

Biotehnoški rečnik za hranu i poljoprivredu

**Obnovljeno i prošireno izdanje rečnika
Biotehnologije i genetičkog inženjeringa**

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Primenjene oznake i prikazivanje materijala ove publikacije oslobadja odgovornosti Organizaciju za hranu i poljoprivredu Ujedinjenih nacija (FAO), u odnosu na zakonski status bilo koje zemlje, teritorije, grada ili oblasti kada je u pitanju definisanje njihovih granica.

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PARTENON • BEOGRAD

III

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PREDGOVOR

Ovaj „Biotehnološki rečnik za hranu i poljoprivredu“ je prerađena i proširena verzija „Rečnika Biotehnologije i Genetičkog Inženjeringa“ objavljenog od strane FAO-a 1999. godine. Uvod prethodnih izdanja je jasno izložio razloge za neposrednu potrebu da se preduzme kompletna revizija, zbog promena u sektoru, stalnog razvoja terminologije i teškoća da se ostane u korak sa tehnološkom evolucijom.

Kada je rečnik publikovan, FAO je bio svestan da bi isti mogao da sadrži neke greške, propuste i nepodesnosti, i zbog toga je smatrao da je prvo izdanje privremeno.

Rečnik je izazvao obiman interes u svetu, što je potvrđeno brojnim priznatim ocenama i posetama web stranica na kojima se nalazi, te ponovljenim zahtevima za prevod definicija na druge zvanične jezike FAO-a.

Zajedno sa neprekidnim procesom obnavljanja, FAO planira da prevede izraze i definicije na druge jezike, da bi rečnik učinila pogodnim za veći broj korisnika.

Ovo novo izdanje takođe donosi promenu u naslovu. Nov naslov preciznije održava svrhu rečnika, ograničenog na izraze u Biotehnologiji za hranu i poljoprivredu.

Zbog interesa za rečnik u našoj zemlji, dobili smo dozvolu organizacije FAO da prevedemo i šampamo Englesko-Srpsku verziju istog, zbog čega smo duboko zahvalni.

UVOD

Biotehnologija je opšti izraz, korišćen u vrlo širokoj oblasti istraživanja. Prema Konvenciji o biološkom diverzitetu, biotehnologija znači: „bilo koja tehnološka primena koja koristi biološke sisteme, žive organizme, ili derivate istih, da bi proizvela ili modifikovala proizvode ili procese za specifično korišćenje“.

Predstavljena u ovom širem smislu, definicija predstavlja mnoge od sredstava i tehnika koje su uobičajene reči danas u poljoprivredi i proizvodnji hrane. Ako se predstavi u užem smislu, definicija razmatra samo „novu“ DNK, molekularnu biologiju i reproduktivnu tehnologiju. Brzina promene u sektoru znači da se terminologija stalno razvija, tako da je bilo teško ostati na nivou tekućih korišćenja.

Ideja za takav zbornik terminologije povezan sa brzo širećim poljima povezanih sa istim ili poreklom od biotehnologije i genetičkog inženjeringa, predstavljena je teškoćom efikasnog komuniciranja u diskusijama na međuvladinom nivou. U različitim prilikama, jednostavne razlike interpretacije terminologije su ugrožavale pregovore od međunarodne važnosti da ispadnu iz koloseka.

Postoje brojne publikacije koje se odnose na terminologiju uskih disciplinskih oblasti, ali FAO nije bio u mogućnosti da nadje pojedinačnu listu koja je pokušala da pokrije širok zamah disciplina i primena odgovarajućih svom mandatu i kompetenciji.

Dakle, ovaj rečnik pokušava da obezbedi iscrpnu i pored toga pristupačnu listu izraza i akronima koji se redovno koriste u biotehnologiji i širem smislu, i u vrlo širokoj oblasti obično nazvanoj „genetički inženjering“, sa svim pratećim problemom korišćenja originalno uzdržanih tehničkih izraza u opštem kontekstu, putem masovnih medija koji ne razlikuju, ili u legalnom kontekstu koji zahteva vrlo tačne definicije.

Ovaj rečnik je pokušaj da se prikaže jedan savremeni popis izraza koji se sada koriste u biotehnologiji, genetičkom inženjeringu, i usko povezanim oblastima. On je namenjen da obezbedi pogodnu informaciju za istraživače, studente i stručnjake. Tekođe je od posebne vrednosti za one čiji jezik nije engleski.

Rečnik je pripremljen reagujući na ispoljenu potrebu. Mnogi od izraza navedenih u ovoj knjizi se inače nalaze samo u publikovanim radovima i knjigama. Izrazi koji su uključeni, odabrani su ispitivanjem knjiga, rečnika, časopisa i sižea, koji su povezani u potpunosti ili delom sa biotehnologijom ili bliskim oblastima.

Dodavši tome, načinjen je pokušaj da se uključe izrazi iz primenjene biotehnologije koji su važni za međuvladine aktivnosti FAO-a, a naročito u oblastima biljnih i životinjskih genetičkih resursa, kvaliteta hrane i zaštite bilja.

ZAHVALNOST

Autori žele da se zahvale Gospodinu Andrei Sonnino kao i SDDR-u (Sustainable Development Department of FAO), za njihovu dozvolu za prevod rečnika i za svaku drugu podršku i pomoć u realizaciji ovog projekta.

Takođe se zahvaljujemo na pomoći Gospođi Zorici Stojanović za njen rad na prekućavanju originalnog rukopisa.

NAPOMENA ČITAOCIMA

FAO bi želeo da bude informisan o bilo kakvim propustima, greškama ili apsurdnostima utvrđenim od strane korisnika. Molimo Vas otkrijte ih, i bilo kakve druge komentare koji se odnose na mišljenje ili moguće puteve za buduće revizije publikacije dostavite na sledeću adresu:

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Rečnik biotehnologije za hranu i poljoprivredu je takođe raspoloživ kao baza podataka za pretraživanje na FAO Biotechnology Website:

www.fao.org/biotech/index.asp

SADRŽAJ

Predgovor	V
Uvod	VI
Zahvalnost	VII
Napomene čitaocima	IX
Skraćenice i simboli	X
Napomene o strukturi rečnika	XIII
Biotehnološki rečnik za hranu i poljoprivredu	1
Aneks 1 – Prefiksi SI za numeričke faktore i oznake	146
Aneks 2 – Grčka azbuka	147
Aneks 3 – Kodoni i aminokiseline	148
Aneks 4 – Amino kiseline, kodovi sa jednim i tri slova	149

SKRAĆENICE I SIMBOLI

Tipografske skraćenice koje slede su korišćene u tekstu.

adj.	pridev
bp	bazni par
<i>cf</i>	<i>confer</i> – videti ili uporediti
kb	kilobaza (hiljadu baznih parova)
pl.	množina
°	stepen
'	prvo
→	Desna strelica
™	Zaštitni znak

Pogledati Aneks 1 – za listu prefiksa SI jedinica za numeričke faktore i oznake

Pogledati Aneks 2 – za grčku azbuku

NAPOMENE O STRUKTURI REČNIKA

- Sve jedinice su izražene kao SI jedinice ako drugačije nije pokazano.
- Stavke su u jednostavnom abecednom redu.
- Akronimi *per se* su uključeni u njihovom abecednom položaju u tekstu. Grčka slova su izgovorena potpuno (na pr. alfa umesto a).
- Sve reči u definicijama koje su saopštene u boldu su sami definisani izrazi (ili njihove množine).

Specifični propisi:

FAO. 1983. Resolution 8/83 of the Twenty-second Session of the FAO Conference. Rome, 5-23 November 1983.

FAO. 1999. *The Global Strategy for the Management of Farm Animal Genetic Resources - Executive Brief*. (see Glossary, pp.39-42; the Glossary was still evolving, but the draft definitions are those developed by the Panel of Experts assisting FAO to detail the Global Strategy.)

Biotehnološki rečnik za hranu i poljoprivredu

A

A Abbreviation for **adenine**.

Skraćenica za adenin.

Ab Abbreviation for **antibody**.

Skraćenica za antitelo.

ABC model Widely accepted model of flower organ identity that appears generally applicable to distantly related **dicotyledonous**, although less well to **monocotyledonous** plants. The model incorporates the *Arabidopsis* genes required for flower organ identity.

Široko prihvaćen model identiteta organa cveta koji je izgleda opšte primenljiv na udaljeno povezane dikotiledone, iako manje dobro na monokotiledone. Model uključuje *Arabidopsis* gene, potrebne za identitet cvetnog organa.

abiotic Absence of living organisms.

Odsustvo živih organizama.

abscisic acid A **phytohormone** implicated in the control of many plant responses to **abiotic** stress, such as extent of stomatal opening under water deficit (i.e. drought) conditions.

Fitohormon koji učestvuje u kontroli mnogih biljnih reagovanja na abiotički stres, kao što je obim otvora stoma pri deficitu vode (tj. suši).

abzyme *See: catalytic antibody*.

Vidi: catalytic antibody.

acaricide A **pesticide** used to kill or control mites or ticks.

Pesticid korišćen za suzbijanje pauka ili krpelja.

ACC synthase Abbreviation for 1-aminocyclopropane-1-carboxylase. The **enzyme** catalyses the rate limiting step in the **ethylene** biosynthetic pathway, and is particularly significant in the fruit ripening process. Plants typically carry a number of distinct ACC synthase genes, which are differentially regulated in response to a variety of developmental, environmental and chemical factors.

Skraćenica za 1-aminociklopropan-1-karboksilazu. Enzim katalizuje stepen ograničavajućeg koraka u biosintezi etilena, i posebno je signifikantan u procesu zrenja ploda. Biljke tipično nose neki broj izrazitih gena ACC sinteze koji su diferencijalno regulisani u regovanju faktora razvića, sredine i hemije.

acceptor control The regulation of the rate of respiration by the availability of **ADP** as a phosphate acceptor.

Podešavanje brzine disanja putem raspoloživosti ADP-a kao akceptora fosfata.

acceptor junction site The junction between the 3' end of an **intron** and the 5' end of an **exon**. *See: donor junction site*.

Veza između trećeg kraja introna i petog kraja eksona. *Vidi: donor junction site*.

accessory bud A **lateral bud** occurring at the base of a **terminal bud** or at the side of an **axillary bud**.

Lateralni pupoljak koji nastaje na osnovi terminalnog pupoljka, ili na strani pazušnog pupoljka.

acclimatization The **adaptation** of a living **organism** (plant, animal or micro-organism) to a changed environment that subjects it to physiological stress. Acclimatization should not be confused with **adaptation**.

Adaptacija živog organizma (biljke, životinje ili mikroorganizma) na izmjenjenu spoljnu sredinu koja ga podvrgava fiziološkom stresu. Aklimatizaciju ne treba mešati sa adaptacijom.

acellular Tissues or organisms that are not made up of separate cells but often have more than one nucleus.

Tkiva ili organizmi koji nisu sastavljeni od posebnih ćelija ali često imaju više od jednog nukleusa

acentric chromosome Chromosome fragment lacking a **centromere**.

Fragment hromozoma bez centromere

acetyl CoA Abbreviation for **acetyl co-enzyme A**.

Skraćenica za *acetyl co-enzyme A*.

acetyl co-enzyme A (Abbreviation: acetyl CoA) A compound formed in the mitochondria when an acetyl group ($\text{CH}_3\text{CO}-$) – derived from breakdown of fats, **proteins**, or carbohydrates – combines with the thiol group ($-\text{SH}$) of **co-enzyme A**.

(Skraćenica za Acetyl CoA) Jedinjenje formirano u mitohondriji kada se acetilna grupa ($\text{CH}_3\text{CO}-$) – nastala razlaganjem masti, proteina ili ugljenih hidrata – kombinuje sa tiolnom grupom ($-\text{SH}$) koenzima A.

ACP Abbreviation for **acyl carrier protein**.

Skraćenica za acyl carrier protein.

acquired Developed in response to the environment, not inherited, such as a

character trait (acquired characteristic) resulting from environmental effect(s). *cf* **acclimatization**.

Razvijen u reagovanju na spoljnu sredinu, nenasledan, kao karakterna osobina (stečena osobina) nastaje pod uticajem sredine. *Uporedi* aklimatizacija

acridine dyes A class of positively charged polycyclic molecules that intercalate into **DNA** and induce frameshift mutations.

Klasa pozitivno opterećenih policikličnih molekula koji se umeću u DNK i izazivaju okvirne mutacije.

acrocentric A chromosome that has its **centromere** near the end.

Hromozom koji ima centromeru blizu kraja.

acropetal Arising or developing in a longitudinal sequence beginning at the base and proceeding towards the apex. *Opposite*: **basipetal**.

Koji nastaje ili se razvija u longitudinalnoj sekvenci počev od osnove i pružajući se ka vrhu (*Suprotno*: basipetal).

activated carbon *See* **activated charcoal**.

Vidi: activated charcoal.

activated charcoal Charcoal that has been treated to remove hydrocarbons and to increase its adsorptive properties. It acts by condensing and holding a gas or solute onto its surface; thus inhibitory substances in nutrient medium may be adsorbed to charcoal included in the medium.

Ugalj koji je bio tretiran da se odstrane ugljovodonici i da se povećaju njegove adsorptivne osobine. Deluje kondenzovanjem i držanjem gasa ili se rastvara na njegovoj površini; tako inhibitorne supstance u medijumu

hraniva mogu biti adsorbovane na ugljalj uključen u medijum.

active transport The movement of a molecule or groups of molecules across a **cell** membrane, which requires the expenditure of cellular energy, because the direction of movement is against the prevailing concentration gradient.

Pokretanje molekula ili grupa molekula kroz ćelijsku mebranu, koja zahteva trošenje ćelijske energije, pošto je smer kretanja protiv preovlađujućeg gradijenta koncentracije.

acute transfection Short-term **transfection**.

Kratkotrajna prenošenja

acyl carrier protein (Abbreviation: ACP). A class of molecules that bind acyl intermediates during the formation of long-chain fatty acids. ACPs are important because of their involvement in many of the reactions necessary for *in vivo* fatty acid synthesis.

Klasa molekula koja vezuje acil posrednike tokom formiranja masnih kiselina dugog lanca. Važni su što je njihovo uključjenje u mnogim reakcijama potrebno za sintezu masnih kiselina *in vivo*.

adaptation Adjustment of a **population** to changes in environment over generations, associated (at least in part) with genetic changes resulting from **selection** imposed by the changed environment. *Not acclimatization*.

Prilagođavanje populacije promenama u sredini tokom generacija, povezano (bar delom) sa genetičkim promenama koje nastaju selekcijom nametnutom usled promenjene sredine. Nije aklimatizacija.

additive genes Genes whose net effect is the sum of their individual **allelic**

effects, i.e. they show neither **dominance** nor **epistasis**.

Geni čiji neto efekat predstavlja sumu njihovih individualnih alelnih efekata, t.j. oni ne pokazuju ni dominantnost ni epistazu

additive genetic variance The net effect of the expression of additive genes, and thus the chief cause of the resemblance between relatives. It represents the main determinant of the response of a **population** to selection. Formally, the **variance of breeding values**.

Čist uticaj ispoljavanja aditivnih gena, i tako glavni uzročnik sličnosti između srodnika. Predstavlja glavnu determinantu reagovanja populacije na selekciju. Formalno, varijansa oplemenjivačkih vrednosti.

adenine (Abbreviation: A). One the **bases** found in **DNA** and **RNA**. *See: adenosine*.

Jedna od baza nađenih u DNK i RNK. *Vidi: adenosine*.

adenosine The (ribo)**nucleoside** resulting from the combination of the base **adenine** (A) and the sugar **D-ribose**. The corresponding **deoxyribonucleoside** is called deoxyadenosine. *See: adenosine triphosphate, adenylic acid, dATP*.

(Ribo) nukleozid koji nastaje kombinacijom baze adenina (A) i šećera D-riboze. Odgovarajući dezoksiribonukleozid zove se dezoksiadenozin. *Vidi: adenosine triphosphate, adenylic acid, dATP*.

adenosine diphosphate (adenosine 5'-diphosphate) (Abbreviation: ADP). *See: adenosine triphosphate*.

Adenzin difosfat (Skraćenica: ADP). *Vidi: adenosine triphosphate*.

adenosine monophosphate (adenosine 5'-monophosphate) (Abbreviation:

AMP). *See*: **adenylic acid**, **adenosine triphosphate**.

Adenozin monofosfat (Skraćenica: AMP). *Vidi*: adenilic acid, adenosine triphosphate.

adenosine triphosphate (adenosine 5'-triphosphate) (Abbreviation: ATP). A **nucleotide** of fundamental importance as the major carrier of chemical energy in all living organisms. It is also required for **RNA** synthesis since it is a direct precursor molecule. ATP consists of **adenosine** with three phosphate groups, linked together linearly. The phosphates are attached to adenosine through the 5'-hydroxyl of its **ribose** (sugar) portion. Upon **hydrolysis**, these bonds yield either one molecule of adenosine 5'-diphosphate (ADP) and the inorganic phosphate ion, or one molecule of **adenosine 5'-monophosphate** (AMP) and **pyrophosphate**; in both cases releasing energy that is used to power biological processes. **ATP** is regenerated by the **phosphorylation** of AMP and ADP.

Adenozin trifosfat (Skraćenica ATP). Nukleotid od fundamentalne važnosti kao glavni nosilac hemijske energije kod svih živih organizama. Takođe je potreban za sintezu RNK, pošto je direktan molekul prethodnik. ATP sadrži adenozin sa tri fosfatne grupe linearno povezane zajedno. Fosfati su dodati adenozinu putem 5' hidroksila svog riboznog (šećernog) dela. Posle hidrolize, ove veze daju bilo jedan molekul adenozin 5'difosfata (ADP) i neorganski fosfatni jon, ili jedan molekul adenozin 5' - monofosfata (AMP) i pirofosfata; u oba slučaja otpuštajući energiju koja se koristi za pokretanje biolo-

ških procesa. ATP se regeneriše putem fosforilacije AMP i ADP.

adenovirus One of a group of **DNA**-containing viruses found in rodents, fowl, cattle, monkeys, and man. In man they are responsible for respiratory-tract infections, but they have been exploited as a **vector** in **gene therapy**, especially for genes targeted at the lungs.

Jedan od grupe virusa koji sadrže DNK, nadjenih u glodara, kokoši, goveda, majmuna i čoveka. U čoveka su odgovorni za infekcije disajnog puta, ali su korišćeni kao vektor u genskoj terapiji, naročito za gene usmerene na pluća.

adenylic acid Synonym for **adenosine monophosphate**, a (ribo)**nucleotide** containing the **nucleoside** adenosine. The corresponding **deoxyribonucleotide** is called **deoxyadenosine 5'-monophosphate** or deoxyadenylic acid.

Sinonim za adenozin monofosfat, (ribo) nukleoid koji sadrži nukleozid adenozin. Odgovarajući deoksiribonukleotid zove se deoksiadenozin 5' monofosfat ili deoksiadenilična kiselina.

adoptive immunization The transfer of an immune state from one animal to another by means of **lymphocyte** transfusions.

Prenos imunog stanja od jedne životinje na drugu, putem transfuzija limfocita.

ADP Abbreviation for **adenosine diphosphate**.

Skraćenica za adenosine diphosphate.

adventitious A structure arising at sites other than the usual ones, e.g. shoots from roots or leaves, and embryos from any cell other than a **zygote**.

Struktura koja se pojavljuje na neuobičajenim mestima, npr. izdanci iz ko-

rena ili listova, i embrioni od bilo koje ćelije osim zigota.

aerobe A **micro-organism** that grows in the presence of oxygen. *Opposite: anaerobe.*

Mikroorganizam koji raste u prisustvu kiseonika. *Suprotno: anaerobe.*

aerobic Active in the presence of free oxygen, e.g. aerobic bacteria that can live in the presence of oxygen.

Aktivan u prisustvu kiseonika, npr. aerobna bakterija koja može da živi u prisustvu kiseonika.

aerobic respiration A type of respiration in which foodstuffs are completely oxidized to carbon dioxide and water, with the release of chemical energy, in a process requiring atmospheric oxygen.

Tip disanja, pri kojem su hraniva potpuno oksidisana u ugljen dioksid i vodu, sa otpuštanjem hemijske energije u procesu koji zahteva atmosferski kiseonik.

affinity chromatography A method for purifying specific components in a solution by exploiting their specific binding to known molecule(s). The mixed solution is passed through a column containing a solid medium to which the binding molecule is covalently attached. *See: immunoaffinity chromatography; metal affinity chromatography; pseudo-affinity chromatography.*

Metod prečišćavanja specifičnih komponeneta u rastvoru putem korišćenja njihovih specifičnih veza za poznate molekule. Mešani rastvor se propušta kroz stub koji sadrži čvrsti medium, za koji je vezujući molekul kovalentno dodat. *Vidi: immunoaffinity chromatography; metal affinity chromatography; pseudo-affinity chromatography.*

affinity tag An amino acid sequence that has been engineered into a **protein** to make its purification easier. The tag could be another **protein** or a short **amino acid** sequence, allowing purification by **affinity chromatography**. *Synonym: purification tag.*

Aminokiselinska sekvenca koja je inženjeringom ubačena u protein, da bi olakšala njegovo prečišćavanje. Dodat bi mogao biti drugi protein ili kratka sekvenca aminokiseline, omogućavajući prečišćavanje putem afinitetne hromatografije. *Sinonim: purification tag.*

aflatoxins A group of toxic compounds, produced by *Aspergillus flavus*, that bind to **DNA** and prevent **replication** and transcription. Aflatoxins can cause acute liver damage and cancer. A health hazard in certain stored foods or feed.

Grupa toksičnih jedinjenja, proizvedenih od *Aspergillus flavus-a*, koja se vezuje za DNK i sprečava replikaciju i transkripciju. Aflatoksini mogu izazvati akutno oštećenje jetre i rak. Zdravstvena opasnost u izvesnim skladištenim hranivima ili stočnom hranivu.

AFLP Abbreviation for **amplified fragment length polymorphism**.

Skraćenica za amplified fragment length polymorphism.

Ag Abbreviation for **antigen**.

Skraćenica za antigen.

agar A **polysaccharide** gelifying agent used in nutrient media preparations and obtained from *Rhodophyta* (red algae). Both the type of agar and its concentration can affect the growth and appearance of cultured **explants**.

Polisaharid, agens za gel korišćen u hranljivim medijima, a dobijen od

Rhodophyta (crvene alge). Oboje, tip agara i njegova koncentracija, mogu da utiču na rast i izgled kultivisanih eksplantata.

agarose The main functional constituent of **agar**.

Glavni funkcionalni sastojak agara.

agarose gel electrophoresis A method to separate **DNA** and **RNA** molecules on the basis of their size, in which samples are subjected to an electric field applied to a gel made with **agarose**.

Metod separacije DNK i RNK molekula na bazi njihove veličine, u kojem su uzorci podvrgnuti električnom polju, primenjenom na gel sačinjen sa agarozom.

aggregate 1. A clump or mass formed by gathering or collecting units. 2. A body of loosely associated cells, such as a friable callus or cell suspension. 3. Coarse inert material, such as gravel, that is mixed with soil to increase its porosity. 4. A serological reaction in which the **antibody** and **antigen** react and precipitate.

1. Gomila ili masa, formirana zbiranjem ili sakupljanjem jedinica. 2. Telo labavo povezanih ćelija, kao što je trošan kalus ili suspenzija ćelija. 3. Grub inertan materijal, kao što je šljunak, mešan sa zemljištem da poveća njegovu poroznost. 4. Serološka reakcija u kojoj antitelo i antigen reaguju i talože se.

agonist A drug, **hormone** or transmitter substance that forms a complex with a **receptor** site. The formation of the complex triggers an active response from a cell.

Lek, hormon ili prenosna supstanca koja formira kompleks sa mestom receptora. Formiranje kompleksa koči aktivno reagovanje od ćelije.

Agrobacterium A genus of bacteria that includes several plant pathogenic species, causing tumour-like symptoms. *See: Agrobacterium rhizogenes, Agrobacterium tumefaciens.*

Rod bakterija koji uključuje nekoliko biljnih patogenih vrsta, izazivajući simptome slične tumoru. *Vidi: Agrobacterium rhizogenes, Agrobacterium tumefaciens.*

Agrobacterium rhizogenes A bacterium that causes **hairy root** disease in some plants. Similar to the **crown gall** disease caused by *Agrobacterium tumefaciens*, this is achieved by the mobilization of the bacterial **Ri plasmid** with the transfer to the plant of some of the genetic material from the plasmid. This process has been used to insert foreign genes into plant cells, but to a lesser extent than the *Agrobacterium tumefaciens*-mediated transformation system, because **regeneration** of whole plants from **hairy root cultures** is problematical.

Bakterija koja izaziva bolest vlaknastog korena u nekih biljaka. Slična raku izazvanom od *Agrobacterium tumefaciens*, to se postiže putem mobilizacije bakterijskog Ri plazmida, sa prenosom na biljku od nekog genetskog materijala od plazmida. Taj proces je korišćen da se ubace strani geni u biljne ćelije., ali u manjem obimu nego *Bacterium tumefaciensom* posredovani transformacioni sistem, pošto je regeneracija celih biljaka iz kulture vlaknastog korena problematična.

Agrobacterium tumefaciens A bacterium that causes **crown gall** disease in some plants. The bacterium characteristically infects a wound, and incor-

porates a segment of **Ti plasmid DNA** into the host **genome**. This **DNA** causes the host cell to grow into a tumour-like structure that synthesizes specific **opines** that only the pathogen can metabolize. This **DNA-transfer** mechanism is exploited in the genetic engineering of plants. *See: T-DNA.*

Bakterija koja izaziva rak u nekih biljaka. Bakterija karakteristično inficira ranu, i uključuje segment Ti plazmida DNK u genom domaćina. Ova DNK izaziva ćeliju domaćina da raste u obliku strukture slične tumoru, koja sintetizuje specifična stanja koja samo ptogen može da metaboliše. Ovaj prenosni mehanizam DNK se koristi u genetičkom inženjeringu biljaka. *Vidi: T-DNA.*

Agrobacterium tumefaciens-mediated transformation The process of **DNA** transfer from *Agrobacterium tumefaciens* to plants, that occurs naturally during **crown gall** disease, and can be used as a method of **transformation**.

Proces transfera DNK iz *Agrobacterium tumefaciens-a* u biljke, koji se prirodno dešava tokom raka, a može se koristiti kao metod transformacije.

AHG Abbreviation for **antihæmophilic globulin**.

Skraćenica za antihæmophilic globulin.

AI Abbreviation for **artificial insemination**.

Skraćenica za artificial insemination.

airlift fermenter A cylindrical **fermentation** vessel in which the cells are mixed by air introduced at the base of the vessel and that rises through the column of culture medium. The **cell suspension** circulates around the column as a consequence of the gra-

dient of air bubbles in different parts of the reactor.

Cilindrična fermentaciona posuda u kojoj se ćelije mešaju vazduhom uvedenim na osnovu posude, a to se povećava kroz stub medijuma kultura. Ćelijska suspenzija cirkuliše oko stuba kao posledica gradijenta vazdušnih mehurića u različitim delovima reaktora.

albinism Hereditary absence of **pigment** in an organism. **Albino** animals have no colour in their skin, hair and eyes. Albino plants lack chlorophyll.

Nasledno odsustvo pigmenta u nekom organizmu. Albino životinje nemaju pigment u koži, dlaci i očima. Albino biljke nemaju hlorofil.

albino 1. An organism lacking pigmentation, due to genetic factors. The condition is **albinism** 2. A conspicuous **plastid** mutant involving loss of chlorophyll.

1. Organizm bez pigmentacije usled genetičkih faktora. Stanje je albinizam. 2. Jasan mutant plastida, uzrokujući gubitak hlorofila.

aleurone The outermost layer of the **endosperm** in a seed, and the site of enzymes concerned with endosperm digestion during seedling growth.

Spoljašnji sloj endosperma u semenu, i mesto enzima povezano sa razmekšavanjem endosperma tokom rasta izdanka.

algal biomass Single-celled plants (e.g. *Chlorella* spp. and *Spirulina* spp.) grown commercially in ponds to make feed materials for zooplankton, which are in turn harvested as feed for fish farms.

Jednoćelijske biljke (na pr. *Chlorella* spp. i *Spirulina* spp.) gajene komer-

cijalno u jezercima, da se stvore hranljivi materijali za zooplankton, koji se za uzvrat ubira kao hranivo za ribnjake.

alginate Polysaccharide gelling agent. Polisaharidno sredstvo za želiranje.

alkylating agent A class of chemicals that transfer alkyl (methyl, ethyl, etc.) groups; for example to the bases in **DNA**. Some of these (especially ethyl methane sulphate, abbreviated EMS) have been much used as **mutagens**.

Grupa hemikalija koja prenosi alkil (metil, etil, itd.) grupe; na primer bazama u DNK. Neki od tih (naročito etil metan sulfonat, skraćeno EMS) bili su mnogo korišćeni kao mutagensi.

allele A variant form of a **gene**. In a **diploid** cell there are two alleles of every gene (one inherited from each parent, although they could be identical). Within a **population** there may be many alleles of a gene. Alleles are symbolized with a capital letter to denote **dominance**, and lower case for **recessive**. In **heterozygotes** with co-dominant alleles, both are expressed. *See: multiple alleles. Synonym: allelomorph.*

Varijantni oblik gena. U diploidnoj ćeliji ima dva alela od svakog gena (po jedan nasledjen od svakog roditelja, iako oni mogu da budu identični). U okviru populacije može biti mnogo alela nekog gena. Aleli se označavaju velikim slovom da označe dominantnost, a niži slučaj za recesivnost. U heterozigota sa kodominantnim alelima, oba su izražena. *Vidi: multiple alleles. Sinonim: allelomorph.*

allele frequency The relative number of copies of an allele in a population,

expressed as a proportion of the total number of copies of all alleles at a given locus in a population.

Relativan broj kopija nakog alela u populaciji, izražen kao proporcija ukupnog broja kopija svih alela na datom lokusu u populaciji.

allelic (adj.) *See allele.*

Alelomorf *Vidi: allele.*

allele-specific amplification (Abbreviation: ASA). The use of the **polymerase chain reaction** at a sufficiently high **stringency** that only one **allele** is amplified. A powerful means of genotyping for single-locus disorders that have been characterized at the molecular level.

(Skraćenica: ASA). Korišćenje lančane reakcije polimeraze pri dovoljno visokoj skućenosti da je samo jedan alel umnožen. Moćno sredstvo za određivanje genotipova za poremećaje pojedinačnog lokusa koji su bili karakterisani na molekularnom nivou.

allelic exclusion A phenomenon whereby only one functional **allele** of an **antibody** gene can be assembled in a given **B lymphocyte**.

Fenomen, čime samo jedan funkcionalni alel gena antitela se može nalaziti skupljen u datom B limfocitu.

allelomorph *See: allele.*

Vidi: allele.

allelopathy The **secretion** of chemicals, such as phenolic and terpenoid compounds, by a plant's roots, which inhibit the growth or reproduction of competitor plants.

Lučenje hemikalija, kao što su fenolna ili terpenoidna jedinjenja, putem biljnih korenova koji inhibiraju rast ili reprodukciju konkurentnih biljaka.

allergen An **antigen** that provokes an **immune response**.

Antigen koji izaziva imuno reagovanje.
allogamy Cross fertilization in plants.

See: fertilization.

Stranooplodnja u biljaka. *Vidi: fertilization.*

allogenic Differing at one or more loci, although belonging to the same species. Thus an organ transplant from one human donor to another is allogeneic, whereas a transplant from a baboon to a human would be **xenogeneic**.

Različit na jednom ili više lokusa, iako pripadajući istoj vrsti. Tako je jedan transplant organa od jednog ljudskog donora na drugi alogeničan, dok bi transplant od babuna na čoveka bio ksenogeničan.

allometric When the **growth rate** of one part of an organism differs from that of another part or of the rest of the body.

Kada je brzina rasta jednog dela organizma različit od drugog dela ili ostataka tela.

allopatric In the context of natural populations of animals or plants, inhabiting distinct and separate areas.

U kontekstu prirodnih populacija životinja ili biljaka, nastanjivati određene ili posebne oblasti.

allopatric speciation Speciation occurring at least in part because of geographic isolation.

Formiranje vrsta, koje nastaje bar delimično zbog geografske udaljenosti.

allopolyploid A **polyploid** organism with sets of chromosomes derived from different species. *Opposite: autopolyploid.*

Poliploidni organizam sa nizovima hromozoma nastalih od različitih vrsta. *Suprotno: autopolyploid.*

allosome Synonym for **sex chromosome**.

Sinonim za polni hromozom.

allosteric control *See: allosteric regulation.*

Vidi: allosteric regulation.

allosteric enzyme An enzyme that has two structurally distinct forms, one of which is active and the other inactive. Active forms tend to catalyse the initial step in a pathway leading to the synthesis of molecules. The end product of this synthesis can act as a feedback inhibitor, converting the enzyme to the inactive form, thus controlling the amount of product synthesized. *Synonym: allozyme.*

Enzim koji ima dva, strukturno posebna oblika, od kojih je jedan aktivan a drugi neaktivan. Aktivni oblici imaju tendenciju da katalizuju početni korak u putanji koja vodi sintezi molekula. Krajnji proizvod ove sinteze može delovati kao inhibitor povratnog procesa, pretvarajući enzim u neaktivni oblik, tako suzbijajući količinu sintetizovanog proizvoda. *Sinonim allozyme.*

allosteric regulation A catalysis-regulating process in which the binding of a small **effector molecule** to one site on an **enzyme** affects the activity at another site.

Proces regulisanja katalize, u kojem vezivanje malog efektor molekula za jedno mesto na enzimu utiče na aktivnost na drugom mestu.

allosteric site That part of an **enzyme** molecule where the non-covalent binding of an **effector molecule** can affect the enzyme's catalytic activity. *See: conformation, ligand.*

Deo enzimskog molekula gde nekovaletno vezivanje efektor molekula

može da utiče na enzimsku katalitičku aktivnost. *Vidi*: conformation, ligand.

allosteric transition A reversible interaction of a small molecule with a **protein** molecule, resulting in a change in the shape of the **protein** and consequent alteration of the interaction of that **protein** with a third molecule.

Povratna interakcija malog molekula sa proteinskim molekulom, rezultirajući u promeni oblika proteina i menjanju interakcije tog proteina sa trećim molekulom.

allotetraploid An **allopolyploid** having two different progenitor genomes.

Allopoliploid koji ima dva različita progenitor genoma.

allotype A classification of **antibody** molecules according to the antigenicity of the constant regions; a variation that is determined by a single allele.

Klasifikacija molekula antitela prema antigenosti konstantnih regiona; varijacija koja je određena jednim alelom.

allozygote A individual that is heterozygous for two different mutant **alleles**.

Individua koja je heterozigotna za dva različita mutantna alela.

allozyme *See*: **allosteric enzyme**.

Vidi: allosteric enzyme.

alpha globulin *See*: **haptoglobin**.

Vidi: haptoglobin.

alternative mRNA splicing The inclusion or exclusion of different **exons** to form different **mRNA transcripts** from a single **transcription** unit.

Uključenje ili isključenje različitih egzona da se formiraju različiti mRNK transkripti iz jedne transkripcione jedinice.

Alu sequences A highly repeated family of 300-bp long sequences dispersed throughout the human genome, so named because they are released by the digestion of genomic **DNA** with the **restriction endonuclease** AluI.

Visoko ponovljena familija od 300-bp dugih sekvenci, rasejanih u ljudskom genomu, tako nazvane pošto su otpuštene putem digestije genomične DNK sa restrikcijom endonukleazom AluI.

amber stop codon *See*: **stop codon**.

Vidi: stop codon.

amino acid A compound containing both amino ($-\text{NH}_2$) and carboxyl ($-\text{COOH}$) groups. In particular, any of 20 basic building blocks of **proteins** having the formula $\text{NH}_2\text{-CR-COOH}$, where R is different for each specific amino acid. *See*: annex 3.

Jedinjenje koje sadrži i amino ($-\text{NH}_2$) i karboksilne grupe ($-\text{COOH}$). Naročito, bilo koje od 20 gradjevinih jedinica proteina, formula je $\text{NH}_2\text{-CR-COOH}$, gde je R različit za svaku specifičnu amino kiselinu. *Vidi*: annex 3.

aminoacyl site (Abbreviation: A-site).

One of two sites on **ribosomes** to which the aminoacyl **tRNA** molecules can bind.

(Skraćenica: A:site): Jedno od dva mesta na ribozomima za koje se mogu vezati molekule amonoacila tRNK.

aminoacyl tRNA synthetase An **enzyme** that catalyses the attachment of an **amino acid** to its specific **tRNA** molecule.

Enzim koji katalizuje povezanost amino kiseline sa svojom specifičnom molekulom tRNK.

amitosis A **cell division** (including nuclear division through constriction of

the nucleus) that occurs without **chromosome** differentiation as in **mitosis**. The mechanism whereby the genetic integrity is maintained during amitosis is uncertain.

Deoba ćelije (uključujući deobu jedra putem skupljanja jedra), što se dešava bez diferencijacije hromozoma kao u mitoze. Mehanizam kojim se genetički integritet održava tokom amitoze je neizvestan.

amniocentesis A procedure for obtaining foetal cells for prenatal diagnosis by sampling the **amniotic fluid** from a pregnant mammal. Cells are cultured, and the **karyotype** is checked for known irregularities (e.g. Down's syndrome and spina bifida in humans).

Postupak za dobijanje fetalnih ćelija za prenatalnu dijagnozu putem uzorkovanja amniotske tečnosti od bremene ženke sisara. Ćelije se kultivišu, i kariotip se pregleda zbog poznatih nepravilnosti (npr. Down-ov sindrom i spina bifida u ljudi).

amnion The thin membrane that lines the fluid-filled sac in which the **embryo** develops in higher vertebrates, reptiles and birds.

Tanka membrana koja okružuje kesu napunjenu tečnošću u kojoj se razvija embrion u viših kičmenjaka, reptila i ptica.

amniotic fluid Liquid contents of the amniotic sac of higher vertebrates, containing foetal, but not maternal cells.

Tečnost, sadržana u amniotskoj kesi viših kičmenjaka, koja sadrži fetalne, ali ne majčinske ćelije.

amorph A mutation that abolishes gene function. *Synonym:* **null mutation**.

Mutacija koja uklanja funkciju gena. *Synonym:* null mutation.

AMP Abbreviation for **adenosine monophosphate**.

Skraćenica za adenosine monophosphate.

amphidiploid A plant derived from doubling the **chromosome** number of an interspecific **F₁** hybrid. Naturally found hybrids of this sort are referred to as **allopolyploid**.

Biljka dobijena udvostručavanjem broja hromozoma jednog interspecijes F1 hibrida. Hibridi ove vrste se nazivju spontani allopoliploidi.

amphimixis True sexual **reproduction** involving the fusion of male and female gametes and the formation of a **zygote**.

Stvarna polna reprodukcija, uključujući fuziju muških i ženskih gameta i formiranje zigota.

ampicillin A penicillin-type **antibiotic** that prevents bacterial growth by interfering with synthesis of the cell wall. Commonly used as a **selectable marker** in the creation of **transgenic** plants.

Antibiotik tipa penicilina koji sprečava rast posredstvom bakterija u sintezi ćelijskog zida. Obično korišćen kao selektivni marker u stvaranju transgenih biljaka.

amplicon The product of a **DNA amplification** reaction. *See:* **polymerase chain reaction**.

Produkat reakcije amplifikacije DNK. *Vidi:* polymerase chain reaction.

amplification 1. Creation of many copies of a segment of **DNA** by the **polymerase chain reaction**. 2. Treatment (e.g. use of chloramphenicol) designed to increase the proportion of **plasmid DNA** relative to that of bacterial (host) **DNA**. 3. Evolutionary expansion in copy number of a

repetitive DNA sequence through a process of repeated duplication.

1. Stvaranje mnogo kopija od segmenta DNK putem lančane reakcije polimeraze.
2. Tretman (na pr. korišćenje hloramfenikola) u cilju povećanja proporcije plazmidne DNK u odnosu na bakterijsku (domaćinsku) DNK.
3. Evoluciono širenje u broju kopija ponovljive sekvence DNK putem procesa ponovljene duplikacije.

amplified fragment length polymorphism (Abbreviation: AFLP). A type of **DNA marker**, generated by the **PCR** amplification of **restriction endonuclease** treated **DNA**. A small proportion of all **restriction fragments** is amplified in any one reaction, so that AFLP profiles can be analysed by gel electrophoresis. This has the important characteristic that many markers can be generated with relatively little effort.

(Skraćenica: AFLP). Tip markera DNK, stvorenog putem amplifikacije lančane reakcije polimeraze restrikcionom endonukleazom tretirane DNK. Mali deo svih restrikcionih fragmenata se umnožava u bilo kojoj reakciji, tako da AFLP profili mogu da se analiziraju putem gel elektroforeze. To ima važnu karakteristiku, da mnogi markeri mogu da se stvore sa relativno malo napora.

amplify To increase the number of copies of a **DNA** sequence, either *in vivo* by inserting into a **cloning vector** that replicates within a host cell, or *in vitro* by **polymerase chain reaction**.

Povećati broj kopija sekvence DNK, bilo *in vivo*, ubacivanjem u vektor kloniranja koji se ponavlja unutar ćelije domaćina, ili *in vitro*, putem lančane reakcije polimeraze.

ampometric *See: electrochemical sensor*

Vidi: electrochemical sensor.

amylase Describing a wide class of enzymes that catalyse the **hydrolysis** of starch.

Opisuje široku grupu enzima koji katalizuju hidrolizu skroba.

amylolytic The capability of enzymatically degrading **starch** into sugars.

Sposobnost enzimatskog razlaganja skroba na šećere.

amylopectin A **polysaccharide** comprising highly branched chains of glucose **residues**. The water-insoluble portion of **starch**.

Polisaharid koji se sastoji od visoko razgranatih lanaca ostataka glukoze. U vodi nerastvorljiv deo skroba.

amylose A **polysaccharide** consisting of linear chains of 100–1000 glucose **residues**. The water-soluble portion of **starch**.

Polisaharid koji se sastoji od linearnih lanaca od 100–1000 ostataka glukoze. U vodi rastvorljiv deo skroba.

anabolic pathway A pathway by which a **metabolite** is synthesized; a biosynthetic pathway.

Putanja putem koje se sintetiše metabolit; biosintetska putanja.

anabolism One of the two subcategories of **metabolism**, referring to the building up of complex organic molecules from simpler precursors.

Jedna od dve podkategorije metabolizma, odnosi se na izgradnju kompleksnih organskih molekula od prostih prekursora.

anaerobe An organism that can grow in the absence of oxygen. *Opposite: aerobic*.

Organizam koji može da raste u odsustvu kiseonika. *Suprotno areobe*.

anaerobic An environment or condition in which molecular oxygen is not available for chemical, physical or biological processes.

Sredina ili stanje u kojem molekularni kiseonik nije dostupan za hemijske, fizičke ili biološke procese.

anaerobic digestion Digestion of materials in the absence of oxygen. *See: anaerobic respiration.*

Svarljivost materijala u odsustvu azota. *Vidi: anaerobic respiration.*

anaerobic respiration Respiration in which foodstuffs are partially oxidized, with the release of chemical energy, in a process not involving atmospheric oxygen. A notable example is in alcoholic fermentation, where sugar is metabolized into ethanol.

Disanje pri kojem se hraniva delom oksiduju otpuštanjem hemijske energije, u procesu koji isključuje atmosferski kiseonik. Izraziti primer je u alkoholnoj fermentaciji, gde se šećer metaboliše u etanol.

analogous Features of organisms or molecules that are superficially or functionally similar but have evolved in a different way or contain different compounds.

Odlike organizama ili molekula da su površinski ili funkcionalno slični, ali su se razvili na različit način, ili sadrže različita jedinjenja.

anaphase The stage of **mitosis** or **meiosis** during which the daughter chromosomes migrate to opposite poles of the cell (toward the ends of the **spindle**). Anaphase follows **metaphase** and precedes **telophase**.

Stanje mitoze ili mejoze tokom kojeg ćerke hromozomi idu ka suprotnim polovima ćelije (prema krajevima vretena). Anafaza sledi metafazu a prethodi telofazi.

anchor gene A gene that has been positioned on both the **physical map** and the **linkage map** of a chromosome, and thereby allows their mutual alignment.

Gen koji je postavljen, kako u fizičkoj mapi, tako i linkage mapi hromozoma, i time omogućava njihovu zajedničku postrojenost.

androgen Any hormone that stimulates the development of male secondary sexual characteristics, and contributes to the control of sexual activity in vertebrate animals. Usually synthesized in the **testis**.

Bilo koji hormon koji stimuliše razvoj muških sekundarnih polnih karakteristika, i doprinosi kontroli seksualne aktivnosti u kičmenjaka. Obično se sintetizuje u testisu.

androgenesis Male **parthenogenesis**, i.e. the development of a haploid embryo from a male nucleus. The maternal nucleus is eliminated or inactivated subsequent to **fertilization** of the ovum, and the **haploid** individual (referred to as androgenetic) contains in its cells the genome of the male **gamete** only. *See: anther culture; gynogenesis.*

Muška partenogeneza, t.j. razviće haploidnog embriona od muškog nukleusa. Majčinski nukleus je eliminisan ili neaktiviran posle oplodnje jajne ćelije, i haploidna individua (označena kao androgenetička) sadrži u svojim ćelijama genom samo muškog gameta. *Vidi: anther culture; gynogenesis.*

aneuploid An organism or cell having a chromosome number other than the normal **somatic** number. Aneuploid gametes have a **chromosome** number other than the normal **haploid** number. The condition is *aneuploidy*.

Organizam ili ćelija koja ima hromozomski broj različit od normalnog somatskog broja. Aneuploidne gamete imaju hromozomski broj različit od normalnog haploidnog broja. Stanje je *aneuploidija*.

angiogenesis The formation and development of new blood vessels in the body, stimulated by growth factors, such as **angiogenin**. The process is required for the spread of malignant tumours.

Formiranje i razviće novih krvnih sudova u telu, stimulirano faktorima rasta, kao što je angiogenin. Proces je potreban za širenje malignih tumora.

angiogenin One of the human angiogenic growth factors. In addition to stimulating (normal) blood vessel formation, angiogenin levels are correlated with placenta formation and tumour growth.

Jedan od ljudskih angiogeničnih faktora rasta. Dodavši stimuliranju (normalnog) formiranja krvnog suda, nivoi angiogena su povezani sa formiranjem placente i rastom tumora.

angiosperm A division of the plant kingdom that includes all flowering plants, i.e. **vascular** plants in which double fertilization occurs resulting in development of fruit containing seeds. Divided into two major groups, **monocotyledons** and **dicotyledons**. *See: gymnosperm*

Podela biljnog sveta koji uključuje sve biljke cvetnice tj. vaskularne biljke, u kojih se dešava dvostruka oplodnja što dovodi do ploda koji sadrži seme. Podeljena u dve glavne grupe, monokotile i dikotile. *Vidi: gymnosperm.*

animal cell immobilization Entrapment of animal cells in some solid material in order to produce some

natural product or genetically engineered **protein**. Animal cells have the advantage that they already produce many **proteins** of pharmacological interest, and that genetically engineered **proteins** are produced by them with the post-translation modifications normal to animals. However, because animal cells are much more fragile than bacterial ones, they cannot tolerate a commercial **fermentation** process.

Hvatanjem u klopku životinjskih ćelija u nekom čvrstom materijalu, da bi se proizveo neki prirodan produkt ili genetički izgrađen protein. Životinjske ćelije imaju prednost da one već proizvode mnoge proteine od farmakološkog interesa, i da su genetički izgrađeni proteini, proizvedeni od njih sa posleprenosnim modifikacijama, normalnim životinjama. Međutim, pošto su životinjske ćelije mnogo nežnije nego bakterijske, one ne mogu tolerisati komercijalni proces fermentacije.

animal cloning *See: cloning.*

Vidi: cloning.

anneal The pairing of **complementary DNA** or **RNA** sequences, via hydrogen bonding, to form a double-stranded **polynucleotide**. *Opposite: denature.*

Sparivanje komplementarnih sekvenci DNK ili RNK, putem vodonikovog vezivanja, da se formira dvo-lančani polinukleotid. *Suprotno: denature.*

annual 1. (adj:) Taking one year, or occurring at intervals of one year. 2. A plant that completes its life cycle within one year. *See biennial, perennial.*

1. (adj:) Godišnji, ili nastao u intervalima od jedne godine. 2. Biljka koja

završava svoj životni ciklus za godinu dana. *Vidi*:biennial, perennial.

anonymous DNA marker A **DNA marker** detectable by virtue of variation in its sequence. The function (if any) of the sequence is unknown. **Microsatellites** and **AFLPs** are typical anonymous **DNA** markers.

DNK marker koji se može otkriti putem osobine varijacije u svojoj sekvenci. Funkcija (ako ima) sekvence nije poznata. Mikrosateliti i AFLP su tipični nepoznati markeri DNK.

antagonism An interaction between two organisms (e.g. moulds or bacteria) in which the growth of one is inhibited by the other. *Opposite*: **synergism**.

Interakcija između dva organizma (na pr. plesni ili bakterije) pri kojoj je rast jednog inhibiran drugim. *Suprotno*: synergism.

antagonist A compound that inhibits the effect of an **agonist** in such a way that the combined biological effect of the two becomes smaller than the sum of their individual effects.

Jedinjenje koje inhibira efekt nekog agonista na takav način, da kombinovani biološki efekt ova dva postaje manji nego suma njihovih individualnih efekata.

anther The upper part of a **stamen**, containing pollen sacs within which the **pollen** develops and matures.

Gornji deo prašnika, koji sadrži polenove kesice u kojima se polen razvija i sazreva.

anther culture The aseptic culture of immature **anthers** to generate **haploid** plants from microspores via **androgenesis**.

Aseptična kultura nezrelih prašnika, da bi se putem androgeneze stvorile haploidne biljke od mikrospora.

anthesis The period during which **anthers** bear mature and functional pollen.

Period tokom kojeg prašnici nose zreo i funkcionalni polen.

anthocyanin A water-soluble blue, purple or red flavonoid pigments found in vacuoles of cells of certain plants.

Vodorastvorljivi plavi, purpurni ili crveni flavonoidni pigmenti, nadjeni u vakuolama ćelija nekih biljaka.

antiauxin A chemical that interferes with the **auxin** response, sometimes by the prevention of auxin transport. Some antiauxins may promote **morphogenesis in vitro** (e.g. 2,3,5-tri-iodobenzoate (TIBA) and 2,4,5-trichlorophenoxyacetate (2,4,5-T)) and are therefore used to stimulate the growth of some cultures.

Hemikalija koja se meša sa reagovanjem auksina, ponekad putem sprečavanja transporta auksina. Neki antiauksini mogu potpomoći morfogenezu *in vitro* (npr. 2, 3, 5, -tri-jodobenzoat (TIBA) i 2, 4, 5-trihlorofenoksiacetat (2, 4, 5-T)), i zbog toga se koriste da stimulišu rast nekih kultura.

antibiosis The prevention of growth or **development** of an organism by a substance or another organism.

Sprečavanje rasta ili razvicia nekog organizma putem neke supstance ili drugog organizma.

antibiotic A class of natural and synthetic compounds that inhibit the growth of, or kill some microorganisms. Antibiotics are widely used medicinally to control bacterial pathogens, but **resistance** in bacteria to particular antibiotics is often rapidly acquired through **mutation**.

Grupa prirodnih ili sintetičkih jedinjenja koja inhibira rast, ili ubija neke mi-

kroorganizme. Antibiotici se široko medicinski koriste za suzbijanje bakterijskih patogena, ali rezistentnost u bakterija na određene antibiotike se često brzo postiže putem mutacije.

antibiotic resistance The ability of a micro-organism to disable an antibiotic or prevent its transport into the cell.

Sposobnost mikroorganizma da onesposobi antibiotik, ili spreči njegov transport u ćeliju.

antibiotic resistance marker gene (Abbreviation: ARMG). Genes (usually of bacterial origin) used as selection markers in **transgenesis**, because their presence allows cell survival in the presence of normally toxic antibiotic agents. These genes were commonly used in the development and release of first generation transgenic organisms (particularly crop plants), but are no longer favoured because of perceived risks associated with the unintentional transfer of antibiotic resistance to other organisms. See **kan^r**, **neo^r**.

(Skracénica ARMG)- Geni (obično bakterijskog porekla) korišćeni kao selekcionni markeri pri transgenezi, zbog njihovog prisustva omogućuju preživljavanje ćelije u prisustvu normalno toksičnih antibiotičkih agensa. Ti geni bili su obično korišćeni u razviću i oslobadjanju prve generacije transgenih organizama (posebno useva), ali nisu duže korišćeni, zbog primećenih rizika povezanih sa nenamernim transferom rezistantnosti antibiotika prema drugim organizmima. *Vidi: kan^r, neo^r.*

antibody (Abbreviation: Ab). An immunological **protein** produced by the **lymphocytes** in response to contact

with an **antigen**. Each antibody recognizes just one **antigenic determinant** of one antigen and acts by specifically binding to it, thus rendering it harmless. Those from the IgG **antibody class** are found in the bloodstream and used in **immunoassay**. *Synonym: immunoglobulin. See: monoclonal antibody, polyclonal antibody.*

(Skracénica Ab). Imunološki protein, proizveden od limfocita u reagovanju sa antigenom. Svako antitelo prepoznaje tek jednu antigenu determinantu jednog antigena i deluje putem specifičnog vezanja za nju, čineći je tako bezopasnom. One iz IgG klase antitela nadjene su u krvotoku, i korišćene su u imuno probi. *Sinonim: imunoglobulin. Vidi: monoclonal antibody, polyclonal antibody.*

antibody binding site The part of an **antibody** that binds to the **antigenic determinant**. *See: complementarity-determining regions. Synonym: paratope.*

Deo antitela koji se vezuje za antigensku determinantu. *Vidi: complementarity-determining regions. Sinonim: paratope.*

antibody class The class to which an antibody belongs, depending on the type of heavy chain present. In mammals, there are five classes of antibodies: IgA, IgD, IgE, IgG, and IgM.

Grupa kojoj pripada antitelo, u zavisnosti od tipa prisutnosti teškog lanca. U sisara ima pet klasa antitela: IgA, IgG, IgE, IgD i IgM.

antibody structure Describes the molecular architecture of an **antibody**, which consists of two identical „light“ chains and two identical „heavy“ chains and has two **antigen-**

binding sites. Each chain consists of a constant region which is the same between antibodies of the same class and sub-class, and a variable region that is antibody-specific.

Opisuje molekularnu arhitekturu nekog antitela, koja se sastoji od dva identična „laka“ lanca, i dva identična „teška“ lanca, a ima dva mesta koja se vezuju za antigen. Svaki lanac sastoji se od stalnog regiona koji je isti između antitela iste klase i podklase, i različitog regiona, koji je antitelo-specifičan.

antibody-mediated immune response

The synthesis of antibodies by B cells in response to an encounter of the cells of the immune system with a foreign **antigen**. *Synonym*: **humoral immune response**.

Sinteza antitela pomoću B ćelija, u odgovoru na susret ćelija imunog sistema sa stranim antigenom. *Sinonim*: humoral immune response.

anticlinal The orientation of cell wall or plane of **cell division** perpendicular to the surface. *Opposite*: **periclinal**.

Orijentacija ćelijskog zida ili ravni deobe ćelije, uspravna na površinu. *Suprotno*: periclinal.

anticoding strand The **DNA** strand used as template for **transcription**. The resulting **mRNA** is complementary in sequence to that of the anticoding strand. *Synonym*: **template strand**.

Lanac DNK, korišćen kao model za transkripciju. Nastala mRNK je komplementarna u sekvenci sa onom u antikodnom lancu. *Sinonim*: template strand.

anticodon A triplet of **tRNA** nucleotides that corresponds to a complementary **codon** in an **mRNA** molecule during **translation**.

Triplet tRNK nukleotida koji je komplementaran sa komplementarnim kodonom u molekulu mRNK tokom translacije.

antigen (Abbreviation: Ag). A **macromolecule** (usually a **protein** foreign to the organism), which elicits an **immune response** on first exposure to the immune system by stimulating the production of **antibodies** specific to its various **antigenic determinants**. During subsequent exposures, the antigen is bound and inactivated by these antibodies. *Synonym*: immunogen.

(Skraćenica:Ag) Makromolekul (obično protein stran za organizam) koji otkriva imunoreakciju pri prvom izlaganju imunom sistemu putem stimulacije proizvodnje antitela specifično njihovim različitim antigenim determinantama. Tokom sledećih izlaganja, antigen je vezan i neaktiviran tim antitelima. *Sinonim*: immunogen.

antigenic determinant The individual surface feature of an **antigen**, that elicits the production of a specific **antibody** in the course of the immune response. Each antigenic determinant, typically a few **amino acids** in size, causes the synthesis of a different antibody and thus exposure to a single antigen may result in the expression of a number of antibodies. *See*: **monoclonal antibody**, **polyclonal antibody**. *Synonym*: epitope.

Individualna površinska karakteristika nekog antigena, koja otkriva proizvodnju specifičnog antitela u toku imunoreakcije. Svaka antigenska determinanta, sa malim brojem amino kiselina, uzrokuje sintezu različitih antitela, i to izlaganje jednom antige-

nu može dovesti do ispoljavanja jednog broja antitela. *Vidi:* monoclonal antibody, polyclonal antibody. *Sinonim:* epitope.

antigenic switching The altering of a micro-organism's surface antigens through genetic re-arrangement, to elude detection by the host's immune system.

Promena antigena površine mikroorganizma putem genetičkog ponovnog aranžmana, da se izbegne otkrivanje putem imunog sistema domaćina.

antihaemophilic factor VIII *See:* **antihaemophilic globulin**.

Vidi: antihaemophilic globulin.

antihaemophilic globulin (Abbreviation AHG). One of the blood clotting factors, a soluble **protein** that causes the fibrin matrix of a blood clot to form. Used as a treatment for haemophilia, AHG is usually obtained from genetically engineered cell cultures. *Synonym:* antihaemophilic factor VIII.

(Skraćenica: AHG) Jedan od faktora zgrušavanja krvi, rastvorljivi protein koji izaziva formiranje matrica krvnog ugruška. Korišćen kao način lečenja hemofilije, AHG se obično dobija iz genetički proizvedenih ćelijskih kultura. *Sinonim:* antihemofilčki faktor VIII.

anti-idiotypic antibody An **antibody**, produced by an organism, which specifically binds to the binding site of an antibody developed by that organism against a foreign **antigen**. Involved with the regulation of the immune response. Some allergic responses are in part due to the breakdown of this sort of regulation.

Antitelo, koje proizvodi neki organizam koje se specifično vezuje na veziv-

nom mestu antitela, koje stvara taj organizam protiv stranog antigena. Uključeno u regulisanju imunoreakcije. Neka alergijska reagovanja su delom usled prekida ove vrste regulacije.

antimicrobial agent Any chemical or biological agent that inhibits the growth and/or survival of micro-organisms. *See:* **antibiotic**.

Bilo koji hemijski ili biološki agens koji inhibira rast i/ili preživljavanje mikroorganizama. *Vidi:* antibiotic.

antinutrient Compounds that inhibit the normal uptake or utilization of nutrients.

Jedinjenja koja inhibiraju usvajanje ili iskorišćavanje hranljivih materija.

anti-oncogene A gene whose product prevents the normal growth of tissue. Gen čiji produkt sprečava normalan rast tkiva.

antioxidant Compounds that slow the rate of oxidation reactions.

Jedinjenja koja usporavaju stepen oksidacionih reakcija.

antiparallel orientation The normal arrangement of the two strands of a **double-stranded DNA** molecule, and of other nucleic-acid duplexes (**DNA-RNA**, **RNA-RNA**), in which the two strands are oriented in opposite directions so that the 5'-phosphate end of one strand is aligned with the 3'-hydroxyl end of the complementary strand.

Pravilan raspored dva lanca, dvostrukih upletenih DNK molekula, i drugih nukleinsko-kiselinskih dupleksa (DNK-RNK, RNK-RNK), u kojih su dva lanca orijentisana u suprotnim pravcima, tako da je 5' fosfatni kraj jednog lanca doveden u pravu liniju sa 3' hidroksilnim krajem dopunskog lanca.

antisense DNA One of the two strands of double-stranded **DNA**, usually that which is **complementary** (hence „anti“) to the **mRNA**, i.e. the non-transcribed strand. However, there is not universal agreement on this convention, and the preferred designations are **coding strand** for the strand whose sequence matches that of the **mRNA**, and **non-coding strand** or **template strand** for the complementary strand (i.e. the transcription template).

Jedan od dva dvostruka lanca DNK, obično onaj koji je dopunski (dakle „anti“) prema mRNK, tj. ne-transkribovanom lancu. Međutim, nema opšte saglasnosti o tom sporazumu, i prihvaćene oznake su kodirajući lanac za lanac čija sekvenca odgovara onoj od mRNK, i nekodirajući lanac ili model lanac za dopunski lanac (tj. transkripcioni model).

antisense gene A gene that produces an **mRNA** complementary to the transcript of a normal gene (usually constructed by inverting the coding region relative to the **promoter**).

Gen koji proizvodi mRNK, koji je komplementaran transkriptu normalnog gena (nastao obrtanjem regiona kodiranja u odnosu na promoter).

antisense RNA An **RNA** sequence that is complementary to all or part of a functional **mRNA** molecule, to which it binds, blocking its translation.

RNK sekvenca koja je komplementarna celoj ili delu funkcionalne mRNK molekule, za koju se vezuje, blokirajući translaciju.

antisense therapy The *in vivo* treatment of a **genetic disease** by blocking translation of a **protein** with a **DNA**

or an **RNA** sequence that is complementary to a specific **mRNA**.

In vivo lečenje genetičke bolesti putem blokiranja translacije proteina sa sekvencom DNK ili RNK, koja je komplementarna specifičnoj mRNK.

antiseptic Any substance that kills or inhibits the growth of disease-causing **micro-organism** (a micro-organism capable of causing sepsis), but is essentially non-toxic to cells of the body.

Bilo koja supstanca koja ubija ili inhibira rast mikroorganizama izazivača bolesti (mikroorganizma u stanju da izazove sepsu), ali je netoksična za telesne ćelije.

antiserum The fluid portion of the blood of an immunized animal (after coagulation of the blood), which retains any **antibodies**.

Tečni deo krvi neke imunizovane životinje (posle koagulacije krvi), koji zadržava bilo koja antitela.

anti-terminator A **protein** which enables **RNA polymerase** to ignore certain transcriptional stop or **termination signals** and thereby produce longer than normal transcripts.

Protein koji omogućava RNK polimerazi da ignoriše neki transkripcioni zastoj ili završne signale, i time proizvodi transkripte duže od normalnih.

antitranspirant A compound designed to reduce plant transpiration. Applied to the leaves of newly transplanted trees, shrubs etc., or cuttings in lieu of misting. Can interfere with **photosynthesis** and respiration if the coating is too thick or is unbroken.

Jedinjenje koje smanjuje transpiraciju biljke. Primenjeno na listovima novo presađenih drveća, žbunja itd., ili na mestu sečenja. Može se ometati foto-

sintezom i respiracijom, ako je sloj suviše debeo ili neisprekidan.

antixenosis The modification of the behaviour of an organism by a substance or another organism. Particularly used in the context of a plant's apparent resistance against insect feeding, when the insects are presented with a choice of plant genotypes.

Promena ponašanja nekog organizma pod uticajem drugog organizma. Posebno očigledno u kontekstu biljne otpornosti različitih genotipova biljaka u ishrani fitofagnih insekata.

apex The portion of a root or shoot containing the primary or **apical meristem**.

Deo korena ili izdanka koji sadrži primarni ili vršni meristem.

apical cell A meristematic initial in the apical meristem of shoots or roots of plants.

Meristemski začetak na vršnom delu izdanaka ili korena biljaka.

apical dominance The phenomenon where growth of lateral (axillary) **buds** in a plant is inhibited by the presence of the terminal (apical) bud on the branch. Explained by the export of **auxins** from the apical bud.

Fenomen gde je rast lateralnih (pazušnih) pupoljaka inhibiran prisustvom terminalnog (vršnog) pupoljka na grani. Objasnjeno ispuštanjem auksina iz vršnog pupoljka.

apical meristem A region of the tip of each shoot and root of a plant in which cell division is continually occurring to produce new stem and root tissue, respectively. Two regions are visible in the apical **meristem**: An outer 1-4-cell layered region (the *tunica*), where cell divisions are **anticlinal**; and below the *tunica*, (ii) the

corpus, where the cells divide in all directions, and increase in volume.

Region vrha svakog izdanka i korena biljke, u kojem se deoba ćelija stalno odvija, da proizvede novo tkivo stabla, odnosno korena. Dva regiona su vidljiva u vršnom meristemu. Na spoljnom 1-4 položenom regionu (*tunica*), gde su deljenja ćelija sa suprotnim nagibom; i ispod tunike, (ii) *corpusa*, gde se ćelije dele u svim pravcima, i zapreminski se povećavaju.

apoenzyme Inactive enzyme that has to be associated with a **co-enzyme** in order to function. The apoenzyme/co-enzyme complex is called a **holoenzyme**.

Neaktivni enzim, koji treba da bude povezan sa koenzimom da bi funkcionisao. Kompleks apoenzim/koenzim naziva se holoenzim.

apomixis The production of an **embryo** in the absence of **meiosis**. Apomictic higher plants produce **asexual** seeds, derived only from maternal tissue. *See: parthenogenesis*.

Proizvodnja embriona u odsustvu mejoze. Apomiktične više biljke stvaraju seme bez oplodnje, koje je poreklom samo od majčinskog tkiva. *Vidi: parthenogenesis*.

apoptosis The process of programmed **cell death**, which occurs naturally as a part of normal development, maintenance and renewal of tissue. Differs from **necrosis**, in which cell death is caused by external factors (stress or toxin).

Proces programirane smrti ćelije, koji se prirodno dešava kao deo normalnog razvića, održavanja i obnove tkiva. Razlikuje se od nekroze, kod koje je smrt ćelije izazvana spoljnim faktorima (stresom ili toksinom).

AP-PCR *See:* **arbitrarily primed polymerase chain reaction.**

Vidi: arbitrarily primed polymerase chain reaction.

aptamer A polynucleotide molecule that binds to a specific molecule, often a **protein**.

Polinukleotidni molekul koji se vezuje na specifični molekul, često protein.

aquaculture Farming of aquatic organisms, including fish, molluscs, crustaceans and aquatic plants.

Uzgajanje vodenih organizama, uključujući ribe, mekušce, rakove i vodene biljke.

Arabidopsis A genus of flowering plants in the *Cruciferae*. *A. thaliana* is used in research as a model plant because it has a small fully sequenced genome, can be cultured and transformed easily, and has a rapid generation time.

Rod biljaka cvetnica u familiji *Cruciferae*. *A. thaliana* se koristi u istraživanju kao model biljka, pošto ima mali, potpuno sekvencionirani genom, može lako biti kultivisana i transformisana, i brzo se reprodukuje.

arbitrarily primed polymerase chain reaction (Abbreviation: AP-PCR) An application of the **polymerase chain reaction** to generate **DNA fingerprints**. The technique uses **arbitrary primers** to amplify anonymous stretches of **DNA**. *See:* **DNA amplification fingerprinting, random amplified polymorphic DNA**.

(Skaćenica: AP-PCR) Primena lančane reakcije polimeraze da se stvore otisci DNK. Tehnika koristi nedefinisane prajmere da umnoži nedefinisane delove DNK. *Vidi:* DNK amplification fingerprinting, random amplified polymorphic DNK.

arbitrary primer An oligonucleotide **primer** whose sequence is chosen at random, rather than one whose sequence matches that of a known locus. These primers therefore amplify **DNA** fragments which have not been pre-selected.

Jedan oligonukleotid, čija je sekvenca odabrana slučajno, pre nego neki čija se sekvenca slaže sa onom poznatog lokusa. Ovi prajmeri povećavaju fragmente DNK koji nisu bili prethodno selekcionisani.

Archaea Single-celled life forms adapted to existence in high pressure, anaerobic, environments such as at extreme ocean depths. These organisms are seen as a promising source of enzymes robust enough for a number of demanding industrial processes.

Jednoćelijske životne forme adaptirane na egzistenciju pod visokim pritiskom, anaerobnim uslovima sredine, kao što su ekstremne okeanske dubine. Ti organizmi su vidjeni kao mogući izvor enzima koji su dovoljno robustni za odredjen broj značajnih industrijskih procesa.

ARMG Abbreviation for **antibiotic resistance marker gene**.

Skraćenica za antibiotic resistance marker gene.

ARS Abbreviation for autonomous(ly) replicating segment (or sequence).

Skraćenica za autonomno ponavljajući segment (ili sekvenca).

artificial inembryonation Non-surgical transfer of embryo(s) to a recipient female. As *in vitro* **embryo** technology develops, artificial inembryonation may replace **artificial insemination**.

Neoperativni transfer embriona u ženku recipijenta. Kako se razvija *in vitro*

embriona tehnologija, veštačka inembrionacija može da zameni veštačko osemenjavanje.

artificial insemination (Abbreviation: AI). The deposition of semen, using a syringe, at the mouth of the uterus to make conception possible.

(Skraćenica: AI) Deponovanje semena, korišćenjem katetera na grlić materice, da bi se koncepcija činila mogućom.

artificial medium *See: culture medium.*

Vidi: culture medium.

artificial seed Encapsulated or coated **somatic embryos** that are planted and treated like seed.

Stavljeni u kapsule, ili obloženi somatski embrioni, koji su ponovo implanrirani i tretirani kao seme.

artificial selection The practice of choosing individuals from a **population** for reproduction, usually because these individuals possess one or more desirable traits.

Praksa odabiranja individua iz populacije za reprodukciju, obično zbog toga što te individue poseduju jednu ili više poželjnih osobina.

ASA Abbreviation for **allele-specific amplification**.

Skraćenica za allele-specific amplification.

ascites Abnormal accumulation of fluid in the peritoneal cavity, occurring naturally as a complication of cirrhosis of the liver, among other conditions. In the context of **monoclonal antibody** production, **hybridoma** cells are injected into mice to induce their proliferation in the resulting ascites. This method has been largely superseded by *in vitro* culture of hybridomas.

Nenormalna akumulacija tečnosti u peritonealnoj šupljini, koja prirodno nastaje usled komplikacija ciroze jetre, između drugih stanja. U kontekstu proizvodnje monoklalnog antitela, hibridoma ćelije se injektiraju u miša da izazovu njihovo umnožavanje u nastajućem ascites-u. ovaj metod je bio uveliko zamenjen sa *in vitro* kulturom hibridoma.

ascospore One of the spores contained in the **ascus** of certain fungi.

Jedna od spora, sadržana u askusu nekih gljiva.

ascus (pl.: asci) Reproductive sac in the sexual stage of a type of fungi (*Ascomycetes*) in which ascospores are produced.

Reproduktivna kesica u seksualnom stadijumu gljivica (*Ascomycetes*) u kojoj se stvaraju askospore.

aseptic Sterile, free of contaminating organisms (bacteria, fungi, algae but not generally including viruses, and particularly not internal **symbionts**).

Sterilan, bez kontaminirajućih organizama (bakterija, gljivica, algi ali generalno ne uključujući viruse, a posebno ne unutrašnje simbiote).

asexual Reproduction not involving **meiosis** or the union of **gametes**.

Reprodukcija koja ne uključuje mejozu ili sjedinjavanje gameta.

asexual embryogenesis *See: somatic cell embryogenesis.*

Vidi: somatic cell embryogenesis.

asexual propagation Vegetative, somatic, non-sexual **reproduction** of a plant without fertilization.

Vegetativna, somatska, neseksualna reprodukcija biljke, bez oplodnje.

asexual reproduction Reproduction that does not involve the formation and union of gametes from the diffe-

rent sexes or mating types. It occurs mainly in lower animals, micro-organisms and plants. In plants, asexual reproduction is by vegetative propagation (e.g. bulbs, tubers, corms) and by formation of spores.

Reprodukcija koja ne uključuje formiranje i sjedinjavanje gameta različitih polova ili tipova parenja. Dešava se uglavnom u nižih životinja, mikroorganizama i biljaka. U biljkama, aseksualna reprodukcija se odvija putem vegetativne propagacije (na pr. lukovice, krtole, izdanci) i formiranjem spora.

A-site Abbreviation for **aminoacyl site**.
Skracénica za aminoacyl site.

assay 1. To test or evaluate. 2. The procedure for measuring the quantity of a given substance in a sample (chemically or by other means).

1. Testirati ili oceniti. 2. Postupak merenja količine date supstance u uzorku (hemijski ili drugim sredstvima).

assortative mating Mating in which the partners are chosen on the basis of phenotypic similarity.

Parenje, pri kojem se partneri biraju na bazi fenotipske sličnosti.

assortment *See*: segregation.

Vidi: segregation.

asymmetric hybrid A hybrid formed, usually via **protoplast fusion**, between two donors, where the **chromosome** complement of one of the donors is incomplete. This chromosome loss can be induced by **irradiation** or chemical treatment, or can occur naturally.

Hibrid, obično nastao fuzijom protoplasta, između dva donora, gde je hromozomska dopuna jednog od donora nekompletna. Taj gubitak hromozoma može se izazvati putem zračenja

ili hemijskim tretmanom, ili se može desiti spontano.

asynapsis The failure or partial failure in the pairing of homologous chromosomes during the first meiotic prophase.

Odsustvo ili delimično odsustvo parenja homolognih hromozoma tokom prve mejotičke profaze.

ATP Abbreviation for **adenosine triphosphate**.

Skracénica za adenosine triphosphate.

ATP-ase An enzyme that brings about the hydrolysis of **adenosine triphosphate**, by the cleavage of either one phosphate groups with the formation of **ADP** and inorganic phosphate, or of two phosphate groups, with the formation of **AMP** and pyrophosphate.

Enzim koji dovodi do hidrolize adenozin trifosfata, putem hidrolize, bilo jedne fosfatne grupe sa formiranjem ADP i neorganskog fosfata, ili dve fosfatne grupe, sa formiranjem AMP i pirofosfata.

attenuated vaccine A virulent organism that has been modified to produce a less virulent form, but nevertheless retains the ability to elicit antibodies against the virulent form. *See*: **inactivated agent**.

Virulentan organizam koji je modifikovan da proizvede manje virulentni oblik, ali zadržava sposobnost da izaziva antitela protiv virulentnog oblika. *Vidi*: inactivating agent.

attenuation A mechanism for controlling **gene expression** in prokaryotes that involves premature termination of transcription.

Mehanizam za kontrolu ekspresije gena u prokariotima, što izaziva prerani prestanak transkripcije.

attenuator A nucleotide sequence in the 5' region of a prokaryotic gene (or in its **RNA**) that causes premature termination of **transcription**, possibly by forming a secondary structure.

Sekvenca nukleotida u 5' regionu gena prokariota (ili u njegovoj RNK) koja izaziva prerani završetak transkripcije, moguće putem sekundarne strukture.

aureofacin An antifungal **antibiotic** produced by a strain of *Streptomyces aureofaciens*. A possible candidate for the **transgenic** control of plant fungal disease.

Antifungalni antibiotik, koji proizvede soj *Streptomyces aureofaciens*-a. Mogao bi se koristiti za transgeno suzbijanje biljne gljivične bolesti.

authentic protein A recombinant **protein** that has all the properties – including any post-translational modifications – of its naturally occurring counterpart.

Rekombinantni protein, koji ima sve osobine-uključujući bilo koje post-translacione modifikacije- od svoje normalne kopije.

autocatalysis Catalysis in which one of the products of the reaction is a catalyst for the reaction.

Kataliza kod koje je jedan od proizvoda reakcije katalizator reakcije.

autocatalytic reaction *See: autocatalysis.*

Vidi:autocatalysis.

autoclave 1. An enclosed chamber in which materials can be heated under pressure to **sterilize** utensils, liquids, glassware, etc., using steam.

1. Zatvorena komora u kojoj se razni materijali mogu zagrevati pod pritiskom, da se sterilizuju uteunzilije, tečnosti, staklarija itd., korišćenjem pare.

autogenous control The action of a gene product to inhibit (negative autogenous control) or enhance (positive autogenous control) the expression of the gene that codes for it.

Dejstvo produkta gena da inhibira (negativna autogena kontrola) ili pojača (pozitivna autogena kontrola) ispoljavanje gena koji je kodiran za isto.

auto-immune disease Disorder in which the immune systems of affected individuals produce antibodies against molecules that are normally produced by those individuals (called self **antigens**).

Poremećaj, u kojem imuni sistem napadnutih individua proizvodi antitela protiv molekula koji su normalno proizvedeni od tih individua (zvani samoantigeni).

auto-immunity A disorder in the body's defence mechanism in which an **immune response** is elicited against its own (self) tissues.

Poremećaj u odbranbenom mehanizmu organizma, u kojem je imuna reakcija izvedena protiv sopstvenih tkiva.

autologous cells Cells taken from an individual, cultured (or stored), and, possibly, genetically manipulated before being transferred back into the original donor.

Ćelije, uzete od individue, kultivisane (ili skladištene) i moguće genetski manipulisane, pre nego što budu vraćene u originalnog donora.

autolysis The process of self destruction of a **cell**, cell organelle, or tissue, through the action of lysosomic enzymes.

Proces samodestrukcije ćelije, ćeliske organele, ili tkiva, putem delovanja enzima lizozoma.

autonomous A term applied to any biological unit that can function on its

own, i.e. without the help of another unit, such as a **transposable element** that encodes an enzyme for its own transposition.

Izraz, primenjen na bilo koju biološku jedinicu koja može da funkcioniše autonomno, tj. bez pomoći druge jedinice, kao element koji prenosi enzim za sopstveno premeštanje.

autonomous(ly) replicating segment (or sequence) (Abbreviation: ARS). Any eukaryotic **DNA** sequence that initiates and supports chromosomal replication; they have been isolated in **yeast** cells.

(Skracenicica: ARS) Bilo koja DNK sekvencija eukariota koja započinje i podstiče replikaciju hromozoma; izolovane su iz ćelija kvasca.

autopolyploid A polyploid whose constituent genomes are derived from the same or nearly the same progenitor. In an autotetraploid, each **chromosome** is present in four copies, so meiotic configurations may include many (or exclusively) quadrivalents (four paired chromosomes), and the **inheritance** of alleles will be **quadruplex**. Quadrivalents do not always segregate normally at meiosis, resulting in lowered fertility, so some established autotetraploid species that reproduce sexually have restricted **quadrivalent** formation.

Poliploid čiji su genomi nastali iz istog ili skoro istog predaka. U autotetraploidu, svaki hromozom je prisutan u četiri kopije, tako da mejotičke konfiguracije mogu da uključe mnoge (ili isključivo) kvadrivalente (četiri naparena hromozoma), a nasledjivanje alela će biti kvadrupleks. Kvadrivalenti se ne razdvajaju uvek normalno pri mejozi, dovodeći do sma-

njene plodnosti, tako da neke stvorene autotetraploidne vrste koje se polno razmnožavaju imaju ograničeno formiranje kvadrivalenta.

autoradiograph A technique for visualizing the presence, location and intensity of radioactivity in histological preparations, paper chromatograms or electrophoretic gel separations, obtained by overlaying the surface with X-ray film and allowing the radiation to form an image on the film.

Tehnika za ocenu prisustva, lokacije, i inteziteta radioaktivnosti u histološkim preparatima, papirnim hromatogramima ili razdvajanja gel elektroforezom, dobijenim prevlačenjem površine sa filmom X-zraka i omogućavanjem da formira sliku na filmu zračenjem.

autosome Any of the chromosomes except the **sex chromosomes**.

Bilo koji od hromozoma izuzev polnih hromozoma.

autotroph Organism capable of self-nourishment utilizing carbon dioxide or carbonates as the sole source of carbon and obtaining energy from radiant energy or from the oxidation of inorganic elements, or compounds such as iron, sulphur, hydrogen, ammonium and nitrites. *Opposite: heterotroph*.

Organizam, sposoban za samoishranu, koristeći ugljen-dioksid ili karbonate kao jedini izvor ugljenika i dobijajući energiju iz energije zračenja, ili od oksidacije neorganskih elemenata, ili jedinjenja, kao što su gvozdje, sumpor, vodonik, amonijak i nitrit. *Suprotno: heterotroph*.

autotrophic (adj.) See: **autotroph**.

Vidi: autotroph.

auxin A group of **plant growth regulators** (natural or synthetic) which stimulate cell division, enlargement, apical dominance, **root** initiation, and flowering.

Grupa regulatora rasta biljaka (prirodna ili sintetička) koja stimulira deobu ćelija, povećanje, vršnu dominantnost, začetak korena i cvjetanja.

auxin-cytokinin ratio The relative proportion of **auxin** to **cytokinin** present in plant **tissue culture** media. Varying the relative amounts of these two hormones affects the proportional growth of shoots and roots.

Relativna proporcija auksina prema citokininu, prisutnom u medijumu kulture tkiva biljaka. Variranje relativnih količina ta dva hormona utiče na proporcijalni rast izdanaka i korena.

auxotroph A mutant cell or **micro-organism** lacking one metabolic pathway present in the parental strain, and that consequently will not multiply on a minimal medium, but requires for growth the addition of a specific compound, such as an **amino acid** or a **vitamin**.

Mutantna ćelija ili mikroorganizam sa nedostatkom jedne metaboličke putanje prisutne kod roditelja i koja se konsekventno ne umnožava na minimalnom medijumu, nego za rast zahteva za rast dodavanje specifičnog jedinjenja, kao što je neka aminokiselina ili vitamin.

availability A reflection of the form and location of nutritional elements and their suitability for absorption.

Odras forme i lokacije elemenata ishrane i njihove pogodnosti za apsorpciju.

avidin A **glycoprotein** present in egg white, which has a strong affinity to **biotin**. Can lead to **biotin** deficiency

if given in large quantities. Used as a biological reagent in the same way as **streptavidin**.

Glikoprotein, prisutan u belancu jajeta, koji ima jak afinitet ka biotinu. Može dovesti do nedostatka biotina ako se da u velikim količinama. Koristi se kao biološki reagens na isti način kao streptavidin.

avidity A measure of the binding strength of an **antibody** to its antigen. Mera jačine vezivanja antitela za njegov antigen.

avirulence gene (Abbreviation: *avr* gene). Many plants contain **R** genes, which confer simply-inherited **resistance** to a specific pathogen race. The plants are able to recognize the presence of the pathogen by an interaction between their **R** gene and the matching pathogen's avirulence gene. Successful recognition triggers a cascade of further genes, often leading to a **hypersensitive response**.

(Skraćenica: *avr* gene) mnoge biljke sadrže *R* gene, koji daju jednostavno-nasledjenu otpornost prema specifičnoj rasi patogena. Biljke su u stanju da prepoznaju prisustvo patogena putem interakcije između njihovog *R* gena i odgovarajućeg patogenog avirulentnog gena. Uspešno prepoznavanje inicira kaskadu daljih gena, često vodeći hipersenzitivnom reagovanju.

avr gene Abbreviation for **avirulence gene**.

Skraćenica za avirulence gene.

axenic culture Free of external contaminants and internal symbionts; generally not possible with surface sterilization alone, sometimes used incorrectly to indicate **aseptic culture**.

Bez spoljnih zagadjivača i unutrašnjih simbionata; uopšte nije moguća sa-

mo putem površinske sterilizacije, ponekad nepravilno korišćena da ukaže na aseptičnu kulturu.

axillary bud A bud found at the axil of a leaf. *Synonym*: **lateral bud**.

Pazušni pupoljak, između lista i stabla.

Sinonim: bočni pupoljak.

axillary bud proliferation Propagation of plant tissue *in vitro* to promote axillary growth, to generate large numbers of **plantlets** in culture.

Razmnožavanje biljnog tkiva *in vitro* radi podsticanja pazušnog rasta, u cilju stvaranja velikog broja mladih biljčica u kulturi.

B

lymphocytes that mature in bone marrow (in mammals) and the *Bursa of Fabricius* (in birds) and produce **antibodies**. Largely responsible for the antibody-mediated or humoral immune response, giving rise to the antibody-producing **plasma cells** and some other cells of the immune system. *Synonym: B lymphocyte*.

Važna klasa limfocita, koja sazreva u koštanoj srži (u sisara) i *Bursa Fabricius-u* (u ptica), i proizvodi antitela. Uveliko odgovorna za reagovanja, posredstvom antitela, ili humoralno imunoreagovanje, delujući na povećanje broja plazma ćelija koje proizvode antitela, i nekih drugih ćelija imunog sistema. *Sinonim: B lymphocyte*.

B chromosome A supernumerary chromosome present in some individuals (both plant and animal). They are smaller than the normal chromosomes, behave abnormally in both **mitosis** and **meiosis**, can vary in number between somatic cells and are not thought to have any significant gene content.

Prekobrojni hromozom, prisutan u nekim individuama (kako biljkama tako i životinjama). Manji su od normalnih hromozoma, ponašaju se abnormalno u mitozu i mejozi, njihov broj varira između somatskih ćelija, i ne smatraju se da imaju bilo koji signifikantan sadržaj gena.

B lymphocyte *See: B cell*.

Vidi: B cell.

BABS Abbreviation for **biosynthetic antibody binding sites**.

Skraćenica za biosynthetic antibody binding sites.

BAC Abbreviation for **bacterial artificial chromosome**.

Skraćenica za bacterial artificial chromosome

bacillus A rod-shaped **bacterium**.

Štapićasta bakterija.

Bacillus thuringiensis (Abbreviation: Bt). A bacterium that produces a toxin against certain insects, particularly *Coloeoptera* and *Lepidoptera*; a major means of **insecticide** for organic farming. Some of the toxin genes are important for **transgenic** approaches to crop protection.

(Skraćenica Bt) Bakterija koja proizvodi toksin protiv nekih insekata, posebno *Coleoptera i Lepidoptera*; glavno sredstvo insekticida za organsku poljoprivredu. Neki od gena koji izazivaju toksičnost su važni za transgene pristupe u zaštiti useva.

back mutation A second mutation at the same site in a **gene** as the original mutation. The second mutation restores the wild-type **protein** sequence.

Sekundarna mutacija na istom mestu u genu kao originalna mutacija. Sekundarna mutacija obnavlja proteinsku sekvencu divljeg tipa.

backcross Crossing an individual with one of its parents or with the genetically equivalent organism. The **offspring** of such a cross are referred to as the backcross generation or backcross progeny.

Ukrštanje individue sa jednim od roditelja, ili sa genetički ekvivalentnim organizmom. Potomstvo takvog ukrštanja označava se kao generacija povratnog ukrštanja, ili potomstvo povratnog ukrštanja.

bacterial artificial chromosome A **plasmid** vector that can be used to clone large inserts of **DNA** (up to 500 kb). *See: yeast artificial chromosome.*

Plazmidni vektor koji se može koristiti za kloniranje velikih delova DNK (do 500 kb). *Vidi: yeast artificial chromosome.*

bacterial toxin A toxin produced by a bacterium, such as **Bt toxin** of *Bacillus thuringiensis*.

Toksin, koji proizvodi bakterija, kao što je Bt toksin *Bacillus thuringiensis*-a.

bacteriocide A chemical or drug that kills bacterial cells.

Hemikalija ili lek koji ubija ćelije bakterija.

bacteriocin A **protein** produced by bacteria of one **strain** and active against those of a closely related strain.

Protein, koji proizvodi bakterija jednog soja, a aktivan protiv onih usko srodnog soja.

bacteriophage (Abbreviation: phage). A **virus** that infects bacteria. Altered forms are used as cloning **vectors**. *See: lambda phage, M13.*

(Skraćenica: phage) Virus koji inficira bakterije. Promenjeni oblici koriste se kao klonirajući vektori. *Vidi: lambda phage, M13.*

bacteriostat A substance that inhibits or slows down growth and reproduction of bacteria.

Supstanca koja inhibira ili usporava rast i reprodukciju bakterija.

bacterium (pl.: bacteria) unicellular prokaryotic organisms, without a distinct nucleus. Major distinctive groups are defined by **Gram staining**. Also classified on the basis of oxygen requirement (aerobic vs anaerobic) and shape (spherical = coccus; rodlike = bacillus; spiral = spirillum; comma-shaped = vibrio; corkscrew-shaped = spirochaete; filamentous).

Jednoćelijski prokariotični organizmi, bez izraženog nukleusa. Glavne izražene grupe se definišu bojenjem po Gramu. Takodje, klasifikovani na bazi potreba za kiseonikom (aerobni prema anaerobnim) i oblika (sfernog = koka; štapičastog = bacil; spiralnog = spiril; oblika zarez = vibrio; spirajnog oblika = spiroheta; filamentozan).

baculovirus A class of insect virus used to make **DNA cloning vectors** for gene expression in eukaryotic cells. Production of a target **protein** can be up to 50% of the cells' **protein** content, and several **proteins** can be made simultaneously, so that multi-subunit enzymes can be made by this system.

Klasa virusa insekta korišćenog za proizvodnju DNK vektora kloniranja, za ispoljavanje gena u eukariotskim ćelijama. Proizvodnja ciljnog proteina može biti do 50% od proteinskog sadržaja ćelije, a nekoliko proteina se može proizvesti simultano, tako da sa tim sistemom može da se načini više podjediničnih enzima.

baculovirus expression vector (Abbreviation: BEV). A method for the *in vitro* production of complex recombinant eukaryotic **proteins**. A genetically engineered baculovirus (a virus that infects certain types of insects) is introduced into appropriate cultured insect cells, which then express the recombinant **protein**.

(Skrtaćenica: BEV) Metod za *in vitro* proizvodnju kompleksnih rekombinantnih eukariotičnih proteina. Genetički izgrađen bakulovirus (virus koji inficira neke tipove insekata) je uveden u odgovarajuće kultivisane ćelije insekata, koje tada ispoljavaju rekombinantni protein.

balanced lethal system A system for maintaining a recessive lethal **allele** at each of two loci on the same pair of chromosomes. In a closed population with no crossing-over between the loci, only the double heterozygotes for the lethal mutations survive.

Sistem za održavanje recesivnog letalnog alela na svakom od dva mesta na istom paru hromozoma. U zatvorenoj populaciji, bez krosing-overa između lokusa, preživljavaju samo dvostruki heterozigoti za letalnu mutaciju.

balanced polymorphism Two or more **phenotypes** maintained in the same breeding population.

Dva ili više fenotipova koji se održavaju u istoj uzgojnoj populaciji.

bank See: **gene bank**.

Vidi: Gene bank.

bar gene See: **pat gene**.

Vidi: *Pat* gene.

barnase A bacterial ribonuclease, which, when transformed into plants and expressed in the anthers, generates a male sterile phenotype. Thus it

is a technology applicable to **F₁** hybrid seed production, which relies on the ability to genetically sterilize genotypes to ensure that all seed borne on the plant are the result of outcrossing. The sterility phenotype is suppressed by the **barstar protein**, which can therefore be used to reverse the sterility where this is necessary.

Bakterijska ribonukleaza, koja, kada je transformisana u biljke i ispoljena u prašnicama, daje muški sterilni fenotip. To je tehnologija primenljiva na **F₁** hibridnu semensku proizvodnju, koja se oslanja na sposobnost da genetički sterilizuje genotipove, da osigura da su sva semena na biljci rezultat stranooplodnje. Sterilitetni fenotip je suzbijen putem barstar proteina, koji može zbog toga da se koristi da reverzibiluje sterilitet kada je to potrebno.

Barr body A condensed mass of **chromatin** found in the nuclei of female mammals. It is a late-replicating, inactive X-chromosome. See: **dosage compensation, sex linkage**

Kondenzovana masa hromatina nadjena u nukleusima ženki sisara. To je kasno-repliciran, neaktivni X-hromozom. Vidi: dosage compensation, sex linkage.

barstar protein A polypeptide inhibitor of **barnase**.

Poli-peptidni inhibitor bakterijske ribonukleaze.

basal 1. Located at the base of a plant or a plant organ. 2. A fundamental formulation of a tissue culture medium containing nutrients but no growth promoting agents.

1. Lociran na osnovi biljke ili biljnog organa.

2. Osnovna formulacija medijuma kulture tkiva koja sadrži hranjive materije, ali ne i agense za stimulaciju rasta.

base One of the components of **nucleosides**, **nucleotides** and **nucleic acids**. Four different bases are found in naturally occurring **DNA** - the **purines** **A (adenine)** and **G (guanine)**; and the **pyrimidines** **C (cytosine)** and **T (thymine)**, the common name for 5-methyluracil). In **RNA**, T is replaced by U (uracil). *See: base pair.*

Jedna od komponenata nukleozida, nukleotida i nukleinskih kiselina. Četiri različite baze nadjene su u prirodno postojećoj DNK, purini A (adenin) i G (guanin); i pirimidini C (citozin) i T (timin, zajedničko ime za 5-metiluracil). U RNK, T je zamenjen sa U (uracilom). *Vidi: base pair.*

base analogue A non-natural **purine** or **pyrimidine** base that differs slightly in structure from the normal bases, but can be incorporated into **nucleic acids**. They are often **mutagenic**.

Neprirodna purinska ili pirimidinska baza, koja se razlikuje u strukturi od normalnih baza, ali se ne može uključiti u nukleinske kiseline. Obično su mutagene.

base pair (Abbreviation: bp). The two separate strands of a nucleic acid **double helix** are held together by specific hydrogen bonding between a **purine** and a **pyrimidine**, one from each strand. The **base** A pairs with T in **DNA** (with U in **RNA**); while G pairs with C in both **DNA** and **RNA**. The length of a nucleic acid molecule is often given in terms of the number of base pairs it contains.

(Skraćenica: bp.) Dva posebna lanca dvostruke spirale nukleinske kiseline međusobno povezana vodoničnim

mostovima (vezuje se jedna purinska i jedna pirimidinska baza). Baza A se vezuje sa T u DNK (sa U u RNK); dok se G vezuje sa C u DNK i RNK. Dužina molekula nukleinske kiseline zavisi od broja baznih parova koje ona sadrži.

base substitution Replacement of one base by another in a **DNA** molecule. *See: transition; transversion.*

Zamena jedne baze drugom u molekulu DNK. *Vidi: transition; transversion.*

basic fibroblast growth factor (Abbreviation: BFGF). *See: fibroblasts.* (Skraćenica: BFGF). *Vidi: fibroblasts.*

basipetal Developing, in sequence, from the **apex** towards the base. *See: acropetal.*

Razvoj, u sekvenci, od vrha prema osnovi. *Vidi: acropetal.*

basophil A type of **leukocyte** produced by **stem cells** in the red bone marrow.

Tip leukocita proizvedenog od matičnih ćelija u srži crvenih kostiju.

batch culture A suspension culture in which cells grow in a finite volume of liquid nutrient medium and follow a sigmoid pattern of growth. All cells are harvested at the same time. *See: continuous culture.* *Synonym: batch fermentation.*

Uzgajana kultura, u kojoj ćelije rastu u ograničenom volumenu tečnog hranljivog medijuma, i slede sigmoidni tip rasta. Sve ćelije se ubiraju u isto vreme. *Vidi: continuous culture.* *Sinonim: batch fermentation.*

batch fermentation *See: batch culture.*

Vidi: batch culture.

bench-scale process A small- or laboratory-scale process; commonly used in connection with fermentation.

Mali, ili laboratorijski proces; obično korišćen u vezi sa fermentacijom.

beta-DNA The form of **DNA** generally found in nature. A right-handed **helix**.

Oblik DNK, opšte nadjen u prirodi. Spirala koja se uvija u desno.

beta-galactosidase A bacterial enzyme that catalyses the cleavage of **lactose** into glucose and galactose, commonly used as a **marker** in **DNA** cloning.

Bakterijski enzim koji katalizuje razlaganje laktoze na glukozu i galaktozu, obično korišćen kao marker u kloniranju DNK.

beta-glucuronidase (Abbreviation: **GUS**). An enzyme produced by certain bacteria, which catalyses the cleavage of a whole range of beta-glucuronides. Because this activity is largely absent in plants, the encoding bacterial gene has been widely used as a **reporter gene** in plant **transgenesis**.

(Skraćenica: **GUS**). Enzim proizveden od izvesnih bakterija, koji katalizuje cepanje celog raspona beta-glukuronida. Pošto je ta aktivnost veoma odsutna u biljkama, kodirani bakterijski gen je široko korišćen kao reporter gen u biljnoj transgenezi.

beta-lactamase An enzyme that detoxifies penicillin group **antibiotics**, such as ampicillin. The β -lactamase gene is commonly used as a marker for successful **transformation**, where only transformed cells are able to tolerate the presence of ampicillin. *See: selectable marker.*

Enzim koji detoksifikuje antibiotike iz grupe penicilina, kao što je ampicilin. Gen β -laktamaze se obično koristi kao marker za uspešnu transfor-

maciju, gde su samo transformisane ćelije u stanju da tolerišu prisustvo ampicilina. *Vidi: selectable marker.*

beta-sitosterol *See: phytosterol.*

Vidi: phytosterol.

BEV Abbreviation for **baculovirus expression vector**.

Skraćenica za baculovirus expression vector.

BFGF Abbreviation for **basic fibroblast growth factor**.

Skraćenica za basic fibroblast growth factor.

biennial A plant which completes its life cycle within two years and then dies.

Biljka koja završava svoj životni ciklus u toku dve godine, a zatim umire.

bifunctional vector *See: shuttle vector.*

Vidi: shuttle vector.

binary vector system A two **plasmid** system in *Agrobacterium tumefaciens* designed to transfer **T-DNA** into plant cells, while avoiding the formation of **crown gall** tumours. One plasmid contains the virulence gene (responsible for transfer of the T-DNA), and the other the T-DNA borders, the selectable marker and the DNA to be transferred.

Dvoploazmidni sistem u *Agrobacterium tumefaciens*-u, postavljen da prenesu T-DNK u biljne ćelije, ali koji ne formira bakterijske tumore. Jedan plazmid sadrži gen virulencije (odgovoran za transfer T-DNK), a drugi T-DNK granice, odabirajući marker i DNK koji će se transformisati.

binding The ability of molecules to bind each other non-covalently because of the exact shape and chemical nature of parts of their surfaces. A common biological phenomenon, as e.g. an

enzyme to its **substrate**; an **antibody** to its **antigen**; a **DNA** strand to its complementary strand. *See: ligand.*

Sposobnost molekula da se nekovalentno vežu, zbog tačnog oblika i hemijske prirode delova njihovih površina. Običan biološki fenomen, kao na pr. enzim prema svom supstratu, antitelo prema svom antigenu; lanac DNK prema svom komplementarnom lancu. *Vidi: ligand.*

bio- A prefix used in scientific words to associate the concept of „living organisms.“ Usually written with a hyphen before vowels, for emphasis or in neologisms.

Prefiks, korišćen u naučnoj terminologiji da poveže koncept „živih organizama“. Obično napisan sa crticom pre samoglasnika za isticanje ili u neologizmima.

bio-accumulation A problem that can arise when a stable chemical such as a heavy metal or DDT is introduced into a natural environment. Where there are no agents present able to biodegrade it, its concentration can increase as it passes up the food chain and higher organisms may suffer toxic effects. This phenomenon may be employed beneficially for the removal of toxic metals from wastewater, and for **bioremediation**. *See: biosorbents.*

Problem koji može nastati kada se stabilna hemikalija, kao što je teški metal ili DDT, uvodi u prirodnu sredinu. Kada nema prisutnih agenasa koji su sposobni da to biorazgrade, koncentracija istih može se povećati kada prodju lanac ishrane, a viši organizmi mogu patiti od toksičnih efekata. Taj fenomen može se koristiti za odstranjivanje toksičnih metala iz ot-

padne vode i za biolečenje. *Vidi: biosorbents.*

bio-assay 1. The assessment of a substance's activity on living cells or on organisms. Animals have been used extensively in **drug** research in bioassays in the pharmaceutical and cosmetics industries. Current trends are to develop bio-assays using bacteria or animal or plant cells, as these are easier to handle than whole animals or plants, are cheaper to make and keep, and avoid the ethical problems associated with testing of animals. 2. An indirect method to detect sub-measurable amounts of a specific substance by observing a sample's influence on the growth of live material.

1. Ocena aktivnosti supstance na žive ćelije ili organizme. Životinje su često korišćene u istraživanju lekova u bio-probama u farmaceutskim i kozmetičkim industrijama. Tekući trendovi su da se razviju bio-probe korišćenjem bakterija ili životinjskih ili biljnih ćelija, pošto se njima lakše manipuliše nego životinjama ili biljkama, jeftinije su za rad i održavanje, i izbegavaju se etički problemi povezani sa testiranjem životinja. 2. Indirektni metod za otkrivanje teško merljivih količina specifične supstance, posmatrajući uticaj uzorka na rast živog materijala.

bio-augmentation Increasing the activity of bacteria that decompose pollutants; a technique used in **bioremediation**.

Povećanje aktivnosti bakterija koje razlažu polutante; tehnika korišćena u biolečenju.

bioavailability The proportion of a nutrient or administered **drug** etc. that can be taken up by an organism in a

biologically effective form. For example, some soils high in phosphorus have a low level of P availability because the pH of the soil renders much of the P insoluble.

Proporcija hraniva ili datog leka itd. koja se može preuzeti od nekog organizma u biološki efikasnom obliku. Na primer, neka ulja bogata fosforom imaju nizak nivo raspoloživosti P, pošto pH zemljišta čini većinu P nerastvorljivim.

biocatalysis The use of enzymes to improve the efficiency of chemical reactions.

Korišćenje enzima za poboljšanje efikasnosti hemijskih reakcija.

biochip *See: DNA chip.*

Vidi: DNA chip.

biocontrol Pest control by biological means. Any process using deliberately introduced living organisms to restrain the growth and development of other organisms, such as the introduction of predatory insects to control an insect pest. *Synonym: biological control.*

Suzbijanje štetnika biološkim putem. Bilo koji proces, koristeći svesno unete žive organizme da bi sprečili rast i razviće drugih organizama, kao što je uvođenje insekata predatora za suzbijanje insekata napasnika. *Synonym: biological control.*

bioconversion Conversion of one chemical into another by living organisms, as opposed to their conversion by isolated enzymes or fixed cells, or by chemical processes. Particularly useful for introducing chemical changes at specific points in large and complex molecules.

Pretvaranje jedne hemikalije u drugu pomoću živih organizama, nasuprot

njihovom pretvaranju putem izolovanih enzima ili fiksnih ćelija, ili hemijskim procesima. Posebno korisno za uvođenje hemijskih promena na specifičnim mestima u velikih kompleksnih molekula.

biodegradable Capable of being biodegraded.

Sposoban da bude biorazgradjen.

biodegrade The breakdown by microorganisms of a compound to simpler chemicals. Materials that are easily biodegraded are colloquially termed **biodegradable**.

Razlaganje od strane mikroorganizama jedinjenja do prostih hemikalija. Materijali koji se lako razgrađuju, su nazvani biorazgradivi.

biodesulphurization The removal of organic and inorganic sulphur from coal by bacterial and soil microorganisms. Certain bacteria can oxidize insoluble sulphur compounds into soluble sulphates, which can be washed away with the bacteria. *See: bioleaching.*

Odstranjenje organskog i neorganskog sumpora iz uglja putem bakterijskih i zemljišnih mikroorganizama. Izvesne bakterije mogu da oksidišu nerastvorljiva sumporna jedinjenja u rastvorljive sulfate, što može da bude isprano bakterijama. *Vidi: bioleaching.*

biodiversity The variability among living organisms from all sources, including, *inter alia*, terrestrial, marine and other ecosystems and the ecological complexes of which they are part; this includes diversity within **species**, between species and of ecosystems. *Synonyms: biological diversity, ecological diversity.*

Varijabilnost medju živim organizmima iz svih izvora, uključujući, *inter alia*,

zemljišni, morski i druge ekosisteme i ekološke komplekse čiji su oni deo; to uključuje varijabilnost unutar vrsta, između vrsta, i ekosistema. *Sinonimi*: biological diversity, ecological diversity.

bio-energetics The study of the flow and the transformation of energy that occur in living organisms.

Proučavanje toka i transformacije energije koji se dešavaju u živih organizama.

bio-engineering The use of artificial tissues, organs and organ components to replace parts of the body that are damaged, lost or malfunctioning.

Korišćenje veštačkih tkiva, organa i komponenata organa radi zamene delova tela koji su oštećeni, izgubljeni, ili nefunkcionalni.

bio-enrichment Adding nutrients or oxygen to increase microbial breakdown of pollutants.

Dodavanje hranljivih materija ili kiseonika da bi se povećala mikrobna razgradnja zagadjuvača.

bio-ethics The branch of ethics that deals with the life sciences and their potential impact on society.

Grana etike koja se odnosi na vitalne i funkcionalne nauke i njihov potencijalni uticaj na društvo.

biofilms A layer of **micro-organisms** growing on a surface, in a bed of polymeric material which they themselves have made. Biofilms tend to form wherever a surface on which bacteria can grow is exposed to some suitable medium and a supply of bacteria.

Sloj mikroorganizama koji raste na površini, u naslagi polimera kojeg su sami načinili. Biofilmovi teže da se formiraju, kad god je površina na ko-

joj bakterije mogu da rastu izložene nekom pogodnom medijumu, i dopunjene bakterijama.

biofuel A gaseous, liquid or solid fuel derived from a biological source, e.g. ethanol, rapeseed oil or fish liver oil.

Gasovito, tečno ili čvrsto gorivo, poreklom iz biološkog izvora, na pr. etanol, repičini ulje, ili ulje riblje jetre.

biogas A mixture of methane and carbon dioxide resulting from the **anaerobic** decomposition of waste such as domestic, industrial and agricultural sewage.

Smeša metana i ugljen dioksida, nastala od anaerobnog razlaganja otpadaka, kao što su domaće, industrijske i poljoprivredne otpadne vode.

bio-informatics The use and organization of information of biological interest. In particular, concerned with organizing bio-molecular databases (particularly **DNA** sequences), utilizing computers for analysing this information, and integrating information from disparate biological sources. *See: in silico.*

Korišćenje i organizacija informacija od biološkog interesa. Posebno, koje se tiču organizovanja bio-molekularnih baza podataka (posebno sekvenci DNK), korišćenjem kompjutera za analizu te informacije, i integrisanjem informacije iz sasvim različitih bioloških izvora. *Vidi: in silico.*

bioleaching The recovery of metals from their ores, using the action of micro-organisms, rather than chemical or physical treatment. For example, *Thiobacillus ferrooxidans* has been used to extract gold from refractory ores. *See: biorecovery.*

Otkrivanje metala iz njihovih ruda, koristeći delovanje mikroorganizama,

pre nego hemijskog ili fizičkog tretmana. Na primer, *Thiobacillus ferroxidans* je korišćen za ekstrakciju zlata iz teško topivih ruda. *Vidi*: biorecovery.

biolistics A technique to generate **transgenic** cells, in which **DNA**-coated small metal particles (tungsten or gold) are propelled by various means fast enough to puncture target cells. Provided that the cell is not irretrievably damaged, the DNA is frequently taken up by the cell. The technique has been successfully used to transform animal, plant and fungal cells, and even mitochondria inside cells. *Synonym*: **microprojectile bombardment**.

Tehnika za stvaranje transgenih ćelija, u kojima se mali metalni delići pokriveni sa DNK (tungsten ili zlato) tretiraju različitim sredstvima dovoljno brzo da probiju odabrane ćelije. Obezbeđujući da ćelija nije nepovratno oštećena, DNK je često usvojena od strane ćelije. Tehnika je uspešno korišćena za transformaciju životinjskih, biljnih i gljivičnih ćelija, i čak mitohondrija unutar ćelija. *Sinonim*: microprojectile bombardment.

biological ageing *See*: **senescence**.

Vidi: senescence.

biological containment Restricting the movement of organisms from the laboratory. Can take two forms: making the organism unable to survive in the outside environment, or making the outside environment inhospitable to the organism. For microorganisms, the favoured approach is to engineer organisms to require a supply of a specific nutrient that is usually available only in the labora-

tory. For higher organisms (plants and animals), it is more possible to ensure that the outside environment is unsuited to growth, spread and reproduction.

Ograničavanje kretanja organizama iz laboratorije. Može imati dva oblika: čineći organizam nesposobnim da preživi u spoljnoj sredini, ili čineći spoljnu sredinu negostoprimljivom za organizam. Za mikroorganizme, povoljan pristup je stvarati organizme da zahtevaju obezbeđenje specifične hranljive materije, koja je obično na raspolaganju samo u laboratoriji. Za više organizme (biljke i životinje) je uglavnom moguće da se obezbedi da spoljna sredina nije pogodna za rast, širenje i reprodukciju.

biological control *See*: **biocontrol**.

Vidi: biocontrol.

biological diversity *See*: **biodiversity**.

Vidi: biodiversity.

biological oxygen demand (Abbreviation: BOD). The dissolved oxygen required for the respiration of a population of **aerobic** organisms present in water. Expressed in terms of the oxygen consumed in water at a temperature of 20°C per unit time. The BOD is used as an indication of the degree to which the sample of water is polluted, particularly by inorganic nutrients for plants.

(Skraćenica: BOD) Rastvoren kiseonik, potreban za disanje populacije aerobnih organizama prisutnih u vodi. Izražen kiseonikom konzumiranim u vodi, na temperaturi od 20°C po jedinici vremena. BOD se koristi kao indikacija stepena do kojeg je uzorak vode zagadjen, posebno neorganiskim hranljivim materijama za biljke.

biologics Agents, such as **vaccines**, that give immunity to diseases or harmful biotic stresses.

Sredstva, kao što su vakcine, koje daju imunitet na bolesti, ili štetne biotičke stresove.

bioluminescence The enzyme-catalyzed production of light by a number of diverse organisms (e.g. fireflies and many deep ocean marine organisms). Utilized as a **reporter gene** in plant **transgenesis**, and for the detection of food-borne pathogenic bacteria.

Enzimski-katalizovana proizvodnja svetlosti od jednog broja različitih organizama (na pr. svitci i mnogi morski organizmi iz dubine okeana). Korišćeni kao reporter gen u transgenezi biljaka, i za otkrivanje patogenih bakterija poreklom iz hrane.

biomagnification *See: bio-accumulation.*

Vidi: bio-accumulation.

biomass 1. The cell mass produced by a population of living organisms. 2. The organic matter that can be used either as a source of energy or for its chemical components. 3. All the organic matter that derives from the **photosynthetic** conversion of solar energy.

1. Čelijska masa, koju proizvodi populacija živih organizama. 2. Organska materija koja se može koristiti, bilo kao izvor energije, ili za njene hemijske komponente. 3. Sva organska materija koja postaje od fotosintetičke konverzije solarne energije.

biomass concentration The amount of biological material in a specific volume.

Količina biološkog materijala u specifičnoj zapremini.

biome A major ecological community or complex of communities, exten-

ding over a large geographical area and characterized by a dominant type of vegetation.

Glavna ekološka zajednica ili kompleks zajednica, pružajući se u velikoj geografskoj oblasti, koja se karakteriše dominantnim tipom vegetacije.

biometry The application of statistical methods to the analysis of continuous variation in biological systems. *Synonym:* biometrics.

Primena statističkih metoda za analizu stalne varijacije u biološkim sistemima. *Sinonim:* biometrika.

biomimetic materials Employed to describe synthetic analogues of natural materials with advantageous properties. For instance, some synthetic molecules act chemically like natural **proteins**, but are not as easily degraded by the digestive system. Other systems such as reverse micelles and/or **liposomes** exhibit certain properties that mimic certain aspects of living systems.

Upotrebljen da opiše sintetičke analoge prirodnih materijala, sa poboljšanim svojstvima. Na primer, neki sintetički molekuli hemijski deluju kao prirodni proteini, ali nisu lako razgradivi od strane digestivnog sistema. Drugi sistemi, kao što su obrnute micelle i/ili lipozomi, ispoljavaju izvesne osobine koje pokreću neke aspekte živih sistema.

biopesticide A compound that kills organisms by virtue of specific biological effects rather than as a broader chemical poison. Differ from **biocontrol** agents in being passive agents, whereas biocontrol agents actively seek the pest. The rationale behind replacing conventional **pesticides** with biopesticides is that the lat-

ter are more likely to be selective and **biodegradable**.

Jedinjenje koje ubija organizme dejstvom specifičnih bioloških efekata, pre nego kao širi hemijski otrov. Razlikuje se od biokontrolnih agenasa, budući da su pasivna sredstva, pošto biokontrolni agensi aktivno pronalaze štetočinu. Razložna postavka iza zamene konvencionalnih pesticida biopesticidima je, da su ovi verovatno selektivni i biorazgradivi.

biopharming The use of genetically transformed crop plants and livestock animals to produce valuable compounds, especially pharmaceuticals. *Synonym*: molecular pharming.

Korišćenje genetički transformisanih useva i domaćih životinja za proizvodnju značajnih jedinjenja, naročito farmaceutskih. *Sinonim*: molecular farming

biopiracy The patenting of genetic stocks, and the subsequent privatization of genetic resources collections. The term implies a lack of consent on the part of the originator.

Patentiranje genetičkih rodova, i potonja privatizacija kolekcija genetičkih resursa. Izraz znači nedostatak saglasnosti od strane autora.

biopolymer Any large **polymer (protein, nucleic acid, polysaccharide)** produced by a living organism. Includes some materials (such as **polyhydroxybutyrate**) suitable for use as plastics. *Synonym*: biological polymer.

Bilo koji veliki polimer (protein, nukleinska kiselina, polisaharid), koju proizvede živi organizam. Uključuje neke materijale (kao što je polihidroksibutirat), pogodne za korišćenje kao plastike. *Sinonim*: biological polymer.

bioprocess Any process that uses complete living cells or their components (e.g. enzymes, **chloroplasts**) to effect desired physical or chemical changes.

Bilo koji proces koji koristi žive ćelije ili njihove komponente (na pr. enzime, hloroplaste), da ostvari poželjne fizičke ili hemijske promene.

bioreactor A tank in which cells, cell extracts or enzymes carry out a biological reaction. Often refers to a **fermentation** vessel for cells or **microorganisms**.

Tank u kojem ćelije, ćelijski ekstrakti, ili enzimi izvode biološku reakciju. Često se odnosi na fermentacionu posudu za ćelije ili mikroorganizme.

biorecovery The use of microorganisms for the recovery of valuable materials (metals or particular organic compounds) from complex mixtures. *See*: **biodesulphurization, bioleaching**.

Korišćenje mikroorganizama za obnavljanje vrednih materijala (metala ili pojedinih organskih jedinjenja) iz kompleksnih smeša. *Vidi*: biodesulphurization, bioleaching.

bioremediation A process that uses living organisms to remove contaminants, pollutants or unwanted substances from soil or water. *See*: **remediation, bio-accumulation, bioaugmentation**.

Postupak koji koristi žive organizme da odstrani zagadjuvače, polutante ili neželjene supstance iz zemljišta ili vode. *Vidi*: remediation, bio-accumulation, bio-augmentation.

biosafety Referring to the avoidance of risk to human health and safety, and to the conservation of the environment, as a result of the use for rese-

arch and commerce of infectious or genetically modified organisms.

Odnosi se na izbegavanje rizika za ljudsko zdravlje i sigurnost, i za konzervaciju spoljne sredine, kao rezultat korišćenja infektivnih ili genetički modifikovanih organizama za istraživanje i komercijalnu upotrebu.

biosafety protocol An inteRNationally agreed protocol set up to protect biological diversity from the potential risks posed by the release of genetically modified organisms. It establishes a procedure for ensuring that countries are provided with the information necessary to make informed decisions before agreeing to the import of such organisms into their territory. *Synonym: Cartagena protocol.* *See: Convention on biological diversity.*

Međunarodno usaglašen protokol, ustanovljen da zaštiti biološku različitost od potencijalnih rizika, postavljenih oslobađanjem genetički modifikovanih organizama. Postupak se zasniva na osiguranju da su zemlje obezbedjene, informacijom koja je potrebna da se donose informisane odluke pre saglašavanja za uvoz takvih organizama na svoju teritoriju. *Sinonim: Cartagena protocol. Vidi: Convention on biological diversity.*

biosensor A device that uses an immobilized biologically-related agent (such as an **enzyme**, antibiotic, **organelle** or whole cell) to detect or measure a chemical compound. Reactions between the immobilized agent and the molecule being analysed are converted into an electric signal.

Uredjaj koji koristi imobilisan biološki agens (neki enzim, antibiotik, organela ili cela ćelija) da otkrije ili meri hemijsko jedinjenje. Reakcije izme-

dju imobilisanog sredstva i molekula koji se analiziraju se pretvaraju u električni signal.

biosilk A **biomimetic** fibre produced by the expression of the relevant orb-weaving spider genes in **yeast** or bacteria, followed by the spinning of the expressed **protein** into a fibre.

Biomimetičko vlakno, proizvedeno ekspresijom relevantnih kružnopletenih paukovih gena u kvascu ili bakteriji, praćeno praćeno uvrtnanjem sintetisanog proteina u vlakno.

biosorbents Micro-organisms which, either by themselves or in conjunction with a **substrate** are able to extract and/or concentrate a desired molecule by means of its selective retention. *See: bio-accumulation.*

Mikroorganizmi koji su, bilo sami, ili povezani sa supstratom, sposobni da izvlače i/ili koncentrišu željeni molekul putem selektivnog zadržavanja. *Vidi: bio-accumulation.*

biosphere The part of the earth and its atmosphere that is inhabited by living organisms.

Deo zemlje i njene atmosfere koji je naseljen živim organizmima.

biosynthesis Synthesis of compounds by living cells, which is the essential feature of **anabolism**.

Sinteza jedinjenja putem živih ćelija, koja je bitna odlika anabolizma.

biosynthetic antibody binding sites (Abbreviation: BABS). *See: dAb.*

(Skraćenica: BABS). *Vidi: dAb.*

biotechnology 1. „Any technological application that uses biological systems, living organisms, or derivatives thereof, to make or modify products or processes for specific use“ (Convention on Biological Diversity). 2. „, Interpreted in a narrow sen-

se, ... a range of different molecular technologies such as gene manipulation and gene transfer, **DNA** typing and cloning of plants and animals“ (FAO's statement on biotechnology) 1., „Bilo koja tehnološka primena koja koristi biološke sisteme, žive organizme, ili njihove derivatne, da bi proizvela ili modifikovala proizvode ili procese za specifično korišćenje“ (Konvencija o biološkom diverzitetu). 2. Interpretirana u užem smislu, ..., niz različitih molekularnih tehnologija, kao što su manipulacija gena i transfer gena, određivanje DNK i kloniranje biljaka i životinja“ (gledište FAO-a o biotehnologiji).

biotic factor Other living organisms that are a component of an organism's environment, and form the biotic environment, affecting the organism in many ways.

Drugi živi organizmi koji su komponente sredine nekog organizma i obrazuju biotičku sredinu, utičući na mnogo načina na organizam.

biotic stress Stress resulting from attack by pathogenic organisms.

Stres koji nastaje od napada patogenih organizama.

biotin A vitamin of the B complex, it acts as a **co-enzyme** for various enzymes that catalyse the incorporation of carbon dioxide into various compounds, and is essential for the metabolism of fats. Adequate amounts are normally produced by the intestinal bacteria in animals. Significant as a molecular biology reagent due to its high affinity with **avidin** and **streptavidin**. *Synonym:* **vitamin H**.

Vitamin B kompleksa, deluje kao koenzim za razne enzime koji katalizuju uključivanje ugljen dioksida u različita jedinjenja, a bitan je faktor za meta-

bolizam masti. Adekvatne količine normalno proizvode crevne bakterije u životinja. Značajan kao reagens molekularne biologije usled visokog afiniteta sa avidinom i streptavidinom. *Sinonim:* vitamin H.

biotin labelling The attachment of biotin to another molecule, especially **DNA**.

Vezivanje biotina za drugu molekulu, naročito DNK.

biotinylated-DNA A **DNA** molecule labelled with **biotin** by incorporation of a biotinylated **nucleotide** (usually **uracil**) into a **DNA** molecule. The detection of the labelled **DNA** is achieved by complexing it with **streptavidin** to which is attached a colour-generating agent such as horseradish peroxidase that gives a fluorescent green colour upon reaction with various organic reagents.

Molekul DNK, određen sa biotinom putem uključivanja biotiniziranog nukleotida (obično uracila) u molekul DNK. Otkrivanje označene DNK se postiže njenim kompleksiranjem streptavidinom, kojem je priljubljen agens stvaralac boje, kao peroksidaza rena, koja daje fluorescentnu zelenu boju posle reakcije sa raznim organskim reagensima.

biotope A small habitat in a large community.

Malo stanište u velikoj zajednici.

biotoxin A naturally produced compound which shows pronounced biological activity, toxic to some or many organisms.

Prirodno proizvedeno jedinjenje koje pokazuje izraženu biološku aktivnost, otrovnu za neke ili više organizama.

biotransformation The conversion of one chemical or material into another

using a biological **catalyst**: a near synonym is biocatalysis, and hence the catalyst used is called a biocatalyst. Usually the catalyst is an **enzyme**, or a fixed whole, dead micro-organism that contains an enzyme or several enzymes.

Pretvaranje jedne hemikalije ili materijala u drugi, korišćenjem biološkog katalizatora: sličan sinonim je biokataliza, i korišćeni katalizator zove se biokatalist. Obično, katalist je neki enzim, ili neki fiksni mrtav mikroorganizam, koji sadrži jedan ili nekoliko enzima

bivalent Two paired homologous chromosomes (one of maternal origin; the other of paternal origin) at **prophase** to **anaphase** of the first meiotic division. Because **DNA** is replicated in prophase, each duplicated chromosome comprises two chromatids, and thus a bivalent comprises four chromatids.

Dva sparena homologna hromozoma (jedan poreklom od majke; drugi poreklom od oca) od profaze, do anafaze prve mejotičke deobe. Pošto se DNK samoreprodukuje u profazi, svaki podvostručeni hromozom uključuje dve hromatide, i tako da bivalent uključuje četiri hromatide.

blast cell A large, rapidly dividing cell that develops from a **B cell** in response to an antigenic stimulus. The blast cell then becomes an **antibody**-producing plasma cell.

Velika, ćelija koja se brzo deli, razvija se iz jedne B ćelije u reagovanju na antigeni stimulus. Ova ćelija tada postaje plazmina ćelija koja proizvodi antitelo.

blastocyst A mammalian embryo (fertilized ovum) in the early stages of de-

velopment, approximately up to the time of implantation. It consists of a hollow ball of cells.

Embrion sisara (oplodjeno jaje) u ranim stadijumima razvića, približno do vremena usadjivanja. Sadrži šuplju ćeliju loptastog oblika.

blastomere Any one of the cells formed from the first few cleavages in animal embryology. The embryo usually divides into two, then four, then eight blastomeres, and so on.

Bilo koja od ćelija formiranih od prvih nekoliko razdvajanja u životinjskoj embriologiji. Embrion se obično cepa na dva, zatim četiri, zatim osam blastomera, itd.

blastula In animals, an early **embryo** form that follows the morula stage; typically, a single-layered sheet (blastoderm) or ball of cells (**blastocyst**).

U životinja, rana embriona forma koja sledi stadijum morule; tipično jednoslojni list (blastoderm) ili lopta od ćelija (blastocist).

bleeding 1. Collection of blood from **immunized** animals. 2. Used to describe the occasional purplish-black colouration of media due to phenolic products given off by (usually fresh) transfers.

1. Sakupljanje krvi od imuniziranih životinja. 2. Korišćeno da opiše slučajno, purpurno-crno obojenje medijuma usled fenolnih proizvoda odatih od (obično svežih) transfera.

blot As a verb, to transfer **DNA**, **RNA** or **protein** to an immobilizing matrix. As a noun, the immobilizing matrix carrying DNA, RNA or protein. The various types of blot are named according to the probe and/or the probed molecules: **Southern blot** (DNA/DNA), **northern blot**

(DNA/mRNA), **western blot** (antibody/**protein**), southwestern blot (DNA/protein). Only „Southern“ is written with an initial capital, as it is named after Ed Southern, the inventor of the technique.

Kao glagol, prenos DNK, RNK ili proteina na imobilizirajuću matricu. Kao imenica, imobilizirajuća matrica koja nosi DNK, RNK ili protein. Različiti tipovi istog imenuju se prema sondi i/ili sondiranim molekulima: Southern blot (DNK/DNK), northern blot (DNK / mRNK), western blot (antitelo / protein), southwestern blot (DNK/protein). Samo „Southern“, se piše sa početnim velikim slovom, kako je nazvana po Edu Southern-u, koji je pronalazač ove tehnike.

blunt end The end of a **double-stranded DNA** molecule in which neither strand extends beyond the other. *Synonym: flush end.*

Kraj dvostruko lančanog DNK molekula, u kojem se ni jedan lanac ne pruža iza drugog. *Sinonim: flush end.*

blunt-end cut To cut a **double-stranded DNA** with a **restriction endonuclease** which generates **blunt ends**. *Synonym: flush-end cut.*

Seći dvostruko lančane DNK sa restrikcionom endonukleazom, koja stvara krajeve, dvostruko lančanog molekula DNK. *Sinonim: flush-end cut.*

blunt-end ligation The joining of two blunt-ended **double-stranded DNA** molecules.

Spajanje dva kraja dvostruko lančanih DNK molekula.

BOD Abbreviation for **biological oxygen demand**.

Skraćenica za biološku potrebu za kiseonikom.

boring platform Sterile bottom half of a **Petri dish** used for preparing **explants** with a cork borer.

Sterilna donja polovina Petrijeva šolje, korišćena za pripremu eksplantata sa plutanom bušilicom.

bound water Cellular water not released into the **intercellular** space upon freezing and thawing. *Opposite: free water.*

Voda ćelije koja nije oslobođena u međučelijski prostor posle smrzavanja i otapanja. *Suprotno: free water.*

bovine growth hormone *See: bovine somatotrophin*

Vidi: bovine somatotrophin.

bovine somatotrophin (Abbreviation: BST) A natural **protein** in cattle. It has been cloned, using **recombinant DNA** technology, expressed in large amounts and marketed as an agricultural product to improve the growth rate and protein:fat ratios in farm cattle, and to improve milk yield. Its use is banned in some countries. *Synonyms: bovine growth hormone.*

(Skraćenica: BST) Prirodan protein u goveda. Kloniran je, korišćenjem tehnologije rekombinantne DNK, izražen u velikim količinama, i prodavan kao poljoprivredni proizvod za poboljšanje brzine rasta i odnosa protein:mast u domaćih goveda, kao i za poboljšanje prinosa mleka. Njegovo korišćenje u nekim zemljama je zabranjeno. *Sinonim: bovine growth hormone.*

bovine somatotrophin *See: bovine somatotrophin.*

Vidi: bovine somatotrophin.

bovine spongiform encephalopathy (Abbreviation: BSE) Cattle disease (colloquially called mad cow disease) caused by **proteinaceous infectious particles**.

(Skracénica: BSE) Bolest goveda (nazvana bolest ludih krava), izazvana protenoidnim infektivnim česticama.

bp Abbreviation for **base pair**.

Skracénica za base pair.

bract A modified leaf that subtends flowers or inflorescences and may appear to be a petal.

Modifikovani list koji se pruža naspram cvetova ili cvasti, i može izgledati kao da je latica.

breed 1. a sub-specific group of domestic livestock with definable and identifiable external characteristics that enable it to be separated by visual appraisal from other similarly defined groups within the same species. 2. a group of domestic livestock for which geographical and/or cultural separation from phenotypically similar groups has led to acceptance of its separate identity.

1. Grupa podvrste u domaće stoke, sa mogućim definisanim i nedefinisanim spoljnim karakteristikama koje im omogućuju da budu izdvojene, putem vizuelne ocene od drugih slično definisanih grupa u okviru iste vrste. 2. Grupa domaće stoke za koju je geografsko i/ili kulturno izdvajanje od fenotipski sličnih grupa dovelo do prihvatanja njenog posebnog identiteta.

breed at risk An animal breed that is in danger of becoming extinct because its **population** has fallen below a critical number.

Rasa životinja koja je u opasnosti da izumre, jer je njena populacija pala ispod kritičnog broja.

breeding The process of **sexual reproduction** and production of offspring.

Proces polne reprodukcije i proizvodnje potomstva.

breeding value A quantitative genetics term, describing that part of the deviation of an individual **phenotype** from the **population** mean that is due to the additive effects of alleles. Thus, if an individual is mated with a random sample of individuals from a population, its breeding value for a given trait is twice the average deviation of its offspring from the population mean for that trait.

Termin kvantitativne genetike, opisujući onaj deo odstupanja nekog individualnog fenotipa od srednje vrednosti populacije, koji se duguje aditivnim efekima alela. Tako, ako se neka individua pari sa slučajnim uzorkom individua iz populacije, njena uzgojna vrednost za datu osobinu je dvostruka prosečna devijacija od njenog potomstva iz srednje vrednosti populacije za tu osobinu.

brewer's yeast Strains of the yeast *Saccharomyces cerevisiae* that are used for the production of beer.

Sojevi kvasca *Saccharomyces cerevisiae* koji se koriste za proizvodnju piva.

bridge A filter paper or other substrate used as a wick and support structure for a plant tissue in culture when a **liquid medium** is used.

Filter papir, ili drugi supstrat, korišćen kao stenjak i potporna struktura za biljno tkivo u kulturi, kada se koristi tečni medijum.

broad-host-range plasmid A **plasmid** that can replicate in a number of different bacterial species.

Plazmid koji se može replicirati u jednom broju različitih bakterijskih vrsta.

broad-sense heritability The proportion of the total phenotypic variation

which results from genetic **variation** or interaction between the **genotype** and the environment.

Proporcija ukupne fenotipske varijacije, koja nastaje od genetičke varijacije, ili interakcije između genotipa i spoljne sredine.

broodstock The group of males and females from which fish are bred.

Grupa mužjaka i ženki koji se koriste za gajenje riba.

browning Discolouration of freshly cut surfaces of plant tissue due to phenolic oxidation. In plant tissue culture, it may indicate a nutritional or pathogenic problem, generally leading to **necrosis**.

Gubljenje boje sveže presečenih površina biljnog tkiva usled oksidacije fenola. U kulturi biljnog tkiva, to može ukazati na ishrambeni ili patogeni problem, koji dovodi do nekroze.

BSA Abbreviation for bovine **serum albumin**.

Skraćenica za bovine serum albumin.

BSE Abbreviation for bovine spongiform encephalopathy. *See* **proteinaceous infectious particle**.

Skraćenica za bovine spongiformnu encephalopathy. *Vidi:* proteinaceous infection particle.

BST Abbreviation for **bovine somatotrophin**.

Skraćenica za bovine somatotrophin.

Bt Abbreviation for *Bacillus thuringiensis*.

Skraćenica za *Bacillus thuringiensis*.

bubble column fermenter A **bioreactor** in which the cells or microorganisms are kept suspended in a tall cylinder by rising air, which is introduced at the base of the vessel.

Bioreaktor u kojem se ćelije mikroorganizama čuvaju u visokom cilindru

putem vazduha koji se uzdiže, a koji je uveden u osnovu posude.

bud A region of meristematic tissue with the potential for developing into leaves, shoots, flowers or combinations of these; generally protected by modified scale leaves.

Region meristemskog tkiva, sa mogućnošću za razviće u lišće, izdanke, cvetove, ili kombinaciju istih; uopšte zaštićen modifikovanim zaštitnim listovima.

bud sport A **somatic** mutation arising in a bud, generating a genetically different shoot. Includes changes due to gene **mutation**, chromosomal mutation or polyploidy.

Somatska mutacija koja se pojavljuje u pupoljku, dajući genetički različit izdanak. Uključuje promene usled mutacije gena, hromozomske mutacije ili poliploidije.

budding 1. A method of asexual **reproduction** in which a new individual is derived from an outgrowth (bud) that becomes detached from the body of the parent. 2. Among fungi, budding is characteristic of the brewers yeast *Saccharomyces cerevisiae*. 3. A form of **graft** in which a single vegetative bud is taken from one plant and inserted into **stem** tissue of another plant so that the two will grow together. The inserted bud develops into a new shoot.

1. Metod aseksualne reprodukcije, u kojem se nova individua dobije iz izrasline (pupoljka) koji postaje odvojen od tela roditelja. 2. Među gljivama, pupljenje je karakteristika pivskog kvasca *Saccharomyces cerevisiae*. 3. Oblik kalema, u kojem je jedan vegetativni pupoljak uzet sa jedne biljke i ubačen u tkivo stabla druge biljke,

tako da će oboje rasti zajedno. Ubačeni pupoljak razvije se u nov izdanak.

bulked segregant analysis A method to obtain **markers** linked to a target **trait**, in which **DNA** samples, prepared from a number of individuals of each of two contrasting phenotypes, are separately pooled and used to generate contrasting **DNA fingerprints**. **DNA** fragments unique to one pool become candidates for a marker linked to the gene controlling the trait.

Metod dobijanja markera vezanih za ciljnu osobinu, u kojima su uzorci DNK, pripremljeni od jednog broja individua dva različita genotipa, posebno spojeni i korišćeni da stvore različite DNK metodom otiska prsta (fingerprint). DNK fragmenti, jedin-

stveni za jedan pul, postaju kandidati za marker, povezan za gen koji kontroliše određenu osobinu.

buoyant density The intrinsic density which a molecule, virus or sub-cellular particle has when suspended in an aqueous solution of a salt, such as CsCl, or a sugar, such as sucrose. **DNA** from different species has different characteristic buoyant densities, determined largely by the relative proportion of the **base-pairs** G+C, to A+T.

Unutrašnja gustina koju ima molekul, virus ili subcelularni delić, kada lebdi u vodenom rastvoru soli kao što je CsCl, ili šećera, kao što je saharoza. DNK različitih vrsta ima različite karakteristike unutrašnjih gustina, određjenih putem relativne proporcije baznih parova G+C, do A+T.

C

C Abbreviation for **cytosine**.

Skraćenica za cytosine.

CAAT box A conserved **DNA** sequence found within the **promoter** region of the **protein**-encoding genes of many eukaryotic organisms. So-called because of its **consensus** sequence GGCCAATCT, it occurs around 75 bases prior to the **transcription** initiation site; and is one of several sites for the recognition and binding of **transcription factors**. *Synonym:* CAT box.

Konzervisana DNK sekvenca, nadjena unutar promoter regiona protein-ekodiranih gena mnogih eukariotičnih organizama. Tako nazvana zbog nje-ne sekvence GGCCAATCT, to se dešava oko 75 baza pre transkripcijskog mesta uvođenja; a to je jedno od nekoliko mesta za prepoznavanje i vezivanje transkripcionih faktora. *Sinonim:* CAT box.

cabinet *See:* growth cabinet.

Vidi: growth cabinet.

callipyge An inherited **trait** in livestock (e.g. sheep) that results in thicker, meatier hind-quarters, and hence a higher meat yield per animal.

Nasledna osobina u stoke (npr. ovaca) koja dovodi do debljih, mesnatijih zadnjih četvrti, dakle većeg prinosa mesa po grlu.

callus (pl.: calli) A protective tissue, consisting of parenchyma cells, that

develops over a cut or damaged plant surface. 2. Mass of **undifferentiated**, thin-walled **parenchyma** cells induced by **hormone** treatment. 3. Actively dividing non-organized masses of undifferentiated and differentiated cells often developing from injury (wounding) or in **tissue culture** in the presence of growth regulators.

Zaštitno tkivo, koje se sastoji od parenhimnih ćelija, koje se razvija iznad posekotine, ili oštećene biljne površine. 2. Masa nadiferenciranih tankozidnih parenhimnih ćelija podstaknutih hormonalnim tretmanom. 3. Aktivnodeleće neorganizovane mase nediferenciranih i diferenciranih ćelija, često nastale od rane (povrede) ili u kulturi tkiva, u prisustvu regulatora rasta.

callus culture A technique of plant tissue culture, usually on solidified medium and initiated by inoculation of small **explants**. Used as the basis for organogenic (shoot or root forming) cultures, cell cultures or **proliferation** of embryoids. Callus cultures can be indefinitely maintained through regular sub-culturing.

Tehnika kulture biljnog tkiva, obično na očvrslom medijumu, i začeta putem inokulacije malih eksplantata. Korišćena kao osnova organogene kulture (izdanka ili formiranja korena)

kulture, kulture ćelija ili proliferaciju embrioida. Kalusne kulture mogu se neograničeno održavati putem redovnog podkultiviranja.

cambial zone Region in stems and roots consisting of the cambium and its recent derivatives.

Region stabala i korena koji se sastoji od kambijuma i njegovih derivata.

cambium (pl.: cambia) A one or two cells thick layer of plant meristematic tissue, between the **xylem** and **phloem** tissues, which gives rise to secondary tissues, thus resulting in an increase in the diameter of the stem or root. The two most important cambia are the **vascular** (fascicular) cambium and the cork cambium.

Jednoćelijski ili dvoćelijski debeli sloj biljnog meristematičnog tkiva, između tkiva ksilema i floema, koja utiču na povećanje sekundarnih tkiva, tako dovodeći do povećanja prečnika stabla ili korena. Dva najvažnija kambijuma su vaskularni (fascikularni) kambijum i kambijum plute.

cAMP Abbreviation for **cyclic adenosine monophosphate**.

Skraćenica za cyclic adenosine monophosphate.

CaMV Abbreviation for **cauliflower mosaic virus**.

Skraćenica za cauliflower mosaic virus.

CaMV 35S Abbreviation for **cauliflower mosaic virus 35S ribosomal DNA promoter**. *See: cauliflower mosaic virus*.

Skraćenica za mozaik virus 35S karfiola, ribozomalni promotor DNK. *Vidi: cauliflower mosaic virus*.

candidate gene A gene whose deduced function (on the basis of **DNA** sequence) suggests that it may be involved in the genetic control of an aspect of phenotype.

Gen čija funkcija (na bazi sekvence DNK) sugerira da može biti uključen u genetičku kontrolu jednog aspekta fenotipa.

candidate-gene strategy An experimental approach in which knowledge of the biochemistry and/or physiology of a trait is used to identify **candidate genes**. *Synonym: functional gene cloning*.

Eksperimentalni pristup u kojem se znanje biohemije i/ili fiziologije osobine koristi za identifikaciju kandidatskih gena. *Sinonim: functional gene cloning*.

canola A specific subgroup of oilseed rape cultivars; canola oil is the highly mono-unsaturated fatty acid and low in erucic acid product produced in the **seed** of these cultivars.

Specifična podgrupa sorata uljane repice; kanola ulje je visoko mononezasićena masna kiselina, siromašna u eruka kiselinu, koju proizvodi seme tih sorti.

cap The structure found on the 5'-end of eukaryotic mRNA, and consisting of an inverted, methylated **guanosine** residue. *See G cap, cap site*.

Struktura nadjena na 5'-kraju eukariotične mRNK, i sadrži invertirani, metilirani ostatak guanozina. *Vidi: G cap, cap site*.

CAP Abbreviation for **catabolite activator protein**.

Skraćenica za katabolički aktivator proteina.

cap site The site on a **DNA template** where transcription begins. It corresponds to the **nucleotide** at the 5' end of the **RNA transcript** which accepts the **G cap**.

Mesto na DNK kalupu gde počinje transkripcija. Ono je saobrazno sa nukle-

otidom na 5' kraju RNK transkripta koji prihvata G cap.

capacitation The final stage, inside the female genital tract, in the maturation process of a **spermatozoon**, as it penetrates the ovum.

Konačan stadijum unutar ženskog genitalnog trakta, u procesu sazrevanja spermatozoe, kad prođe u jajnu ćeliju.

capillary electrophoresis A form of electrophoresis used widely in current large-scale **DNA sequencing** facilities, where the sample is passed through a long, very-narrow-bore tube containing a re-usable matrix.

Oblik elektroforeze koji se široko koristi u sadašnjim sposobnostima povezivanja DNK, gde se uzorak propušta kroz dugu vrlo usku bušotinu cevi, koja sadrži matricu koja se ponovo koristi.

CAPS *See: cleaved amplified polymorphic sequence.*

Vidi: cleaved amplified polymorphic sequence.

capsid The **protein** coat of a **virus**. The capsid often determines the shape of the virus. *Synonym: coat protein.*

Proteinski omotač virusa. Omotač često određuje obim virusa. *Sinonim: coat protein.*

capsule Carbohydrate coverings that have antigenic specificity, present on some types of bacteria and other micro-organisms. The capsule is usually composed of polysaccharides, polypeptides, or polysaccharide-**protein** complexes. These materials are arranged in a compact manner around the cell surface.

Ugljenohidratni omotači koji imaju antigenu specifičnost, prisutnu u nekih tipova bakterija i drugih mikroorganizama. Kapsula je obično sastavlj-

na od polisaharida, polipeptida ili polisaharidno-proteinskih kompleksa. Te materije su razvrstane na kompaktan način oko ćelijske površine.

carbohydrate *See: polysaccharide.*

Vidi: polysaccharide.

carboxypeptidase A class of enzymes which catalyse the cleavage of **peptide** bonds, requiring a free carboxyl group in the substrate. The **peptide bond** adjacent to this group is cleaved and a free **amino acid** is released. Used for deriving the amino acid sequence of peptides.

Grupa enzima koja katalizuje cepanje peptidnih veza, kojoj je potrebna slobodna karboksilna grupa u supstratu. Peptidna veza susedna ovoj grupi je razdvojena i otpuštena je slobodna aminokiselina. Koristi se za izvođenje aminokiselinske sekvence peptida.

carcinogen A substance capable of inducing cancer in an organism.

Supstanca, sposobna da izaziva rak u organizmu.

carcinoma A malignant tumour derived from epithelial tissue, which forms the skin and the outer cell layers of internal organs.

Maligni tumor, poreklom od epitelnog tkiva, koji formira kožu i spoljne ćelijske slojeve unutrašnjih organa.

carotene A reddish-orange **plastid** pigment involved in **photosynthesis**. A **carotenoid** and precursor of **vitamin A**.

Crvenkasto-narandžasti plastidni pigment, uključen u fotosintezu. Karotoid je prekursor vitamina A.

carotenoid A group of chemically similar red to yellow pigments responsible for the characteristic colour of many plant organs or fruits, such as

tomatoes, carrots, etc. Oxygen-containing carotenoids are called **xanthophylls**. Carotenoids serve as light-harvesting molecules in photosynthetic assemblies and also play a role in protecting prokaryotes from the deleterious effects of light. *See: carotene*.

Grupa hemijski sličnih, crvenih do žutih pigmentata, daju karakterističnu boju mnogim biljnim organima ili plodovima kao što su paradajz, mrkva i sl. Karotinoidi koji sadrže kiseonik zovu se ksantofili. Karotinoidi služe kao molekule skupljači svetla u fotosintezi, a takodje igraju ulogu u zaštiti prokariota od štetnih efekata svetla. *Vidi: carotene*.

carpel Female reproductive **organ** of flowering plants, consisting of stigma, **style** and ovary.

Ženski reproduktivni organ cvetnica koji se sastoji od žiga tučka, stubića i ovarijuma.

carrier A **heterozygous** individual bearing a **recessive** mutant **allele** for a defective condition that is „masked“ by the presence of the **dominant** normal allele; the phenotype is normal, but the individual passes the defective (recessive) allele to half of its offspring.

Heterozigotna individua koja nosi recisivni mutantni alel za defektno stanje, koje je „maskirano“ prisustvom dominantnog normalnog alela; fenotip je normalan, ali individua prenosi nepotpuni (recesivan) alel na polovinu svog potomstva.

carrier DNA DNA of undefined sequence which is added to the transforming (**plasmid**) DNA used in physical DNA-transfer procedures. This additional DNA increases the effici-

ency of transformation in **electroporation** and chemically-mediated DNA delivery systems. The mechanism responsible is not known.

DNK nedefinisana sekvenca, koja je dodata transformisanoj (plazmidnoj) DNK, korišćenoj u fizičkim postupcima DNK transfera. Ova dodatna DNK povećava efikasnost transformacije u elektroporaciji hemijski posredovanim sistemima raznošenja DNK. Mehanizam koji je odgovoran nije poznat.

carrier molecule 1. A molecule that plays a role in moving electrons through the electron transport chain. They are usually **proteins** bound to non-**protein** groups and able to undergo oxidation and reduction relatively easily, thus allowing electrons to flow. 2. A lipid-soluble molecule that can bind to lipid-insoluble molecules and transport them across membranes. Carrier molecules have specific sites that interact with the molecules they transport. The efficiency of carrier molecules may be modified by changing the interacting sites through genetic engineering.

1. Molekul koji igra ulogu u kretanju elektrona kroz elektronski transportni lanac. Oni su obično proteini, vezani za neproteinske grupe, i u stanju da podnose oksidaciju ili redukciju relativno lako, tako omogućavajući protok elektrona. 2. Molekul rastvorljiv u lipidu, koji se može vezati za molekule nerastvorljive u lipidu i prenositi ih kroz membrane. Molekuli nosači imaju specifična mesta koja su u interakciji sa molekulima koje transportuju. Efikasnost molekula nosača može biti modifikovana menjanjem mesta interakcije putem genetičkog inženjeringa.

Cartagena protocol *See: biosafety protocol.*

Vidi: biosafety protocol.

casein A group of milk **proteins**.

Grupa mlečnih proteina.

casein hydrolysate The mixture of **amino acids** and **peptides** produced by enzymatic or acid hydrolysis of **casein**.

Smeša aminokiselina i peptida, proizvedenih putem enzimske ili kiselinske hidrolize kazeina.

cassette *See: construct.*

Vidi: construct.

CAT box *See: CAAT box.*

Vidi: CAAT box.

catabolic pathway A pathway by which an organic molecule is degraded in order to release energy for growth and other cellular processes.

Putanja, putem koje se organska molekula razgrađuje da bi otpustila energiju za rast i druge ćelijske procese.

catabolism The breakdown of large molecules in living organisms, with the accompanying release of energy.

Razlaganje velikih molekula u živih organizama, sa pratećim otpuštanjem energije.

catabolite activator protein (Abbreviation: CAP). A **protein** which combines with **cyclic AMP**. The cAMP-CAP complex binds to the promoter regions of *E. coli* and stimulates transcription of the relevant **operon**. *Synonyms*: catabolite regulator **protein** (CRP), cyclic AMP receptor protein.

(Skraćenica: CAP) Protein koji se kombinuje sa cikličnim AMP. cAMP-CAP kompleks vezuje se na regione promotere *E.coli* i stimuliše transkripciju odgovarajućeg operona. *Sinonim*: catabolic regulator protein (CRP), cyclic AMP receptor protein.

catabolite repression Glucose-mediated reduction in the rates of **transcription** of genes that encode enzymes involved in **catabolic pathways** (e.g. the *lac* operon).

Smanjenje stepena transkripcije gena posredstvom glukoze, koji pretvaraju u kodove enzime uključene u kataboličke putanje (npr. *lac* operon).

catalase A **metalloenzyme**, present in both plants and animals, that catalyzes the decomposition of hydrogen peroxide to water and oxygen. This activity is important in the detoxification of reactive oxygen generated as part of the response to stress.

Metaloenzim, prisutan u biljkama i životinjama, koji katalizuje razlaganje vodonik peroksida na vodu i kiseonik. Ta aktivnost je važna u detoksifikaciji reaktivnog kiseonika, nastalog kao deo reagovanja na stres.

catalysis The process of increasing the rate of a chemical reaction by the addition of a substance that is not itself changed by the reaction (the **catalyst**).

Proces povećanja stepena hemijske reakcije dodavanjem neke supstance, koja nije promenjena reakcijom (katalist).

catalyst A substance that promotes a chemical reaction by lowering the activation energy of a chemical reaction, without itself undergoing any permanent chemical change.

Supstanca koja izaziva hemijsku reakciju smanjivanjem aktivacione energije hemijske reakcije, bez sopstvenog podlaganja bilo kojoj stalnoj hemijskoj promeni.

catalytic antibody An antibody selected for its ability to catalyse a chemical reaction by binding to and stabilizing

zing the transition-state intermediate.
Synonym: abzyme.

Antitelo, odabrano zbog sposobnosti da katalizuje hemijsku reakciju putem vezivanja za nju, i stabilizacije sredine tranzicionog stanja. *Sinonim:* abzyme.

catalytic RNA *See:* **ribozyme**.

Vidi: ribozyme.

catalytic site The part of the surface of an **enzyme** molecule (usually only a small portion of the total) necessary for the catalytic process.

Deo površine jednog enzimskog molekula (obično mali deo od ukupnog) potrebne za katalitički proces.

cauliflower mosaic virus (Abbreviation CaMV). A **DNA** virus affecting cauliflower and many other **dicot** species. Its importance is due to the **promoter** of its 35S **ribosomal DNA**, which is constitutively active in most plant tissues, and has therefore been widely used as a promoter for the expression of **transgenes**.

(Mozaik virus karfiola skraćena: CaMV). Virus DNK koji zaražava karfiol i mnoge druge dikotiledone vrste. Njegova važnost je usled promotera njegove 35S ribozomne DNK, koja je prirodno aktivna u mnogim biljnim tkivima, i zbog toga je široko korišćena kao promotor za izražavanje transgena.

cauliflower mosaic virus 35S promoter (Abbreviation CaMV 35S). A promoter sequence isolated from the ribosomal gene of the **cauliflower mosaic virus**

(Mozaik virus karfiola 35S promoter skraćena: cAMV 35S) Sekvenca promotor, izolovana iz ribozomalnog gena mozaik virusa karfiola.

caulogenesis Stem **organogenesis**; induction of shoot development from **callus**.

Organogeneza stabla; početak razvića izdanka iz kalusa.

CBD Abbreviation for **Convention on Biological Diversity**.

Skraćena za Convention on Biological Diversity.

ccc DNA Abbreviation for **covalently-closed circle DNA**. *See:* **circularization**.

Skraćena za covalently-closed circle DNA. *Vidi:* circularization.

CD molecules Abbreviation for: **cluster of differentiation molecules**. Any group of surface **antigens** associated with a specific sub-population of **T cells**.

Skraćena za cluster of differentiation molecules. Bilo koje grupa površinskih antigena povezana sa specifičnom podpopulacijom T ćelija.

cDNA Abbreviation for **complementary DNA**.

Skraćena za complementary DNA.

cDNA clone A double-stranded **cDNA** molecule propagated in a vector, and used as a probe in **RFLP** analyses, as **template** for the production of **EST** sequences, and for **gene expression** studies.

Dvostruko uvijena cDNK molekula razmnožena u vektoru, i korišćena kao proba u analizama RFLP, kao kalup za proizvodnju EST sekvenci, i za proučavanje ekspresije gena.

cDNA cloning A method of cloning the coding sequence of a gene, starting with its **mRNA** transcript.

Metod kloniranja kodirane sekvence gena, počev od njegovog mRNK transkripta.

cDNA library An collection of **cDNA** clones.

Kolekcija klonova cDNK.

CDR Abbreviation for **complementarity-determining regions**.

Skraćenica za complementarity-determining regions.

cell The fundamental level of structural organization in complex organisms. Eukaryotic cells contain a **nucleus** (with **chromosomes**) and **cytoplasm** with the **protein** synthesis machinery, bounded by a membrane. Prokaryotic cells have no nucleus.

Fundamentalni nivo strukturne organizacije u kompleksnih organizama. Eukariotske ćelije sadrže nukleus (sa hromozomima), i citoplazmu sa mehanizmom proteinske sinteze, vezanom sa membranom. Prokariotske ćelije nemaju nukleus.

cell culture The *in vitro* growth of cells isolated from multi-cellular organisms.

In vitro rast ćelija izolovanih od višćelijskih organizama.

cell cycle The sequence of stages that a **cell** passes through between one division and the next. The cell cycle oscillates between **mitosis** (M) and the **interphase**, which is divided into the G₁ phase (involving a high rate of biosynthesis and growth), the S phase (in which the **DNA** content is doubled as a consequence of **chromosome** replication), and the G₂ phase (preparatory **for cell division**).

Sekvenca stadijuma koje ćelija prolazi između uzastopnih deoba. Ćelijski ciklus osciluje između mitoze (M) i međufaze, koja je podeljena u G₁ fazu (uključujući visok stepen biosinteze i rasta), S faze (u kojoj je sadržaj DNK udvostručen kao posledica replikacije hromozoma), i G₂ faze (pripreme za ćelijsku podelu).

cell differentiation The transition of cells (by the programmed activation and de-activation of the necessary genes) from an tissue-unspecific type, in which daughter cells are similarly undifferentiated, to a committed type in which the **cell line** specializes to become a recognizable tissue or organ.

Tranzicija ćelija (programiranom aktivacijom i dezaktivacijom potrebnih gena) od jednog tkivno-nespecifičnog tipa, u kojem su ćelije ćerke slično nedefinisane, do obaveznog tipa u kojem se ćelijska linija specijalizuje da postane prepoznatljivo tkivo ili organ.

cell division Formation of two or more daughter cells from a single parent cell. The **nucleus** divides first, followed by the formation of a cell membrane between the daughter nuclei. Division of somatic cells is termed **mitosis**; **egg** and **sperm** precursors are formed following **meiosis**.

Formiranje dve ili više ćelija ćerki od jedne roditeljske ćelije. Nukleus se deli prvi, praćen formiranjem ćelijske membrane između nukleusa ćerki. Podela somatskih ćelija je nazvana mitozom, formirani su prekursori jajne ćelije i spermija, sledeći mejozu.

cell fusion Formation *in vitro* of a single **hybrid cell** from the coalescence of two cells of different species origin. In the hybrid cell, the donor nuclei may remain separate, or may fuse, but during subsequent cell divisions, a single **spindle** is formed so that each daughter cell has a single **nucleus** containing complete or partial sets of chromosomes from each parental line. *Synonym: cell hybridization.*

Formiranje *in vitro* jedne hibridne ćelije od spajanja dve ćelije poreklom od

različitih vrsta. U hibridnoj ćeliji, nukleusi donora mogu ostati posebno, ili se mogu spojiti, ali tokom uzastopnih ćelijskih deoba, formirano je jedno vreteno, tako da svaka ćelija ćerka ima jedan nukleus koji sadrži kompletan ili nekompletan set hromozoma od svake roditeljske linije.
Sinonim: cell hybridization.

cell generation time The interval between the beginning of consecutive divisions of a cell, equivalent to the time that it takes for a population of single-celled organisms to double its cell number.

Interval između početka uzastopnih deoba ćelije, ekvivalentan vremenu koje je potrebno za populaciju jednoćelijskih organizama da udvostruči svoj broj ćelija.

cell hybridization *See:* cell fusion.

Vidi: cell fusion.

cell line 1. A cell lineage that can be maintained *in vitro*. Significant genetic changes can occur during lengthy periods in culture, so that the genotype of long-term cell lines may not be the same as that of the starter cell. 2. A cell lineage that can be recognized *in vivo*.

1. Ćelijsko poreklo koje se može održavati *in vitro*. Signifikantne genetičke promene mogu nastati tokom dugih perioda u kulturi, tako da genotip dugotrajnih ćelijskih linija ne može biti isti kao onaj od početne ćelije. 2. Ćelijsko poreklo koje može biti prepoznato *in vivo*.

cell membrane *See:* plasmalemma.

Vidi: plasmalemma.

cell number The number of cells per unit volume of a culture.

Broj ćelija po jedinici zapremine kulture.

cell plate The precursor of the cell wall, formed at the beginning of cell divi-

sion. The cell plate develops in the region of the equatorial **plate** and arises from membranes in the **cytoplasm**.

Prekursor ćelijskog zida, formiran na početku deobe ćelija. Ćelijska ploča razvija se u regionu ekvatorijalne ravni, i nastaje od membrana u citoplazmi.

cell sap Water and dissolved substances, sugar, amino acids, waste substances, etc., in the plant cell **vacuole**.

Voda i rastvorene materije, šećer, aminokiseline, otpadne supstance, itd., u vakuoli biljne ćelije.

cell selection The process of selecting cells exhibiting specific traits within a group of genetically different cells. Selected cells are often sub-cultured onto fresh medium for continued selection and exposed to an increased level of the selection agent to eliminate false positives.

Proces izbora ćelija koje ispoljavaju specifične osobine sa grupom genetički različitih ćelija. Izabrane ćelije su često podkultivisane na svežem medijumu za stalnu selekciju, i izložene povećanom nivou selekcije radi eliminisanja pogrešno odredjenih.

cell sorter *See:* fluorescence-activated cell sorting, flow cytometry.

Vidi: fluorescence-activated cell sorting, flow cytometry.

cell strain An *in vitro* culture initiated by asexual reproduction from a single cell. Such cell lines should represent a **population** of genetically homogenous cells. Strains are defined by specific properties or markers used for their selection. *Synonym:* **single-cell line**.

In vitro kultura, započeta aseksualnom reprodukcijom od jedne ćelije. Takve

linije ćelija bi trebalo da predstavlja ju populaciju genetički homogenih ćelija. Sojevi se definišu putem specifičnih svojstava ili markera korišćenih za njihovu selekciju. *Sinonim:* single cell line.

cell suspension Cells in culture in moving or shaking liquid medium, often used to describe **suspension cultures** of single cells and cell aggregates.

Ćelije u kulturi, u kretanju ili mešanju tečnog medijuma, često korišćene da opišu suspenzione kulture pojedinih ćelija i ćelijskih agregata.

cell wall A rigid external structure which surrounds plant cells. It is formed outside the **plasmalemma** and consists primarily of **cellulose**.

Čvrsta, spoljna struktura, koja okružuje biljne ćelije. Obrazuje se izvan plazmaleme, i sastoji se prvenstveno od celuloze.

cell-free protein synthesis *See: in vitro translation.*

Vidi: *in vitro* translation.

cell-free transcription *See: in vitro transcription.*

Vidi: *in vitro* transcription.

cell-free translation *See: in vitro translation.*

Vidi: *in vitro* translation.

cell-mediated (cellular) immune response *See: T-cell-mediated (cellular) immune response.*

Vidi: T-cell-mediated (cellular) immune response.

cellular oncogene *See: proto-oncogene.*
Vidi: proto-oncogene.

cellulase Enzyme catalysing the breakdown of **cellulose**.

Enzim koji katalizuje razlaganje celuloze.

cellulose A complex **polysaccharide** composed of long linear chains of

glucose **residues**. It comprises 40% to 55% by weight of the plant cell wall.

Kompleksni polisaharid, sastavljen od dugih linearnih lanaca ostatka glukoze. Predstavlja težinskih 40% do 55% biljnog ćelijskog zida.

cellulose nitrate *See: nitrocellulose.*

Vidi: nitrocellulose.

cellulosome A multi-**protein** aggregate present in some micro-organisms which degrade **cellulose**. It contains multiple copies of the enzymes necessary for this process, and is often found on the outer surface of the **micro-organism** cell.

Višeproteinski agregat, prisutan u nekim mikroorganizmima koji degradira celulozu. Sadrži višestruke kopije enzima potrebnih za taj proces, a često se nalazi na spoljašnjoj površini ćelije mikroorganizama.

centiMorgan (Abbreviation: cM). Unit of **map distance**. For small **recombination fractions**, cM and % recombination frequency are equivalent.

(Skraćenica: cM) Jedinica distance mape. Za male frakcije rekombinacija, cM i % učestalosti rekombinacije su jednaki.

central dogma The basic concept that, in nature, genetic information generally flows from **DNA** to **RNA** to **protein**. However, information contained in the RNA molecules of **retroviruses** can also flow back to DNA.

Osnovni koncept, da u prirodi, genetska informacija uopšte teče od DNK do RNK do proteina. Međutim informacija, sadržana u molekulima RNK molekula retrovirusa, može takodje da teče nazad do DNK.

central mother cell A subsurface cell located in a plant apical **meristem** and characterized by a large **vacuole**.

Podpovršinska ćelija, locirana u vršnom meristemu biljke, i karakteriše se velikom vakuolom.

centre of origin The geographic locations where a particular domesticated plant species originated. These areas are the likeliest source of natural genetic variation, and represent ideal targets for *in situ* conservation.

Geografska lokacija odakle potiču posebne domestikovane biljne vrste. Te oblasti su najverovatnije izvor prirodne genetičke varijacije, i predstavljaju idealne ciljeve za *in situ* konzervaciju.

centrifugation Separating molecules by size or density using centrifugal forces generated by a spinning rotor. G-forces of several hundred thousand times gravity are generated in ultracentrifugation. *See: density gradient centrifugation.*

Izdvajanje molekula po veličini ili gustini korišćenjem centrifugalnih sila, stvaranih putem okretnog rotora. G-sile od nekoliko stotina hiljada gravitacija se postižu u ultracentrifugaciji. *Vidi: density gradient centrifugation.*

centrifuge A mechanical device which delivers the centrifugal forces necessary for **centrifugation**.

Mehanički uređaj koji oslobađa centrifugalne sile, potrebne za centrifugiranje.

centriole An **organelle** in many animal cells that appears to be involved in the formation of the **spindle** during **mitosis**. During cell division, the two centrioles move to opposite sides of the **nucleus** to form the ends of the spindle.

Organela u mnogim životinjskim ćelijama koja je izgleda uključena u stvaranje deobnog vretena tokom mitoze. Tokom ćelijske podele, dve centriole

se kreću na suprotne strane nukleusa kako bi formirale krajeve vretena.

centromere The eukaryotic **chromosome** structure, which appears as a constriction in **karyotype** analysis, to which the **spindle** fibres attach during mitotic and meiotic division. Composed of highly **repetitive DNA**.

Eukariotička hromozomska struktura, koja se pojavljuje kao suženje u analizi kariotipa, na koju se kače vlakna deobnog vretena tokom mitotičke i mejotičke deobe. Sastavljena od visoko ponovljive DNK.

centrosome A specialized region of a living cell, situated next to the nucleus, where **microtubules** are assembled and broken down during cell division. The centrosome of most animal cells contains a pair of centrioles.

Specijalizovani region žive ćelije, koji se nalazi blizu nukleusa, gde su mikrovlakna skupljena i prekinuta tokom ćelijske deobe. Centrozom većine životinjskih ćelija sadrži par centriola.

cephem-type antibiotic An antibiotic that shares the basic chemical structure of cephalosporin.

Antibiotik koji daje osnovnu hemijsku strukturu cefalosporina.

chain terminator 1. *See: stop codon.*

2. In the Sanger method of **DNA** sequencing, refers to the labelled di-deoxynucleotide triphosphates which are added to disrupt **DNA polymerase** extension.

1. *Vidi: stop codon.* 2. U Sanger-ovom metodu sekvenciranja DNK, odnosi se na obeležene di-dezoksinukleotid trifosfate, koji se dodaju da unište širenje DNK polimeraze.

Chakrabarty decision A landmark legal case in the U.S.A., in which it was held that the inventor of a new **micro-organism** whose invention otherwise met the legal requirements for obtaining a **patent**, could not be denied a patent solely because the invention was alive. This has set the precedent for the patenting of life forms.

Princip pravnog slučaja u SAD, po kome pronalazač novog mikroorganizma, čiji pronalazak inače zadovoljava pravne zahteve za dobijanje patenta, ne može biti osporen, jedino pošto je pronalazak bio živ. To je pretpostavka za patentiranje živih formi.

chaperone A family of **proteins** that ensure the correct assembly and **conformation** of other polypeptides *in vivo* as they emerge from the **ribosome**, but are not themselves components of the functional assembled structures. The prokaryotic equivalents are known as chaperonins. *See: heat shock protein.*

Familija proteina koja osigurava ispravno skupljanje i konformaciju drugih polipeptida *in vivo*, pošto oni proizlaze iz ribozoma, ali sami nisu komponente funkcionalno združenih struktura. Prokariotički ekvivalenti su poznati kao čaperonini. *Vidi: heat shock protein.*

chaperonin *See: chaperone.*

Vidi: chaperone.

character *See: trait.*

Vidi: trait.

characterization Description of the essential properties of an organism or system.

Opis bitnih osobina nekog organizma ili sistema.

charcoal The black porous residue of partly burnt wood, bones, etc; a form of carbon. *See: activated charcoal*

Crni porozni ostatak delimično sagorelog drveta, kostiju, itd., oblik ugljenika. *Vidi: activated charcoal.*

chelate A cation bound to an organic molecule through electron pair donation from nitrogen and/or oxygen atoms in its structure. **Ethylenediamine tetraacetic acid** is a typical and frequently employed chelating agent. Soluble chelates can supply plants with **micronutrients** which would otherwise be unavailable because of precipitation.

Katjon vezan za organsku molekulu putem donacije elektronskog para od azotnih i/ili kiseonikovih atoma u svojoj strukturi. Etilendiamin tetrasirćetna kiselina je tipičan, i često korišćen agens helatiranja. Rastvorljivi helati mogu da obezbede biljke mikrohranljivim materijama, koje bi inače bile nedostupne zbog taloženja.

chemical mutagen A chemical capable of inducing **mutations** in living organisms.

Hemikalija sposobna da izazove mutacije kod živih organizama.

chemically-defined medium When all of the chemical components of a **culture medium** are fully known and defined.

Kada su sve hemijske komponente kulturnog medijuma potpuno poznate i definisane.

chemiluminescence The emission of light during the course of a chemical reaction.

Emisija svetlosti tokom hemijske reakcije.

chemostat A continuous and open **culture** in which **growth rate** and cell density are maintained constant by a

fixed rate of input of a growth-limiting nutrient.

Kontinuirana i otvorena kultura, u kojoj se brzina rasta i gustina ćelija održavaju konstantne putem fiksnog ulaganja hranljive materije koja ograničava rast.

chemotaxis The movement of a cell, or the whole or part of an organism, towards or away from an increasing concentration of a particular substance.

Kretanje ćelije, ili celog ili dela nekog organizma, prema, ili suprotno od povećane koncentracije određene supstance.

chemotherapy The treatment of disease, especially infections or cancer, by means of chemicals.

Lečenje bolesti, naročito infekcija i raka, putem hemikalija.

chiasma (pl.: chiasmata) A visible point of junction between two non-sister **chromatids** of **homologous** chromosomes during the first meiotic prophase. *Synonym*: **cross-over**.

Vidljiva tačka spoja između dve nestrinske hromatide homologih hromozoma tokom prve mejotičke profaze. *Sinonim*: cross-over.

chimera (or chimaera) 1. An organism whose cells are not all genotypically identical. This can occur as a result of: somatic mutation; grafting (*see*: **graft chimera**); or because the individual is derived from two or more embryos or zygotes. 2. A **recombinant DNA** molecule that contains sequences from different organisms.

1. Organizam čije sve ćelije nisu genotipski identične. To se može desiti kao rezultat somatske mutacije; kalemljenja (*vidi*: graft chimera), ili je individua poreklom od dva ili više em-

briona ili zigota. 2. Molekul rekombinantne DNK koji sadrži sekvence različitih organizama.

chimeroplasty A method designed to create defined alterations in **DNA** sequence at a target locus, with potential both for **gene therapy** and for investigating gene function. A synthetic nucleic acid that contains DNA interspersed with small amounts of **RNA** is introduced into the target cell, where it pairs with its target gene sequence and then triggers the cell's **DNA repair** machinery, resulting in the replacement of the native sequence by the synthetic one.

Metod, sačinjen da stvori određene izmene u sekvenci DNK na ciljnom lokusu, sa potencijalom, kako za gensku terapiju, tako i za ispitivanje funkcije gena. Sintetička nukleinska kiselina koja sadrži DNK, malie količine RNK, je uvedena u ciljnu ćeliju, gde se pari sa sekvencom njegovog ciljnog gena, a zatim obara ćelijski mehanizam reparacije DNK, dovodeći do zamene prirodne sekvence sintetičkom.

chimeric DNA *See*: chimera (2).

Vidi: chimera (2).

chimeric gene An engineered gene, where a coding sequence is fused to **promoter** and/or other sequences derived from a different gene. Most genes used in **transformation** are chimeric. *Synonym*: **fusion gene**.

Gen, gde je sekvenca kodiranja spojena za promoter i/ili druge sekvence, nastale od različitog gena. Većina gena korišćenih u transformaciji su himerini. *Sinonim*: fusion gene.

chimeric protein *See*: **fusion protein**.

Vidi: fusion protein.

chimeric selectable marker gene A gene that is constructed from parts of

two or more different genes and allows the host cell to survive under conditions where it would otherwise die.

Gen koji je konstruisan od delova dva, ili više različitih gena, i omogućava ćeliji domaćinu da preživi u uslovi-ma gde bi inače uginula.

chip See: **micro-array**.

Vidi: micro-array.

chitin A nitrogenous **polysaccharide** that gives structural strength to the exoskeleton of insects and the cell walls of fungi.

Azotni polisaharid koji daje strukturnu jačinu egzoskeletu insekata i ćelij-skim zidovima gljiva.

chitinase An **enzyme** which breaks down **chitin**.

Enzim koji razlaže hitin.

chloramphenicol An **antibiotic** that interferes with **protein** synthesis.

Antibiotik koji posreduje u sintezoi proteina.

chlorenchyma Plant tissue (leaf **mesophyll** and other **parenchyma** cells) containing **chloroplasts**.

Biljno tkivo (mezofil lista i druge parenhimske ćelije) koje sadrži hloroplaste.

chlorophyll One of the two pigments responsible for the green colour of most plants. It is an essential component of the machinery to absorb light energy for photosynthesis. See: **chloroplast**.

Jedan od dva pigmenta odgovorna za zelenu boju većine biljaka. Bitna je komponenta mehanizma za apsorpciju svetlosne energije za fotosintezu. Vidi: chloroplast.

chloroplast Specialized **plastid** that contains **chlorophyll**. Lens-shaped and bounded by a double membrane,

chloroplasts contain membranous structures (thylakoids) piled up into stacks, surrounded by a gel-like matrix (stroma). They are the site of solar energy transfer and some important reactions involved in starch or sugar synthesis. Chloroplasts have their own **DNA**; these genes are inherited only through the female parent, and are independent of nuclear genes.

Specijalizovan plastid koji sadrži hlorofil. Oblikovan kao sočivo, i vezan dvostrukom membranom, hloroplast sadrži membranozne strukture (tilakoide) skupljene u grupe okružene sa matricom sličnom gelu (stromom). Oni su mesto transfera solarne energije i nekih važnih reakcija uključenih u sintezu skroba ili šećera. Hloroplasti imaju sopstvenu DNK; ti geni se nasledjuju samo putem majke, i nezavisni su od nuklearnih gena.

chloroplast DNA The **DNA** present in the chloroplast. Although the chloroplast has a small genome, the large number of chloroplasts per cell ensures that chloroplast **DNA** is a significant proportion of the total **DNA** in a plant cell.

DNK prisutna u hloroplastu. Iako hloroplast ima mali genom, veliki broj hloroplasta po ćeliji osigurava da je DNK hloroplasta signifikantna proporciji ukupne DNK u biljnoj ćeliji.

chloroplast transit peptide (Abbreviation: CTP). A transit peptide that, when fused to a **protein**, acts to transport that protein into plant chloroplasts. Once inside the chloroplast, the transit peptide is cleaved off the protein. Used to target **transgene** expression to the chloroplast, where this is appropriate.

(Skracénica: CTP) Tranzitni pepid koji, kada je spojen sa proteinom, deluje tako da transportuje taj protein u biljne hloroplaste. Unutar hloroplasta, transitni pepid je otepljen od proteina. Korišćen da usmerava ispoljavanje transgena hloroplasta, gde je to odgovarajuće.

chlorosis The appearance of yellow colour in plants, due to the failure of development or the breakdown of **chlorophyll**. This is generally a symptom of either nutritional disturbance or of **pathogen** infection.

Pojava žute boje u biljaka, usled propusta u razviću ili razlaganja hlorofila. To je uopšte simptom, bilo poremećaja u ishrani ili patogene infekcije.

chromatid Each of the two strands of **chromatin** comprising a duplicated chromosome. The term is applied only while the two chromatids are joined at the **centromere**. As soon as the centromere divides, setting the two chromatids adrift (during **anaphase** of mitosis; and during anaphase II of meiosis), they are called chromosomes.

Svaki od dva lanca hromatina, koji sadrži udvostručen hromozom. Izraz se primenjuje samo dok su dve hromatide spojene u centromeri. Čim se centromera podeli, dve hromatide se razvoje (tokom anafaze mitoze; i tokom anafaze II mejoze), one se zovu hromozomi.

chromatin Substance of which eukaryotic chromosomes are composed. It consists of a complex of **DNA**, **histone** and **non-histone chromosomal proteins** (mainly histones), and a small amount of **RNA**.

Supstanca od koje se sastoje eukariotski hromozomi. Sastoji se od kompleksa

DNK, histona i nehistskih proteina hromozoma (uglavnom histona), i male količine RNK.

chromatin fibre The standard structural **conformation** of **chromatin** in strands of 30 nm average diameter.

Standardna strukturna konformacija hromatina u lancima prosečnog prečnika od 30 nm.

chromatography A method for separating the components of mixtures of molecules by partitioning them between two phases, one stationary and the other mobile. Appropriate selection of partitioning mechanism can produce separation of very closely-related molecules.

Metod razdvajanja komponenata smeša molekula putem deobe istih između dve faze, jedne stacionarne, a druge mobilne. Odgovarajući izbor mehanizma deljenja može da omogućiti izdvajanje vrlo blisko povezanih molekula.

chromocentre Body produced by fusion of the heterochromatic regions of the chromosomes in the polytene tissues (e.g. the salivary glands) of certain *Diptera*.

Telašce proizvedeno spajanjem heterohromatinskih regiona hromozoma u tkiva (npr. politena pljuvačnih žlezda) izvesnih *Diptera*.

chromogenic substrate A compound or substance that contains a colour-forming group.

Jedinjenje ili supstanca koja sadrži grupu za formiranje boje.

chromomeres Small dense bodies identified by their characteristic size and linear arrangement along a chromosome.

Mala telašca, identifikovana putem karakterističnih veličina i linearnog rasporeda duž hromozoma.

chromonema (pl.: chromonemata) An optically single thread forming an axial structure within each **chromosome**.

Optički pojedinačna nit, formirajući osovinsku strukturu u okviru svakog hromozoma.

chromoplast **Plastid** containing pigments other than **chlorophyll**. *See: chloroplast*.

Plastid, sadrži druge pigmente osim hlorofila. *Vidi: chloroplast*.

chromosomal aberration An abnormal change in chromosome structure or number, including deficiency, duplication, inversion, translocation, aneuploidy, polyploidy, or any other change from the normal pattern.. Although it can be a mechanism for enhancing genetic diversity, most alterations are fatal or debilitating, especially in animals. *See: chromosome mutation*.

Abnormalna promena u hromozomskoj strukturi ili broju, uključujući deficije, duplikacije, inverzije, translokacije, aneuploidiju, poliploidiju, ili bilo koju drugu promenu od normalnog stanja. Iako može biti mehanizam za povećanje genetičkog diverziteta, većina promena je fatalna, ili slabi organizam, naročito u životinja. *Vidi: chromosome mutation*.

chromosomal integration site A chromosomal location where **foreign DNA** can be integrated, often without impairing any essential function in the host organism.

Hromozomska lokacija, gde strana DNK može da se ugradi, često bez narušavanja bitne funkcije u organizmu domaćina.

chromosomal polymorphism The occurrence of one to several chromosomes in two or more alte

structural forms within a population; the structurally changed chromosomes are the result of chromosome mutations (i.e. any structural change involving the gain, loss or re-location of chromosome segments).

Postojanje jednog do nekoliko hromozoma u dva ili više alternativna strukturalna oblika u okviru populacije; strukturalno izmenjeni hromozomi su rezultat hromozomske mutacije (npr.bilo koja strukturalna promena, uključujući prirast, gubitak ili ponovno izdvajanje hromozomskih segmenata).

chromosome In eukaryotic cells, chromosomes are the nuclear bodies containing most of the genes largely responsible for the differentiation and activity of the cell. Chromosomes are most easily studied in their contracted state, which occurs around the **metaphase** of **mitosis** or **meiosis**; they contain most of the cell's **DNA** in the form of **chromatin**. Each eukaryotic species has a characteristic number of chromosomes. Bacterial and viral cells contain only one chromosome, which consists of a single or double strand of DNA or, in some viruses, **RNA**, without **histones**.

U eukariotskim ćelijama, hromozomi su nuklearna tela koja sadrže većinu gena odgovornih za diferencijaciju i aktivnost ćelije. Hromozomi se najlakše proučavaju u kontrahovanom stanju, a to nastaje u metafazi mitoze ili mejoze; oni sadrže većinu ćelijske DNK u obliku hromatina. Svaka eukariotska vrsta ima karakterističan broj hromozoma. Bakterijske i ćelije virusa sadrže samo jedan hromozom, koji sadrži jednostruki ili dvostruki

lanac DNK, ili kod nekih virusa, RNK, bez histona.

chromosome aberration *See: chromosomal aberration.*

Vidi: chromosomal aberration.

chromosome banding Differential staining of chromosomes in such a way that light and dark areas occur along the length of the chromosomes in repeatable patterns. Identical banding pattern implies chromosome homology.

Različito bojenje hromozoma, na takav način da nastaju svetle i tamne regije po dužini hromozoma u ponovljivim oblicima. Identični tip vezivanja posredno izražava homologiju hromozoma.

chromosome jumping A technique that allows two segments of **duplex DNA** that are separated by thousands of base pairs (about 200 kb) to be cloned together. After sub-cloning, each segment can be used as a **probe** to identify cloned **DNA** sequences that, at the chromosome level, are roughly 200 kb apart. *See positional cloning.*

Tehnika koja dopušta da dva segmenta dvostruke RNK koji su razdvojeni hiljadama baznih parova (oko 200kb), budu zajedno klonirani. Posle podkloniranja, svaki segment može da se koristi kao provera za identifikaciju kloniranih DNK sekvenci, da su na nivou hromozoma, udaljeni circa 200kb. *Vidi: positional cloning.*

chromosome landing An alternative to **chromosome walking** for **positional cloning**. Clones of genomic **DNA** are fragmented so as to include both the target gene and a closely linked marker and are screened to select ('land on') those clones that contain the target gene.

Alternativa hromozomskom pomeranju za poziciono kloniranje. Klonovi genomičke DNK su fragmentisani, tako da uključe oboje, ciljni gen i usko vezani marker. Sačuvani su tako da se odaberu oni klonovi koji sadrže ciljni gen.

chromosome mutation A change in the gross structure of a chromosome, usually causing severely deleterious effects in the organism, but can be maintained in a population (*See: chromosomal polymorphism*). They are often due to meiotic errors. The main types of chromosome mutation are translocation, duplication, s and inversion.

Promena u ukupnoj strukturi hromozoma, obično uzrokujući veoma štetne efekte u organizmu, ali se može održati u populaciji (*Vidi: chromosomal polymorphism*). One nastaju često usled grešaka u mejozi. Glavni tipovi hromozomskih mutacija su translokacije, duplikacije, s i inverzije.

chromosome theory of inheritance The theory that chromosomes carry the genetic information and that their behaviour during **meiosis** provides the physical basis for **segregation** and independent assortment.

Teorija da hromozomi nose genetičku informaciju, i da njihovo ponašanje tokom mejoze obezbeđuje fizičku osnovu za razdvajanje i nezavisno parenje.

chromosome walking A strategy for **mapping** or sequencing a chromosome segment and for **positional cloning**. Large restriction **fragments** (or **BAC** clones) are generated and, after probing, a single starting point is identified. New probes are synthesized complementary to sequences of

the same fragment (BAC clone) that are adjacent to the starting point, and these are then used to identify different restriction fragments (BAC clones) overlapping the one selected as the starting point. The procedure is used repetitively, working away from the starting point.

Strategija za mapiranje ili sekvenciranje hromozomskog segmenta, i za poziciono kloniranje. Veliki restrikcioni fragmenti (ili BAC klonovi) se stvaraju i, posle provere, se identifikuje određena startna tačka. Nove provere se sintetizuju dopunski do sekvenci istog fragmenta (BAC klonova) koje su granične startnoj tački, i one se zatim koriste da identifikuju različite restrikcione fragmente (BAC klonova), preklapajući jednog odabranog kao startnu tačku. Postupak se koristi ponavljajući, dalje od startne tačke.

chymosin An **enzyme** that clots milk, used in the manufacture of cheese.

Enzim koji zgrušava mleko, koristi se u proizvodnji sira.

ciliate (adj.) *See* **cilium**.

Vidi: cilium.

cilium (pl.: cilia) Hairlike locomotor structure on certain cells; a locomotor structure on a ciliate protozoan.

Lokomotorna struktura na nekim ćelijama; slična vlati lokomotorna struktura na bičastoj protozoi.

circadian Of physiological activity, etc.: recurring at approximately 24-hour intervals.

Od fiziološke aktivnosti, itd.: vraćajući se u intervalima od približno 24 časa.

circularization The self-ligation of a linear **DNA** fragment having complementary ends, generally generated by digestion with a **restriction endonuclease**. Successful ligation produ-

ces a molecule in the form of a covalently-closed circle. **Plastid DNA** and **plasmids** are examples of naturally circularized DNA.

Samovezivanje linearnog fragmenta DNK koji ima komplementarne krajeve, nastalo putem reakcije sa restrikcijom endonukleazom. Uspesno vezivanje proizvodi molekul u obliku kovalentno-zatvorenog kruga. Plastidna DNK i plazmidi su primeri prirodno okružene DNK.

cis configuration *See*: **coupling**.

Vidi: coupling.

cis heterozygote A double heterozygote that contains two mutations arranged in a *cis* configuration (e.g. $a^+ b^+ / a b$).

Dvostruki heterozigot, koji sadrži dve mutacije postavljene u *cis* konfiguraciji (na pr. a^+b^+ / ab).

cis-acting protein A **protein** with the particular property of acting only on the molecule of **DNA** from which it was expressed.

Protein sa posebnim delovanjem, samo na molekul DNK od kojeg je istisnut.

cis-acting sequence A **nucleotide** sequence that only affects the expression of genes located on the same chromosome.

Sekvenca nukleotida koja utiče samo na ispoljavanje gena lociranih na istom hromozomu.

cistron A **DNA** sequence that codes for a specific polypeptide; a gene.

DNK sekvenca koja kodira specifičan polipeptid; gen.

class switching The process during which a **plasma** cell stops producing antibodies of one class and begins producing antibodies of another class.

Proces tokom kojeg ćelija plazme prestaje da proizvodi antitela jedne kla-

se, i počinje proizvodnju antitela druge klase.

cleave To break phosphodiester bonds of double-stranded **DNA**, usually with a type II **restriction endonuclease**. *Synonyms*: cut; digest.

Raskinuti fosfodiesterske veze dvostrukog lanca DNK, obično sa tipom II restrictione endonuklease. *Sinonim*: cut; digest.

cleaved amplified polymorphic sequence A segment of **DNA** that can be amplified by **polymerase chain reaction** (PCR) and which contains a **DNA** sequence **polymorphism**. Following PCR amplification of a locus, the **amplicon** is treated with a **restriction endonuclease**. If the **recognition site** for this enzyme is present in the amplicon, two or more restriction fragments are generated. Thus sequence variation between individuals at the recognition site(s) can be detected by **electrophoresis**. *See also*: **restriction fragment length polymorphism**.

Segment DNK se umnožava putem reakcije polimeraznog lanca (PCR), i koji sadrži polimorfizam sekvence DNK. Sledeći PCR amplifikaciju lokusa, ampikon se tretira restrikcijom endonukleazom. Ako je mesto prepoznavanja za taj enzim prisutno u ampikonu, stvaraju se dva ili više restrikcijonih fragmenata. Tako varijacija sekvence između individua na mestu prepoznavanja može biti otkrivena putem elektroforeze. *Vidi takođe*: restriction fragment length polymorphism.

cline Variation in one or more phenotypic characters or allele frequencies across a geographical gradient.

Varijacija u jednoj ili više fenotipskih osobina ili učestalosti alela preko geografskog gradijenta.

clonal propagation Asexual propagation of many new plants (**ramets**) from an individual (**ortet**); all have the same genotype.

Aseksualno razmnožavanje mnogih novih biljaka (rameta) od individualne (orteta); sve imaju isti genotip.

clonal selection The production of a population of **plasma** cells all producing the same **antibody** in response to the interaction between a **B lymphocyte** producing that specific antibody and the **antigen** bound by that antibody. *See*: **primary immune response**, **secondary immune response**.

Prirodna populacija plazma ćelija, koje sve proizvode isto antitelo u reagovanju na interakciju između B limfocita, koji proizvodi to specifično antitelo, i antigena, vezanog za to antitelo. *Vidi*: primary immune response, secondary immune response.

clone 1. A group of cells or individuals that are genetically identical as a result of **asexual** reproduction, breeding of completely inbred organisms, or forming genetically identical organisms by nuclear transplantation. 2. Group of plants genetically identical in which all are derived from one selected individual by vegetative propagation. 3. Verb: to clone. To insert a **DNA** segment into a **vector** or host chromosome.

1. Grupa ćelija ili individua koje su genetički identične kao rezultat aseksualne reprodukcije, gajenje potpuno inbred organizama, ili formiranje genetički identičnih organizama putem nuklearne transplantacije. 2. Grupa biljaka koje su genetički identične, u

kojima su sve postale od jedne odabrane individue putem vegetativnog razmnožavanja. 3. Glagol: klonirati. Ubaciti segment DNK u vektor ili hromozom domaćina.

clone bank *See: gene bank.*

Vidi: gene bank.

cloned strain or line A strain or line descended directly from a clone.

Soj ili linija koji direktno potiču od klon.

cloning *See: gene cloning.*

Vidi: gene cloning.

cloning site *See: insertion site.*

Vidi: insertion site.

cloning vector A small, self-replicating DNA molecule – usually a **plasmid** or viral DNA chromosome – into which foreign DNA is inserted in the process of cloning genes or other DNA sequences of interest. It can carry inserted DNA and be perpetuated in a host cell. *Synonym: cloning vehicle.*

Mali, samo – reprodukovani molekuli DNK – obično plazmid ili virusni DNK hromozom-u koji se ubacuje strana DNK u procesu kloniranja gena, ili drugih sekvenci DNK koje su od interesa. Može nositi ubačenu DNK i da bude neprekidno ovekovečena u ćeliji domaćinu. *Sinonim: cloning vehicle.*

cloning vehicle *See: cloning vector.*

Vidi: cloning vector.

closed continuous culture A culture system, in which the inflow of fresh medium is balanced by the **outflow** of corresponding volumes of spent medium. Cells are separated mechanically from outflowing medium and added back to the culture.

Sistem kulture, u kojem je ulivanje svežeg medijuma balansirano izlaskom

odgovarajućih zapremina utrošenog medijuma. Ćelije su odvojene mehanički od odlazećeg medijuma koji otiče, i dodate nazad kulturi.

cluster of differentiation *See: CD molecules.*

Vidi: CD molecules.

cM Abbreviation for **centiMorgan**.

Skraćenica za centiMorgan.

CMP Abbreviation for **cytidine monophosphate**. *See: cytidylic acid.*

Skraćenica za cytidine monophosphate.

Vidi: cytidylic acid.

coat protein *See: capsid.*

Vidi: capsid.

coccus A spherical bacterium.

Sferična bakterija.

co-cloning The unintentional cloning of DNA fragments, along with the desired one, that can occur when the source of DNA being cloned is not sufficiently purified.

Slučajno kloniranje fragmenata DNK, istovremeno sa željenim, koje može nastati kada izvorni DNK koji se klonira, nije dovoljno prečišćen.

coconut milk Liquid **endosperm** of the coconut, often used to supply organic nutrients to *in vitro* cultures of plant cells and tissues.

Tečni endosperm kokosovog oraha, često korišćen za snabdevanje organskim hranljivim materijama za *in vitro* kulture biljnih ćelija i tkiva.

co-culture The joint culture of two or more types of cells, such as a plant cell and a micro-organism, or two types of plant cells. Used in various dual-culture systems or in **nurse culture**.

Združena kultura dva ili više tipova ćelija, kao što su biljna ćelija i mikroorganizam, ili dva tipa biljnih ćelija. Korišćena u različitim dvokulturnim sistemima, ili u zaštitnoj kulturi.

Codex Alimentarius Commission An international regulatory body (part of FAO) responsible for the definition of a set of international food standards. The Commission periodically determines, then publishes a list of food ingredients and maximum allowable levels (the *Codex Alimentarius*) deemed to be safe for human consumption.

Međunarodno pravno telo (deo FAO-a) odgovorno za definiciju pravila međunarodnih standarda o hrani. Komisija periodično određuje, zatim publikuje listu sastojaka hrane i maksimalno dopustivih nivoa (*Codex Alimentarius*) cenjenih da su sigurno dopustivi za ljudsko konzumiranje.

coding The specification of a **peptide** sequence, by the code contained in **DNA** molecules. *See: genetic code.*

Specifikacija pepidne sekvence, putem koda sadržanog u DNK molekulima. *Vidi: genetic code.*

coding sequence That portion of a gene which directly specifies the **amino acid** sequence of its product. Non-coding sequences of genes include **introns** and control regions, such as **promoters**, **operators**, and **terminators**.

Deo gena koji direktno određuje sekvencu aminokiselina svog produkta. Nekodirajuće sekvence gena uključuju introne i kontrolne regione, kao što su promoteri, operateri i terminatori.

coding strand The strand of a **DNA** double helix that contains the same base sequence (after substituting U for T) found in the **mRNA** molecule resulting from **transcription** of that segment of **DNA**. Sometimes called the sense strand. The **mRNA** mole-

cule is transcribed from the other strand, known as the **template** or antisense strand. *See: antisense DNA.*

Lanac dvostruke spirale DNK, koji sadrži istu baznu sekvencu (posle zamenе U za T) nadjenu u mRNK molekulu, nastalom od transkripcije tog segmenta DNK. Ponekad nazvan čulni lanac. Molekul mRNK je transkribovan sa drugog lanca, poznatog kao model ili antičulni lanac. *Vidi: antisense DNK.*

co-dominance Where both **alleles** are expressed in the heterozygous state, so that the **phenotype** reflects a contribution from both alleles. For example, roan coat colour in cattle results from a mixture of red hairs and white hairs, caused by heterozygosity for the red allele and the white allele.

Gde su oba alela ispoljena u heterozigotnom stanju, tako da fenotip odražava doprinos od oba alela. Na primer, crveno -bela prskana boja u goveda nastaje od smeše crvenih i belih dlaka, izazvanih putem heterozigotnosti za crveni alel i beli alel.

co-dominant alleles *See: co-dominance.*

Vidi: co-dominance.

codon One of the groups of three consecutive nucleotides in **mRNA**, which represent the unit of genetic coding by specifying a particular **amino acid** during the synthesis of polypeptides in a cell. Each codon is recognized by a **tRNA** carrying a specific amino acid, which is incorporated into a **polypeptide** chain during **protein** synthesis. In **DNA**, any informative **triplet** of bases, including both coding and control sequences. *See: genetic code, start codon, stop codon.* *Synonym: triplet.* *See: annex 3.*

Jedna od grupa od tri uzastopna nukleotida u mRNK, koja predstavlja jedinicu genetičkog kodiranja specifiirajući određenu aminokiselinu tokom sinteze polipeptida u ćeliji. Svaki kodon se prepoznaje preko tRNK koja nosi specifičnu aminokiselinu koja je uključena u polipeptidni lanac tokom sinteze proteina. U DNK, bilo koji informativni triplet baza, uključujući obe, kodirajuće i kontrolne sekvence. *Vidi*: genetic code, start codon, stop codon. *Sinonim*: triplet. *Vidi*: annex 3.

codon optimization An experimental strategy in which **codons** within a cloned gene – ones not generally used by the host cell **translation** system – are changed by *in vitro* **mutagenesis** to the preferred codons, without changing the amino acids of the synthesized **protein**.

Eksperimentalna strategija u kojoj su kodoni u okviru kodiranog gena-koji nisu uopšte korišćeni od ćelije domaćina translacionog sistema- promenjeni putem *in vitro* mutageneze u željene kodone, bez menjanja aminokiselina sintetisanog proteina.

co-enzyme Synonym for **co-factor**.

Sinonim za co-factor.

co-evolution The evolution of complementary adaptations in two species brought about by the **selection** pressure that each exerts on the other. Common in symbiotic associations, in insect-pollinated plants, etc.

Evolucija dopunskih adaptacija u dvema vrstama, prouzrokovana selekcionim pritiskom, kojeg svaka vrši nad drugom. Uobičajena u simbiotskim asocijacijama, kod biljaka koje oprašuju insekti, itd.

co-factor An organic molecule or inorganic ion necessary for the normal

catalytic activity of an enzyme.

Synonym: **co-enzyme**.

Organska molekula ili neorganski jon koji je potreban za normalnu katalitičku aktivnost enzima. *Sinonim*: co-enzyme.

co-fermentation The simultaneous growth of two micro-organisms in one bioreactor.

Simultani rast dva mikroorganizma u jednom bioreктору.

cohesive end *See*: **extension**.

Vidi: extension.

coincidence The ratio of the observed to the expected frequency of double **cross-overs**, where the expected frequency is calculated by assuming that the two cross-over events occur independently of one another.

Odnos eksperimentalnih prema očekivanoj frekvenciji dvostrukih krosing overa, gde je očekivana frekvencija izračunata pretpostavljajući da se dva događaja krosing overa dešavaju nezavisni jedan od drugoga.

co-integrate A **chimeric DNA** molecule formed by the incorporation at a single site of two different **DNA** molecules.

Himerna DNK molekula, formirana inkorporacijom jednog mesta od dva različita DNK molekula.

co-integrate vector system A two **plasmid** system for plant **transgenesis**.

One plasmid is engineered to carry a **T-DNA** segment incorporating the gene(s) to be introduced. After introduction into *Agrobacterium tumefaciens*, the plasmid undergoes homologous recombination with a resident disarmed **Ti plasmid** to form a single plasmid carrying the genetic information for transferring the genetically engineered T-DNA region to plant cells.

Dvoplazmidni sistem za biljnu transgenezu. Jedan plazmid je stvoren da nosi T-DNK segment spajanjem gena koji će biti uneti. Posle unošenja u *Agrobacterium tumefaciens*, plazmid se podvrgava homolognoj rekombinaciji sa rezidentnim **Ti plazmidom**, da obrazuje jedan plazmid koji nosi genetičku informaciju za prenošenje genetički stvorenog T-DNK regiona u biljne ćelije.

colchicine An alkaloid, obtained from the autumn crocus *Colchicum autumnale*, which inhibits **spindle** formation. When applied during **mitosis**, **chromosomes** are unable to separate during **anaphase**. This property is used to achieve a doubling of the chromosome number. A further use is to halt mitosis at metaphase, the stage at which **karyotypes** are best viewed.

Alkaloid, dobijen od mrazovca *Colchicum autumnale*, koji inhibira formiranje deobnog vretena. Primenjen tokom mitoze, hromozomi nisu u stanju odlaze na polove tokom anafaze. Ta osobina se koristi da se postigne udvostručavanje broja hromozoma. Dalje korišćenje je da se mitozu zadrži u metafazi, stadijumu pri kojem se kariotipovi najbolje vide.

coleoptile Protective sheath covering the **shoot apex** of the **embryo** in the grasses.

Zaštitni omotač, koji pokriva vrh izdanka embriona u travama.

coleorhiza A protective sheath surrounding the **radicle** in the grasses.

Zaštitni omotač koji okružuje korenovku klicu u travama.

co-linearity 1. A general relationship in which the units in one molecule occur in the same sequence as the units

in another molecule which they specify; e.g. the nucleotides in a gene are co-linear with the amino acids in its encoded polypeptide. 2. The phenomenon whereby **gene** order is preserved between distinct species.

1. Odnos u kojem jedinice jednog molekula nastaju u istoj sekvenci kao jedinice u drugom molekulu kojeg one specifikuju; npr. nukleotidi u genu su kolinearni sa aminokiselinama u njegovom enkodiranom polipeptidu. 2. Fenomen kojim je raspored gena sačuvan između posebnih vrsta.

collenchyma A tissue of living cells, found particularly in midribs and leaf petioles. Characterized by **cell** walls unevenly thickened with **cellulose** and hemicellulose, but never lignified; it functions as a mechanical support in young, short-lived or non-woody organs.

Tkivo živih ćelija, nađeno u centralnim nervima na listu i lisnim drškama. Karakterišu se sa nejednako zadebljanim ćelijskim zidovima koji sadže celulozou i hemicelulozom, ali nikada nisu lignificirani; njihova funkcija je mehanička podrška u mladim, kratkotrajnih i nedrvenastih organa.

colony 1. An group of genetically identical cells or individuals derived from a single progenitor. 2. A group of interdependent cells or organisms.

1. Grupa genetički identičnih ćelija ili individua nastalih od jednog progenitora. 2. Grupa međusobno zavisnih ćelija ili organizama.

colony hybridization A technique that uses a **nucleic acid probe** to identify a recombinant bacterial **colony** carrying a particular inserted **DNA**.

Tehnika koja koristi probu nukleinske kiseline da identifikuje rekombinant-

nu bakterijsku koloniju koja nosi posebno ubačenu DNK.

combinatorial library The many novel combinations (consisting of one heavy and one light **immunoglobulin** chain coding region) that are generated when a heavy-chain **library** is combined by random **pairing** with a light-chain library. These constructs are propagated in a **vector**, and their gene products screened for novel affinity properties.

Mnoge nove kombinacije (sastoje se od jednog teškog i jednog lakog imunoglobulinskog lančanog regiona kodiranja) koje su stvorene kada je biblioteka teškog lanca kombinovana slučajnim sparivanjem sa bibliotekom lakog lanca. Ovi sklopovi se umnožavaju u vektoru, i njihovi genski produkti su sačuvani za nove osobine afiniteta.

combining site *See: antibody binding site.*

Vidi: antibody binding site.

commensalism The interaction of two or more dissimilar organisms where the association is advantageous to one without affecting the other(s).

Interakcija dva, ili više različitih organizama, gde je asocijacija od koristi jednom bez uticaja na druge.

companion cell A living cell associated with the **sieve cell** of **phloem** tissue in **vascular** plants.

Živa ćelija, povezana sa ćelijom sita floem tkiva u vaskularnih biljaka.

comparative mapping The comparison of map locations of genes and markers between species. In comparisons between closely related species, this will usually uncover a high degree of **conservation** of **synteny** and **co-linearity**. In these cases, the li-

kely location of many genes can be predicted from **model** system data. Comparisons across wider phylogenetic distances reveal increasing loss of synteny.

Uporedjenje mape lokacija gena i markera između različitih vrsta. U uporedjenjima između usko povezanih vrsta, to će obično otkriti visok stepen konzervacije sintenije i kolinearnosti. U tim slučajevima, verovatna lokacija mnogih gena se pretpostavlja na osnovu podataka model sistema. Uporedjenja ukrštenih širih filogenetskih distanci otkrivaju povećani gubitak sintenije.

comparative positional candidate gene Relates to an indirect means of assigning function to a **QTL**. Where a **QTL** has been linked to a **marker** in one species, and that same marker is linked to a known gene in a **model** system, inferences may be drawn as to the nature of the **QTL**.

Odnosi se na indirektan nači određivanja funkcije prema **QTL**-u. Gde je **QTL** bio vezan za marker u jedne vrste, a da je isti marker povezan sa poznatim genom u model sistemu, zaključci se mogu dobijati po prirodi **QTL**-a.

competent 1. Bacterial cells able to take up **foreign DNA** molecules and thereby become genetically transformed. Can be genetically determined, or induced by physical treatment. 2. A competent cell is capable of developing into a fully functional embryo.

1. Bakterijske ćelije, u stanju da usvoje molekule strane DNK i time postanu genetički transformisane. Mogu biti genetički određene, ili proizvedene fizičkim tretmanom. 2. Kompetentna

ćelija je sposobna za razviće potpuno funkcionalnog embriona.

complement proteins Proteins that bind to **antibody-antigen** complexes and help degrade the complexes by **proteolysis**.

Proteini koji se vezuju za komplekse antitelo-antigen i pomažu razgradnju kompleksa putem proteolize.

complementarity 1. *See: complementary*. 2. The similar correspondence between **DNA** and the **mRNA** transcribed from it.

1. *Vidi: complementary*. 2. Slična komplementarnost između DNK i mRNK, transkribovane od nje.

complementarity - determining regions (Abbreviation: CDR). Regions of the light and heavy subunits of the **immunoglobulin** molecules that interact with the **antigen**. The primary **amino acid** sequences of these regions are highly variable between **antibodies** of the same class. *See: antibody binding site*.

(Skracénica: CDR) Regioni lakših i težih podjedinaca imunoglobulinskih molekula, koji su u interakciji sa antigenom. Primarne sekvence aminokiselina tih regiona su visoko varijabilne između antitela iste klase. *Vidi: mesto vezivanja antitela*.

complementary Two **DNA** molecules are complementary to one another when each successive base position from the 5' end in the first molecule is matched by the corresponding residue in the second, starting at the 3' end, according to the normal **base pair** rules (i.e. A for T, C for G). In the appropriate conditions, two complementary **single-stranded DNA** molecules will renature to form a double-stranded molecule. Comple-

mentary nucleotides are members of the pairs adenine-thymine, adenine-uracil, and guanine-cytosine that have the ability to hydrogen bond to one another.

Dva molekula DNK su komplementarna jedan drugom kada je svaka sukcesivna bazna pozicija 5' kraja u prvom molekulu saglasna sa odgovarajućom, koja počinje na 3' kraju prema normalnim pravilima baznog para (tj. A za T, C za G). U povoljnim uslovima, dva komplementarna jednolančana DNK molekula će ponovo formirati molekul sa dva lanca. Komplementarni nukleotidi su parovi adenin-timin, adenin-uracil, i guanin-citozin koji se vodonikovom vezom međusobno povezuju.

complementary DNA (Abbreviation: **cDNA**). A **DNA** strand synthesized *in vitro* from a mature **RNA** template using **reverse transcriptase**. **DNA polymerase** is then used to create a double-stranded molecule. Differs from genomic DNA by the absence of **introns**. *Synonym: copy DNA*.

(Skracénica: cDNA) DNK lanac sintetisan *in vitro* od RNK, korišćenem reverznoj transkriptazi. DNK polimeraza se zatim koristi da stvori dvolančani molekul. Razlikuje se od genomske DNK odsustvom introna. *Sinonim: copy DNA*.

complementary entity 1. Synonym of **base pair**. 2. One of a pair of segments or strands of **nucleic acid** that will hybridize with one another.

1. *Sinonim* baznog para. 2. Jedan od parova segmenata ili lanaca nukleinske kiseline, koji će se hibridizovati.

complementary genes Two or more interdependent genes, such that (in the case of dominant complementarity)

the **dominant** allele from either gene can only produce an effect on the **phenotype** of an organism if the dominant allele from the other gene is also present; in the case of **recessive** complementarity, only double **homozygous recessive** individuals show the effect.

Dva ili više međusobno zavisnih gena, tako da (u slučaju dominantne komplementarnosti) dominantan alel od bilo kojeg gena može jedino proizvesti fenotip nekog organizma ako je dominantan alel iz drugog gena takođe prisutan; u slučaju recesivne komplementarnosti, samo dvostruko homozigotne recesivne individue pokazuju efekt.

complementary homopolymeric tailing The process of adding **complementary nucleotide** extensions to **DNA** molecules, (e.g. deoxyguanosine) to the 3' end of one **DNA** molecule and **deoxycytidine** to the 5' end of another **DNA** molecule) to facilitate the **ligation** of the two **DNA** molecules. *Synonyms:* **dA - dT tailing**, **dG - dC tailing**.

Proces dodavanja komplementarnih nukleotidnih nastavaka molekulama DNK (npr. deoksiguanozina) na 3' kraju jedne DNK molekule, a deoksicitidina na 5' kraj druge DNK molekule, kako bi olakšali vezivanje dva molekula DNK. *Sinonimi:* dA-dT nastavak, dG-dC otpadak.

complementation *See:* **genetic complementation**.

Vidi: genetic complementation.

complementation test A genetic method to test whether or not independent mutations are allelic. In a cross between the two **mutant** individuals, the genotype will be $m_1 m_2$ if the mutations are allelic and $m_1 +/+ m_2$ if

non-allelic. The **phenotype** of the former will be mutant, but that of the latter will be **wild type** (normal). *Synonym:* **trans test**.

Genetički metod za testiranje, da li su ili nisu nezavisne mutacije alelne. U meleza između dve mutantne individue, genotip će biti $m_1 m_2$ ako su mutacije alelne, a $m_1 +/+ m_2$ ako nisu alelne. Fenotip prve biće mutant, ali druge divlji tip (normalan). *Sinonim:* trans test.

complete digest The treatment of a **DNA** preparation with a **restriction endonuclease** for sufficient time for all of the potential target sites within that **DNA** to have been cleaved. *Opposite:* **partial digest**.

Tretman pripreme DNK restrikcijom endonukleazom sa dovoljno vremena za sva ciljna mesta koja treba da budu razdvojena u okviru te DNK. *Suprotno:* partial digest.

composite transposon A **transposon** formed when two identical or nearly identical transposons insert on either side of a non-transposable segment of **DNA**.

Transpozon koji se obrazuje kada se dva identična ili skoro identična transpozona umetnu na bilo koju stranu neprenosivog segmenta DNK.

compound chromosome A chromosome formed by the fusion of two separate chromosomes, as in attached-X chromosomes or attached-X-Y chromosomes.

Hromozom nastao putem spajanja dva zasebna hromozoma, kao u vezanim-X hromozomima, ili vezanim-X-Y hromozomima.

concatemer A **DNA** segment made up of repeated sequences linked head to tail.

Segment DNK načinjen od ponovljenih segmenata, vezanih od glave ka za repu.

concordance Identity of matched pairs or groups for a given trait, such as sibs expressing the same trait.

Identitet odgovarajućih parova ili grupa za datu osobinu, kao kod srodnika koji ispoljavaju istu osobinu.

conditional lethal mutation A **mutation** that is lethal under one set of environmental conditions (the restrictive conditions, commonly associated with high temperature) but is viable under another set of environmental conditions (the permissive conditions).

Mutacija koja je letalna pod jednim nizom uslova spoljne sredine (restriktivna stanja, zajednički povezana sa visokom temperaturom), ali je vijabilna pod drugim uslovima sredine (dopustivim uslovima).

conditioning 1. The effects on phenotypic characters of external agents during critical developmental stages. 2. The undefined interaction between tissues and **culture medium** resulting in the growth of single cells or small aggregates. Conditioning may be accomplished by immersing cells or callus contained within a porous material (such as **dialysis** tubing) into fresh medium for a period dependent on cell density and a volume related to the amount of fresh medium.

1. Efekti fenotipskih osobina spoljnih agenasa tokom kritičnih stadijuma razvića. 2. Nedefinisana interakcija između tkiva i kulture medijuma koja dovodi do rasta pojedinih ćelija ili malih agregata. Kondicioniranje može biti ostvareno potapanjem ćelija ili kalusa, sadržanog u poroznom

materijalu (kao što su cevi dijalize), u svež medijum u zavisnosti od gustine ćelija, i zapremine koja zavisi od količine svežeg medijuma.

conformation The various three dimensional shapes that can be adopted by a given molecule. In particular, the different ways in which the **primary sequence** of a biological **polymer** may be folded. This is determined by intra-molecular forces, including hydrogen bonding and, in **proteins**, **disulphide bridges**. In **proteins**, conformation is often critical for biological activity, and the functions of some molecules are carried out by switching between two alternative stable conformations. The native conformation found *in vivo* may be changed to typically less ordered, uncharacterized, and usually biologically-inactive forms by **denaturing**.

Različiti trodimenzionalni oblici koji mogu da budu usvojeni od određenog molekula. Različiti načini u kojima primarna sekvenca od biološkog polimera može da se savije. To je određeno putem intra-molekularnih sila, uključiv vezivanja vodonikom i u proteinima, disulfidnim mostovima. U proteinima, konformacija je često kritična za biološku aktivnost i funkcije nekih molekula se realizuju putem skretanja između dve alternativne stabilne konformacije. Prirodna konformacija nadjena *in vivo* može se promeniti do tipično manje sredjenih, nekarakterističnih, i obično biološki-neaktivnih oblika putem denaturacije.

conidium (pl.: conidia) An **asexual spore** produced by a specialized hypha in certain fungi.

Aseksualna spora, nastala od specijalizovane hife u izvesnih gljiva.

conjugation 1. Union of **gametes** or **unicellular** organisms during fertilization. 2. The unidirectional transfer of **plasmid DNA** from one bacterium cell to another, involving cell-to-cell contact. The **plasmid** usually encodes the majority of the functions necessary for its own transfer. 3. Attachment of sugar and other polar molecules to less polar compounds, thus making them more water soluble.

1. Skup gameta ili jednoćelijskih organizama tokom oplodjenja. 2. Jednosmerni transfer plazmidne DNK od jedne bakterijske ćelije do druge, uključujući kontakt od ćelije do ćelije. Plazmid obično dekodira većinu od funkcija potrebnih za sopstveni transfer. 3. Lepljenje šećera i drugih polarnih molekula za manje polarna jedinjenja, čineći ih tako više rastvorljivim u vodi.

conjugative functions Plasmid-based genes and their products that facilitate the transfer of a **plasmid** from one bacterium to another via **conjugation**.

Geni bazirani na plazmidima i njihovi produkti koji olakšavaju transfer plazmida od jedne do druge bakterije putem konjugacije.

consanguinity Related by descent from a common ancestor.

Povezano prenosom od zajedničkog pretka.

consensus sequence The part of a gene or **signal sequence** that is shared over a wide range of members of a gene family, both within a given species, or in comparisons between species.

Deo gena ili signalna sekvenca koja je učestvovala u širokom rasponu članova familije gena, kako u okviru da-

tih vrsta, tako i u poredjenjima između vrsta.

conservation *See: gene (resources) conservation, conserved sequence*

Vidi: gene (resources) conservation, conserved sequence.

conserved sequence An identical or highly similar sequence of **nucleotides** or **amino acids** which occurs as part, or all of a number of different genes or **proteins**, in either the same or different species. This conservation can signify which part of the full sequence is responsible for the functionality.

Identična, ili vrlo slična sekvenca nukleotida ili aminokiselina, koja nastaje kao deo, ili celina različitih gena ili proteina, u istim, ili različitim vrstama. Ta konzervacija može označiti koji deo sekvence je odgovoran za funkcionalnost.

constant domains Regions of **antibody** chains that have the same **amino acid** sequence in different members of a particular class of antibody molecules.

Regioni lanaca antitela koji imaju istu aminokiselinsku sekvencu u različitim članovima posebne klase molekula antitela.

constitutive The expression of a **gene** without any requirement for **induction**.

Ekspresija gena bez bilo kakvog zahteva za indukciju.

constitutive gene A gene that is continually expressed in all cells of an organism.

Gen koji se stalno ispoljava u svim ćelijama nekog organizma.

constitutive promoter An unregulated **promoter** that allows for continual **transcription** of its associated gene.

Jedan neregulirani promotor koji omogućava stalnu transkripciju svog povezanog gena.

constitutive synthesis Continual synthesis of a **gene** product by an organism.

Kontinuirana sinteza produkta gena nekog organizma.

construct An engineered **chimeric DNA** designed to be transferred into a cell or tissue. Typically, the construct comprises the gene or genes of interest, a **marker gene** and appropriate control sequences as a single package. A repeatedly-used construct may be called a cassette.

Proizvedena himerna DNK, koja može da bude prenetu u ćeliju ili tkivo. Konstrukt uključuje gen ili gene od interesa, marker gen i odgovarajuće lekovite supstance kao pojedinačno pakovanje. Ponovno-korišćen konstrukt može biti nazvan kasetom.

contained use *See: containment.*

Vidi: containment.

containment Measures and protocols applied to limit contact of **genetically modified organisms** or **pathogens** with the external environment. *Synonym: contained use.*

Mere i protokoli, primenjeni da ograniče kontakt genetički modifikovanih organizama ili patogena sa spoljnom sredinom. *Sinonim: contained use.*

contaminant 1. An undesired chemical present in a compound or mixture of compounds. 2. Any **micro-organism** accidentally introduced into a **culture** or **culture medium**. The contaminant may compete with the desired cells and consequently inhibit their growth, or totally replace them.

1. Nepoželjna hemikalija prisutna u jedinjenju ili smeši jedinjenja. 2. Bilo

koji mikroorganizam slučajno unet u kulturu ili medijum kulture. Kontaminant može konkurisati željenim ćelijama i kao posledica inhibirati njihov rast, ili ih potpuno zameniti.

contig A set of overlapping cloned **DNA** fragments that can be assembled to represent a defined region of the **chromosome** or **genome** from which they were obtained. Contig definition is a necessary step for assembling whole genome sequences.

Niz preklapajućih kloniranih fragmenata DNK koji da predstavljaju određeni region hromozoma ili genoma od kojih su dobijeni. Definicija kontinga je potreban korak za sakupljanje celih sekvenci genoma.

continuous culture A **suspension** culture continuously supplied with nutrients by the inflow of fresh medium. The culture volume is normally constant.

Suspenziona kultura kontinuirano snabdevena sa hranljivim materijama putem ulivanja svežeg medijuma. Zapremina kulture je normalno konstantna.

continuous fermentation A process in which cells or micro-organisms are maintained in culture in the exponential **growth phase** by the continuous addition of fresh medium that is exactly balanced by the removal of **cell suspension** from the bioreactor.

Proces, u kojem se ćelije ili mikroorganizmi održavaju u kulturi u ekponencijalnoj fazi rasta, putem stalnog davanja svežeg medijuma koji je tačno izbalansiran odstranjenjem suspenzije ćelija iz bioreaktora.

continuous variation Variation where individuals cannot be classified as belonging to one of a set of discrete

classes. Characters showing continuous variation are referred to as quantitative. *See: polygene, quantitative trait locus.* *Opposite: discontinuous variation.*

Varijabilnost, gde se individue ne mogu klasifikovati tako da pripadaju jednom od niza diskretnih klasa. Osobine koje ispoljavaju kontinuiranu varijabilnost definišu se kao kvantitativne. *Vidi: polygene, quantitative trait locus.* *Suprotno: discontinuous variation.*

controlled environment A closed environment in which parameters, such as light, temperature, relative humidity and sometimes the partial gas pressure (and possibly its composition), are fully controlled.

Zatvorena sredina, u kojoj su parametri kao svetlost, temperatura, relativna vlažnost i ponekad parcijalni pritisak gasa (ili njegov sastav), potpuno kontrolisani.

controlling element In eukaryotes, **transposons** which affect the activity of known genes. This can occur as a result of the **integration** within, or close to a gene, thereby disrupting its activity; or following its **excision** from such a site, thereby restoring activity.

U eukariota, transpozoni koji utiču na aktivnost poznatih gena. To može nastati kao rezultat integracije u okviru, ili blisko genu, time razarajući njenu aktivnost; ili prateći njeno otsecanje od takvog mesta i time vraćajući aktivnost.

Convention on Biological Diversity (Abbreviation: CBD). The international treaty governing the conservation and use of biological resources around the world, that has also called

for the establishment of rules to govern the international movement of non-indigenous living organisms and **genetically modified organisms**.

(Skracenicica: CBD) Medjunarodni sporazum o konzervaciji i korišćenju bioloških resursa u svetu, koji je takođe odgovoran za određivanje pravila upravljanja na medjunarodnom nivou genetički modifikovanih organizama.

conversion The development of a **somatic embryo** into a plant.

Razviće somatskog embriona u biljku.

coordinate repression Correlated regulation of a **structural gene** within an **operon** by a molecule that interacts with the **operator**.

Regulisanje delovanja strukturnog gena u okviru jednog operona putem molekule koja je u interakciji sa operatorom.

copy DNA *See: complementary DNA.* *Vidi: complementary DNK.*

copy number The number of a particular **plasmid** per bacterium cell, or **gene per genome**.

Broj određenog plazmida po bakterijskoj ćeliji, ili gena po genomu.

co-repressor An **effector molecule** that forms a complex with a **repressor** and turns off the expression of a gene or set of genes.

Molekul efektor koji formira kompleks sa represorom i onemogućava ispoljavanje jednog ili više gena.

corpus A part of the **apical meristem** below the **tunica**. In the corpus, cells divide in all directions, and increase in volume.

Deo vršnog meristema ispod tunike. U telu, ćelije se dele u svim pravcima, i povećavaju se po zapremini.

correlation A statistical association between variables.

Statističko povezivanje između varijabli.

cortex Primary tissue of a stem or root, bounded externally by the **epidermis** and internally in the stem by the **phloem**, and in the root by the pericycle.

Primarno tkivo stabla ili korena, spolja vezano epidermisom, u stablu sa floemom, a u korenu sa periciklom.

cos ends The 12-base, single-strand, complementary **extensions** of **bacteriophage lambda DNA**.

Dvanaesto - bazna, jednolančana, komplementarna proširenja bakteriofaga lambda DNK.

cos sites See **cos ends**.

Vidi: cos ends.

co-segregation The joint **inheritance** of two characters, usually the result of genetic **linkage**.

Zajedničko nasledjivanje dve osobine, obično rezultat genetičke vezanosti.

cosmid A synthetic **plasmid** which incorporates the **cos ends**, and one or more **selectable** markers such as an **antibiotic resistance** gene. Cosmids were designed as **vectors** able to incorporate **DNA** fragments up to 40–50 kb in size.

Sintetički plazmid, koji uključuje cos krajeve, i jedan ili više markera koji se mogu odabrati, kao što je gen rezistentnosti na antibiotik. Kosmidi su namenjeni kao vektori koji su u stanju da uključe DNK fragmente veličine 40–50 kb.

co-suppression A natural **gene silencing** phenomenon, which probably evolved as part of plants' defence against viral attack, but which has become important in the context of

plant **transgenesis**. Operates by inhibiting the expression of **transgenes** with homology to native **DNA** through the interaction of native and transgenic **mRNA**.

Prirodan fenomen inaktivnosti gena, koji je verovatno razvijen kao odbrana biljke od napada virusa, ali koji je postao važan u kontekstu biljne transgeneze. Radi putem inhibicije ispoljavanja transgena, sa homologijom prema prirodnoj DNK putem interakcije prirodne i transgene mRNK.

cot curve A method to estimate the heterogeneity of sequence of a **DNA** preparation, based on the observation that the more homogenous the **DNA**, the more easily (and therefore faster) the annealing of **single-stranded DNA** will occur. The Cot curve plots the extent of annealing from a fully single-stranded preparation over time. The cot (product of initial concentration and time) at which half the DNA has re-natured is the half-cot, a parameter indicating both the degree of heterogeneity in a complex mixture, and of the extent of complementarity in a mixture of two single-stranded DNA molecules.

Metod za izračunavanje heterogenosti sekvence DNK, zasnovan na činjenici da što je veća homogenost DNK, lakše će se (i zbog toga brže) formirati DNK sa jednim lancem. Kot krivina kroji planove formiranja od potpuno jednostrukog preparata tokom vremena. Kot (produkt početne koncentracije i vremena), pri kojem se polovina DNK denaturisala je polukot, parametar koji pokazuje, kako stepen heterogenosti u kompleksnoj smeši, tako obim komplementarnosti u smeši dva jednolančana molekula DNK.

co-transfection The procedure by which a **baculovirus** and a transfer **vector** are simultaneously introduced into insect cells in culture.

Postupak putem kojeg se bakulovirus i transfer vektor simultano uvode u ćelije insekata u kulturi.

co-transformation A protocol for producing **transgenesis**, in which **host** (plant or animal) cells are transformed simultaneously with two different **plasmids**, one of which carries a **selectable marker**, and the other the gene to be transferred. Relies on the observation that given a sufficiently high concentration of both plasmids, transformed cells will have incorporated both plasmids, possibly at different genomic **loci**. If the transgenes are separable through normal meiotic recombination, transgenic individuals without the selectable marker can be selected in subsequent generations.

Protokol za proizvodnju transgeneze, u kojoj su (biljne ili životinjske) ćelije domaćina transformisane simultano sa dva različita plazmida, od kojih jedan nosi selektirani marker, a drugi gen koji će se transferisati. Zasniva se na činjenici da će date u dovoljno visokoj koncentraciji oba plazmida, transformisane ćelije imati pripojena oba plazmida, verovatno na različitim genomskim lokusima. Ako su transgeni razdvojni putem normalnih mejotičkih rekombinacija, transgene individue bez selektivnog markera mogu da budu odabrane u kasnijim generacijama.

cotyledon Leaf-like structures at the first **node** of the seedling stem. In some **dicotyledons**, they represent a food storage organ for the germinating seedling.

Strukture slične listu na prvom kolencu stabla izdanka. U nekim dikotilama,

one predstavljaju organ skladištenja hrane za izdanak koji klija.

coupling The phase state in which either two **dominant** or two **recessive** alleles of two different genes occur on the same chromosome. *Synonym: cis configuration. Opposite: repulsion; trans configuration.*

Fazno stanje u kojem se javljaju, bilo dva dominantna, ili dva recesivna alela koja potiču od dva različita gena na istom hromozomu. *Sinonim: cis konfiguracija. Suprotno: repulzija, trans konfiguracija.*

covalently-closed circular DNA (Abbreviation: ccc DNA). A **DNA** molecule in which the free ends have **ligated** to form a circle. The strands remain linked together even after denaturation. **Plasmids** exist in this form in their *in vivo* state. In its native form, ccc **DNA** will adopt a supercoiled configuration. *See: circularization.*

(Skrtačenica: cccDNK) Molekul DNK u kojem su slobodni krajevi vezani tako da formiraju krug. Lanci ostaju povezani, čak i posle denaturacije. Plazmidi postoje u tom obliku u njihovom *in vivo* stanju. U njenom prirodnom obliku, cccDNK će usvojiti vrlo spiralizovanu konfiguraciju. *Vidi: circularization.*

CP4 EPSPS Abbreviation for CP4 5-enolpyruvyl-shikimate-3-phosphate synthase. *See: enolpyruvyl-shikimate-3-phosphate synthase.*

Skrtačenica za CP4 5-enolpyruvyl-shikimate-3-phosphate syntase. *Vidi: enolpyruvyl-shikimate-3-phosphate synthase.*

cpDNA Abbreviation for **chloroplast DNA**.

Skrtačenica za DNK hloroplasta.

cross The mating of two individuals or populations. *See:* **cross-breeding**.

Parenje dve individue ili populacije. *Vidi:* cross-breeding.

cross hybridization The annealing of a single-stranded **DNA** sequence to a single-stranded target **DNA** to which it is only partially complementary. Often, this refers to the use of a **DNA probe** to detect **homologous** sequences in species other than the origin of the **probe**.

Kaljenje sekvence jednolančane DNK jednolančanu ciljnu DNK, kojoj je ona samo parcijalno komplementarna. Često se to odnosi na korišćenje probe DNK za otkrivanje homolognih sekvenci u vrsta drugačijih od porekla probe.

cross pollination Application of **pollen** from one plant to another to effect the latter's fertilization.

Primena polena jedne biljke na drugu, u cilju oplodjenja druge.

cross pollination efficiency The ease with which **cross pollination** can be achieved. Generally measured by the number of **hybrid** progeny generated per flower pollinated.

Slučaj kod kojeg može da se izvrši stranooplodnja. Opšte uzev, meren brojem hibridnog potomstva nastalog po oplodjenom cvetu.

cross-breeding Mating between members of different populations (lines, breeds, races or species). *See:* **cross**.

Parenje između različitih populacija (linija, rasa, sojeva ili vrsta). *Vidi:* cross.

crossing over The process by which **homologous** chromosomes exchange material at **meiosis** through the breakage and reunion of non-sister chro-

matids. *See:* **recombination**, **chiasma**.

Proces putem kojeg dolazi do izmene materijala homolognih hromozoma u mejozi, putem preloma i ponovnog sjedinjenja nesestrinskih hromatida. *Vidi:* recombination, chiasma.

crossing-over unit *See:* **recombination fraction**.

Vidi: recombination fraction.

cross-over *See:* **chiasma**.

Vidi: chiasma.

crown The base of the **stem** of cereals and forage species from which tillers or branches arise. In woody plants, the root-stem junction. In forestry, the top portion of the tree.

Osnova stabla cerealija i krmnih biljaka od kojih nastaju bokori ili grane. U drvenastih biljaka, spoj korena-stabla. U šumarstvu, gornji deo drveta.

crown gall A tumorous growth at the base of certain plants characteristic of infection by *Agrobacterium tumefaciens*. The **gall** is induced by the **transformation** of the plant cell by portions of the **Ti plasmid**.

Tumor rast na osnovi nekih biljaka koji se karakteriše infekcijom sa *Agrobacterium tumefaciens*. Tumor je izazvan transformacijom biljne ćelije delovima Ti plazmida.

CRP Abbreviation for catabolite regulator protein. *See:* **catabolite activator protein**.

Skraćenica za protein, katabolički regulator. *Vidi:* catabolite activator protein.

cry proteins A class of crystalline **proteins** produced by strains of *Bacillus thuringiensis*, and engineered into crop plants to give **resistance** against insect pests. These **proteins** are toxic to certain categories of insects (e.g.

corn borers, corn rootworms, mosquitoes, black flies, armyworms, tobacco hornworms, some types of beetles, etc.), but are harmless to mammals and most beneficial insects.

Synonym: **delta endotoxins.**

Klasa kristalnih proteina, koje proizvode sojevi *Bacillus thuringiensis*, ugrađeni su u useve da uticu na rezistentnost prema štetnim insektima. Ovi proteini su toksični za izvesne kategorije insekata (na pr. kukuruznog moljca, kukuruzne zlatice, komaraca, simulida, sovice, rožastog crva duvana, neki tipovi buba, itd.), ali su bezopasni za sisare i većinu korisnih insekata. *Sinonim:* delta endotoxins.

cryobiological preservation The preservation of **germplasm** resources in a dormant state by storage at ultra-low temperatures, often in liquid nitrogen. Currently applied to storage of plant seeds and **pollen**, micro-organisms, animal **sperm**, and **tissue culture** cell lines. *Synonyms:* **cryopreservation, freeze preservation.**

Konzervisanje izvora germaplazme u dormantnom stanju skladištenjem pri ultra-niskim temperaturama, često u tečnom azotu. Primenjuje se za skladištenje biljnih semena i polena, mikroorganizama, životinjske sperme i ćeliskih linija kulture tkiva. *Sinonim:* cryopreservation, freeze preservation.

cryogenic At very low temperature.

Pri vrlo niskoj temperaturi.

cryopreservation See: **cryobiological preservation.**

Vidi: cryobiological preservation.

cryoprotectant Compound preventing cell damage during successive free-

zing and thawing processes. Cryoprotectants are agents with high water solubility and low toxicity. Two types commonly used: permeating (glycerol and **DMSO**) and non-permeating (sugars, dextran, ethylene glycol, **polyvinylpyrrolidone** and hydroxyethyl starch).

Jedinjenje koje sprečava oštećenje ćelije tokom sukcesivnih procesa zamrzavanja i otapanja. Krioprotektanti su agensi sa visokom vodenom stabilnošću i niskom toksičnošću. Dva tipa koji se uobičajeno koriste: prožimajući (glicerol i DMSO) i neprožimajući (šećeri, dekstran, etilen glikol, polivinilpirolidon i hidroksietil skrob).

cryptic Anything hidden. 1. Structurally **heterozygous** individuals that are not identifiable as they do not show abnormal meiotic chromosome pairing configurations ('cryptic structural hybrids'). 2. A form of polymorphism controlled by recessive genes ('cryptic **polymorphism**'). 3. Any **mutation** which is exposed by a sensitizing mutation and otherwise poorly detected (such mutations probably escape detection because of the plasticity of composition of the corresponding polypeptide). 4. Phenotypically very similar species (cryptic species) which do not hybridize under normal conditions. 5. Cryptic genetic variation refers to the existence of, for example, alleles conferring high performance for a **trait**, in a breed that has low performance for that trait.

Bilo šta skriveno. 1. Strukturno heterozigotne individue koje se ne mogu identifikovati, pošto ne pokazuju abnormalno parenje hromozoma u me-

jozi. („kriptički strukturni hibridi“).

2. Oblik polimorfizma pod kontrolom recesivnih gena („kriptički polimorfizam“).

3. Bilo koja mutacija koja je ispoljena putem osjetljive mutacije, i inače teško se otkriva, (takve mutacije verovatno se ne mogu otkriti zbog plastičnosti sastava odgovarajućeg peptida).

4. Fenotipski vrlo slične vrste (kriptične vrste) koje se ne hibridizuju u normalnim uslovima.

5. Kriptična genetička varijacija odnosi se na postojanje od na pr., alela koji daju visoku performansu za osobinu, u rasi koja ima nisku performansu za tu osobinu.

CTP Abbreviation for 1. **cytidine 5'-triphosphate**, which is required for **RNA** synthesis since it is a direct precursor molecule; 2. **Chloroplast transit peptide**.

Skraćenica za 1. cytidine 5'-triphosphate, koji je potreban za sintezu RNK, pošto je to direktna prekursor molekula; 2. Hloroplast tranzit peptid.

cultigen A cultivated plant **species** with no known wild progenitor.

Kultivisana biljna vrsta bez poznatog divljeg progenitora.

cultivar (Abbreviation: cv). An **INTERNATIONALLY** accepted term denoting a **variety** of a cultivated plant. Must be distinguishable from other varieties by stated characteristics and must retain their distinguishing characters when reproduced under specific conditions.

(Skraćenica: cv) Medjunarodno prihvaćen izraz koji označava varijetet gajene biljke. Mora biti različit od drugih varijeteta putem utvrđenih karakteristika, i mora zadržati osobine koje ih razlikuju kada se reprodukuje u specifičnim uslovima.

culture A **population** of plant or animal cells or micro-organisms grown under controlled conditions.

Populacija biljnih ili životinjskih ćelija, gajenih u kontrolisanim uslovima.

culture alteration A term used to indicate a persistent change in the properties of a culture's behaviour (e.g. altered morphology, **chromosome** constitution, virus susceptibility, nutritional requirements, proliferative capacity, etc.). The term should always be qualified by a precise description of the change which has occurred in the culture.

Izraz, korišćen da ukaže na stalne promene u osobinama ponašanja kulture (npr. izmenjena morfologija, hromozomska konstitucija, podložnost virusu, potrebe u ishrani, kapacitet razmnožavanja, itd.). Izraz bi trebalo uvek kvalifikovati preciznim opisom promene koja je nastala u kulturi.

culture medium Any nutrient system for the cultivation of cells, bacteria or other organisms; usually a complex mixture of organic and inorganic nutrients.

Bilo koji sistem hraniva za kultivisanje ćelija, bakterija, ili drugih organizama; obično kompleksna smeša organskih i neorganskih hranljivih materija.

culture room A dedicated room for maintaining **cultures**, often in a **controlled environment**.

Prostorija namenjena za održavanje kultura, često u kontrolisanoj sredini.

curing The elimination of a **plasmid** from its host cell. Many agents which interfere with **DNA** replication, e.g. **ethidium bromide**, can cure plasmids from either bacterial or eukaryotic cells.

Eliminacija plazmida iz ćelije domaćina. Mnogi agensi koji se mešaju sa replikacijom DNK, na pr. etidijumbromid, mogu da izleče plazmide, bilo od bakterijskih ili eukariotskih ćelija.

cut See: **cleave**.

Vidi: cleave.

cuticle Layer of cutin or wax, formed on the outer surface of leaves and fruits, thought to have evolved to reduce evaporative water loss.

Sloj kutina ili voska, formiran na spoljnoj površini lišća i plodova, za koji je razvijen da smanji gubitak vode isparavanjem.

cutting A detached plant part that, with appropriate treatment, can regenerate into a complete plant.

Odvojen biljni deo koji, odgovarajućim tretmanom može da se regeneriše u kompletnu biljku.

cybrid A hybrid, originating from the fusion of a cytoplasm (the **cytoplasm** without nucleus) with a whole cell derived from a different species.

Hibrid koji potiče iz fuzije citoplazma (citoplazme bez nukleusa) sa ćelijom poreklom od različitih vrsta.

cyclic adenosine monophosphate (Abbreviations: cyclic AMP, cAMP). A „messenger“ molecule that regulates many intracellular reactions by transducing signals from extracellular growth factors to cellular metabolic pathways.

(Skraćenica: cyclic AMP, cAMP) „Mesendžer“ molekul koji reguliše mnogo unutarćelijskih reakcija putem prenošenja signala od vanćelijskih faktora rasta do ćelijskih metaboličkih putanja.

cyclic AMP Abbreviation for **cyclic adenosine monophosphate**.

Skraćenica za cyclic adenosine monophosphate.

cyclodextrin Cyclic **oligomer** of glucose.

Ciklični oligomer glukoze.

cycloheximide A molecule that inhibits **protein** synthesis in eukaryotes, but not in prokaryotes. It blocks **peptide bond** formation by binding to the large ribosomal subunits. *Synonym*: actidione.

Molekul koji inhibira sintezu proteina u eukariota, ali ne u prokariota. On blokira obrazovanje peptidne veze vezivanjem na velike podjedinice ribozoma. *Sinonim*: actidione.

cytidine The (ribo)**nucleoside** resulting from the combination of the **base cytosine** (C) and the sugar D-**ribose**. The corresponding **deoxyribonucleoside** is called deoxycytidine. See: **CTP** (1), **dCTP**, **cytidylic acid**.

(Ribo)nukleozid koji nastaje od kombinacije baznog citozina (C) i šećera D riboze. Odgovarajući dezoksiribonukleozid se zove deoksicitidin. *Vidi*: CTP (1), dCTP, cytidylic acid.

cytidine triphosphate (cytidine 5'-triphosphate) See: **CTP** (1).

Vidi: CTP (1)

cytidylic acid *Synonym* for **cytidine** monophosphate (abbreviation: CMP), a (ribo)**nucleotide** containing the **nucleoside** cytidine. The corresponding deoxyribonucleotide is called deoxycytidine 5'-monophosphate or deoxycytidylic acid.

Sinonim za cytidine monophosphate (skraćena: CMP), (ribo)nukleotid koji sadrži nukleozid citidin. Odgovarajući dezoksiribonukleotid je nazvan deoksicitidine 5' -monofosfat ili deoksicitidilna kiselina.

cytochrome A class of pigments in plant and animal cells, usually in the

mitochondria. They function as electron carriers in respiration.

Grupa pigmenata u biljnim i životinjskim ćelijama, obično u mitohondrijama. Oni funkcionišu kao nosači elektona u disanju.

cytochrome p450 A highly diversified set (more than 1500 known sequences) of heme-containing **proteins**. Frequently called hydroxylases, although P450 **proteins** can perform a wide spectrum of other reactions. In bacteria they are soluble and approximately 400 amino acids long; eukaryotic P450s are larger – about 500 amino acids. In mammals they are critical for drug metabolism, haemostasis, cholesterol **biosynthesis** and steroidogenesis; in plants they are involved in plant **hormone** synthesis, phytoalexin synthesis, flower **petal pigment** biosynthesis and many unknown functions. In fungi they make ergosterol and they are involved in pathogenesis. Bacterial P450s are key elements in **antibiotic** synthesis.

Visoko raznovrstan niz (više od 1500 poznatih sekvenci) proteina koji sadrže heme. Često nazvan hidroksilaze, iako P450 proteini mogu da ostvare široki spektar drugih reakcija. U bakterija, oni su rastvorljivi, i oko 400 aminokiselina dugi; eukariotični P450 su duži -oko 500 aminokiselina. U sisara, oni su kritični za metabolizam leka, hemostazu, biosintezu holesterola i steroidnu genuzu; u biljaka oni su uključeni u sintezu biljnih hormona, sintezu fitoaleksina, biosintezu cvetnog pigmenta latica, i drugih nepoznatih funkcija. U gljiva, oni proizvode ergosterol i uključeni su u patogenezu. Bakterijski P450 su ključni elementi u sintezi antibiotika.

cytogenetics The biology of chromosomes and their relation to the transmission and **recombination** of genes.

Biologija hromozoma i njihovog odnosa u transmisiji i rekombinaciji gena.

cytokine A generic name for a diverse group of soluble **proteins** and peptides which act as humoral regulators at extremely small concentrations and which, either under normal or pathological conditions, modulate the functional activities of individual cells and tissues. *See: lymphokine, monokine.*

Opšti naziv za različitu grupu rastvorljivih proteina i peptida koji dejstvuju kao humoralni regulatori pri izvanredno malim koncentracijama i koji, bilo pod normalnim ili patološkim uslovima, podešavaju funkcionalne aktivnosti pojedinih ćelija i tkiva. *Vidi: lymphokine, monokine.*

cytokinesis Cytoplasmic division and other changes exclusive of nuclear division that are a part of **mitosis** or **meiosis**.

Deoba citoplazme i druge promene isključive od deobe jedra koja je deo mitoze ili mejoze.

cytokinin Plant growth regulators characterized as substances that induce **cell division** and cell differentiation. In tissue culture, these substances are associated with enhanced callus and shoot development. The compounds are derivatives of **adenine**. *See: kinin.*

Regulatori biljnog rasta, supstance koje izazivaju ćelijsku deobu i ćelijsku diferencijaciju. U kulturi tkiva, te supstance su povezane sa povećanim razvićem kalusa i izdanka. Jedinjenja su derivati adenina. *Vidi: kinin.*

cytology The study of the structure and function of cells.

Proučavanje strukture i funkcija ćelija.

cytolysis Cell disintegration.

Ćelijska dezintegracija.

cytoplasm The living material of the cell, exclusive of the nucleus, consisting of a complex **protein** matrix or gel, and where essential membranes and cellular organelles (mitochondria, plastids, etc.) reside.

Živi materijal ćelije, izuzev jedra, sastoji se od kompleksne proteinske matrice ili gela, u kojoj se nalaze bitne membrane i ćelijske organele (mitohondrije, plastidi, itd.).

cytoplasmic genes Genes located on **DNA** outside the nucleus, i.e. on **plastids**.

Geni locirani u DNK izvan nukleusa, t.j. u plastidima.

cytoplasmic inheritance Hereditary transmission dependent on **cytoplasmic genes**.

Nasledjivanje, zavisno od citoplazmičnih gena.

cytoplasmic male sterility Genetic defect due to faulty functioning of mitochondria in **pollen** development, preventing the formation of viable pollen. Commonly found or **inducible** in many plant species and exploited for some **F₁ hybrid** seed programmes.

Genetički defekt usled lošeg funkcionisanja mitohondrija u razviću polena, sprečavajući formiranje funkcionalnog polena. Obično se nalazi ili proizvodi u mnogim biljnim vrstama, i koristi se u programima stvaranja nekih **F₁** hibrida.

cytoplasmic organelles Discrete subcellular structures located in the cytoplasm of cells - mitochondria, **plastids** and **lysosomes**.

Subćelijske strukture locirane u citoplazmi ćelija-mitohondrije, plastidi i lizosomi.

cytosine (Abbreviation: C). One the **bases** found in **DNA** and **RNA**. *See: cytidine*.

(Skraćenica: C) Jedna baza, nadjena u DNK i RNK. *Vidi: cytidine*.

cytosol The fluid portion of the **cytoplasm**, i.e. the cytoplasm minus its organelles.

Tečni deo citoplazme, t.j. citoplazma isključujući njene organele.

cytotoxic T cell *See: killer T cell*.

Vidi: killer T cell.

cytotoxicity Poisoning of the cell.

Trovanje ćelije.

cytotype A maternally inherited cellular condition in *Drosophila-e* that regulates the activity of transposable P elements.

Nasledjivanje po majci u *Drosophila* koje reguliše aktivnost prenosivih P elemenata.

D

D loop Abbreviation for displacement loop. Formed when a short stretch of **RNA** is paired with one strand of **DNA**. This displaces the original partner DNA; also the displacement of a region of one strand of **duplex DNA** by a single-stranded invader in the reaction catalyzed by **recA**.

Skraćenica za premeštajuću petlju. Formirana kada se kratak lanac RNK pari sa jednim lancem DNK. To izbacuje originalnog partnera DNK; takođe izbacivanje regiona jednog lanca dvostruke DNK sa jednostrukim napadačem u reakciji katalizovanoj sa **recA**.

dA - dT tailing *See* **complementary homopolymeric tailing**.

Vidi: complementary homopolymeric tailing.

dAb (Full term: **single domain antibody**). **Antibodies** with only one (instead of two) **protein** chain derived from only one of the two domains of the normal antibody structure. Exploits the finding that for some antibodies, half of the molecule binds to its target **antigen** almost as well as the whole molecule. The major advantage of dAbs over other antibodies is that they can be cloned and expressed into bacteria, so that large numbers of antibodies can be generated and screened in parallel.

(Puni izraz: single domain antibody)
Antitela sa samo jednim (umesto

dva) proteinskim lancem, postala od samo jedne od dve oblasti normalne strukture antitela. Koristi nalaz, da se za neka antitela pola molekula vezuje za svoj ciljni antigen, skoro isto tako uspešno kao ceo molekul. Glavna prednost dAbs-a nad drugim antitelima je da oni mogu da se kloniraju i brzo otpreme u bakterije, tako da se veliki broj antitela može stvoriti i paralelno zaštititi.

DAF *See*: **DNA amplification fingerprinting**.

Vidi: DNA amplification fingerprinting.

Dalton (Abbreviation: Da). A unit of atomic mass roughly equivalent to the mass of a hydrogen atom. Used as to express molecular weight, which for biological **macromolecules** is usually in the range kilo- (kDa) to megaDaltons (MDa).

(Skraćenica: Da) Jedinica atomske mase, ekvivalent prema masi atoma vodonika. Korišćena da izrazi molekularnu težinu, koji je za biološke makromolekule obično u rasponu kilo- (kDa) do megaDaltona (MDA).

DAMD *See*: **directed amplification of minisatellite DNA**.

Vidi: directed amplification of minisatellite DNK.

Darwinian cloning Selection of a **clone** from a large number of essentially random starting points, rather than isolating a natural **gene** or making a

carefully designed artificial one. Molecules which are more similar to those needed are selected, mutated to generate new variants, and re-selected. The cycle proceeds until the required molecule is found. The advantage of the system is that the selection is from a vast number of possibilities.

Izbor klona iz velikog broja bitnih slučajnih početnih tačaka, pre nego izolovanjem prirodnog gena, ili proizvodnjom brižljivo stvorenog veštačkog gena. Molekule koje su sličnije onima koje treba da se izaberu, mutirane da stvore nove varijante, i ponovo selekcionisane. Ciklus se produžuje dok se ne nadje potreban molekul. Prednost sistema je, da je selekcija moguća iz velikog broja mogućnosti.

dATP Abbreviation for deoxyadenosine 5'-triphosphate. dATP is required for **DNA** synthesis since it is a direct precursor molecule. *See:* **adenosine**, **adenylic acid**.

Skraćenica za deoksiadenozin 5'-trifosfat. dATP je potreban za sintezu DNK, pošto je isti direktan molekul prekursor. *Vidi:* adenosine, adenylic acid.

dCTP Abbreviation for deoxycytidine 5'-triphosphate. dCTP is required for **DNA** synthesis since it is a direct precursor molecule. *See:* **cytidine**, **cytidylic acid**.

Skraćenica za deoxycytidine 5' triphosphate. dCTR je potreban za sintezu DNK, pošto je isti direktan molekul prekursor. *Vidi:* cytidine, citydylic acid.

ddNTP Abbreviation for **di-deoxynucleotide**.

Skraćenica za di-deoxynucleotide.

death phase The final **growth phase** of cell culture, during which nutrients have been depleted and **cell number** decreases.

Konačna faza rasta kulture ćelija, tokom koje su hranljive materije iscrpljene, i broj ćelija se smanjuje.

deceleration phase The phase of declining growth rate, following the **linear phase** and preceding the **stationary phase** in most batch-suspension cultures. *See:* **growth phase**.

Faza opadanja brzine rasta, sledeći linearnu fazu i predhodeći stacioniranu fazu u većine količinski prekinutih kultura. *Vidi:* growth phase.

de-differentiation The process, in response to wounding and in tissue cultures, by which plant cells can become unspecialized and start to proliferate by **cell division** to form a mass of **undifferentiated** cells (or **callus**) which, in response to appropriate stimuli, may later differentiate again to form either the same cell type or a different one.

Proces u reagovanju na ranjavanje i u kulturi tkiva, putem kojeg biljne ćelije mogu da postanu nespecializovane i počnu da se razmnožavaju ćelijskom deobom tako da formiraju masu nediferenciranih ćelija (ili kalusa) koje, u reagovanju na odgovarajuće stimuluse, mogu kasnije da se ponovo diferenciraju, da formiraju isti, ili drugačiji tip ćelija.

defective virus A virus that, by itself, is unable to reproduce when infecting its **host** cell, but that can grow in the presence of another virus. This other virus provides the necessary molecular machinery that the first virus lacks.

Virus koji, sam po sebi, nije u stanju da se reprodukuje kada inficira ćeliju

domaćina, ali može da raste u prisustvu drugog virusa. Taj drugi virus obezbeđuje potrebnu molekularnu mašineriju koju prvi virus nema.

deficiency Lack of adequate supply of nutritional, enzymatic, or environmental requirements, so that development, growth or physiological functions are affected.

Nedostatak adekvatnog obezbeđenja ishrambenih, enzimatskih, ili zahteva spoljne sredine, tako da su napadnuti razviće, rast, ili fiziološke funkcije.

defined 1. Fixed conditions of medium, environment and **protocol** for growth. 2. Precisely known and stated elements of a **tissue culture** medium.

1. Fiksno stanje medijuma, spoljne sredine i protokola za rast. 2. Tačno poznati i utvrđeni elementi medijuma kulture tkiva.

degeneracy The specification of one **amino acid** by more than one **codon**. It arises from the inevitable redundancy resulting from the 64 possible codons encoding only 20 amino acids.

Specifikacija jedne aminokiseline sa više od jednog koda. Pojavljuje se od neizbežnog obilja, nastalog od 64 moguća kodona enkodirajući samo 20 aminokiselina.

degeneration 1. Changes in cells, tissues or organs due to disease. 2. The reduction in size or complete loss of organs during evolution.

1. Promene u ćelijama, tkivima ili organima usled bolesti. 2. Smanjenje obima, ili potpuni gubitak organa tokom evolucije.

dehalogenation The removal of halogen atoms (fluorine, chlorine, bromine, iodine) from molecules, for example during biodegradation.

Odstranjenje halogenih atoma (fluora, hlora, broma, joda) iz molekula, na primer tokom biodegradacije.

dehiscence The spontaneous and often violent opening of a fruit, **seed pod** or **anther** to release and disperse the seeds or pollen.

Spontano, i često snažno otvaranje voća, mahune ili prašnika da bi se izbacilo i rasejalo seme ili polen.

dehydrogenase An **enzyme** that catalyses the removal of hydrogen atoms in biological reactions.

Enzim koji katalizuje gubitak vodonikovih atoma u biološkim reakcijama.

dehydrogenation A chemical reaction in which hydrogen is removed from a compound.

Hemijska reakcija u kojoj se vodonik odstranjuje iz jedinjenja.

de-ionized water Water from which most salts have been removed – with varying degrees of efficiency – by ion exchange.

Voda, iz koje je većina soli odstranjena putem izmene jona-sa različitim stepenima efikasnosti.

deletion A **mutation** involving the removal of one or more **base pairs** in a **DNA** sequence. Large deletions are sometimes microscopically visible in **karyotype** analyses.

Mutacija, koja uključuje gubitak jednog ili više baznih parova u sekvenci DNK. Ove velike mutacije su ponekad mikroskopski vidljive pri analizi kariotipa.

deliberate release In a biotechnology context, the intentional release of **genetically modified organisms**.

U biotehnološkom kontekstu, namerno oslobađanje genetički modifikovanih organizama.

delta endotoxins See: **cry proteins**.

Vidi: *cry* proteins.

deme A group of organisms in the same taxon.

Grupa organizama koja pripada istom taksonu.

demineralize To remove the mineral content (salts, ions) from a substance, especially water. Removal methods include distillation, electro-dialysis and ion exchange. *See: de-ionized water.*

Odstraniti mineralni sadržaj (soli, jone) iz supstance, naročito vode. Metode odstranjivanja uključuju: destilaciju, elektrodijalizu i izmenu jona. *Vidi: deionized water.*

denature To disrupt the normal *in vivo* **conformation** of a nucleic acid or (more usually) a **protein** by physical or chemical means, usually accompanied by the loss of activity. *See: denatured DNA, denatured protein.*

Uništiti normalnu *in vivo* konformaciju nukleinske kiseline ili (više uobičajeno) proteina, fizičkim ili hemijskim sredstvima, obično praćeno gubitkom aktivnosti. *Vidi: denatured DNK, denatured protein.*

denatured DNA Double-stranded **DNA** that has been converted to single strands by breaking the hydrogen bonds linking **complementary nucleotide** pairs. Often reversible. Usually achieved by heating.

Dvolančana DNK koja je pretvorena u jednolančanu, putem prekida vodikovih mostova, vezujući komplementarne parove nukleotida. Često povratno. Obično se postiže zagrevanjem.

denatured protein Altering the *in vivo* **conformation** of a **protein** by heat or salt treatment, thereby destroying its biological activity. Unlike denatu-

red **DNA**, denatured **proteins** are seldom able to be renatured.

Menjanje *in vivo* konformacije proteina putem toplote, ili tretmanom sa solju, time razarajući njegovu biološku aktivnost. Za razliku od denaturisane DNK, denaturisani proteini su retko sposobni da se renaturišu.

denaturing gradient gel electrophoresis (Abbreviation: **DGGE**). An **electrophoresis** method for separating similar sized **DNA** fragments on the basis of their sequence, by applying across the gel a gradient of increasingly denaturing conditions (usually by increasing the concentration of a denaturing chemical, such as formamide or urea). As the double-stranded molecules denature into a partially and eventually a fully single-stranded state, their electrophoretic mobility changes.

(Skraćenica: DGGE) Metod elektroforeze za izdvajanje fragmenata DNK slične veličine na bazi njihove sekvence, primenom gel uspon povećavajućih uslova denaturisanja (obično putem povećanja koncentracije hemikalije za denaturisanje, kao što su formamid ili urea). Kako se molekule sa dva lanca denaturišu u parcijalno ili eventualno puno jednolančano stanje, njihova elektroforetska mobilnost se menja.

dendrimer A **polymer** that repeatedly branches until stopped by the physical constraint of having formed a complete, hollow sphere. These structures possess sites on their exterior surface to which **DNA** fragments can be attached, and are thus useful as carriers of DNA for transgenesis.

Polimer koji se ponovljivo grana dok ne bude zaustavljen fizičkom prisilom,

ili formiranjem kompletne šuplje sfere. Ove strukture poseduju mesta na spoljašnjoj površini na koju mogu da se priljube fragmenti DNK, i tako su korisni kao nosioci za transgenezu DNK.

denitrification A chemical process in which nitrates in the soil are reduced to molecular nitrogen, which is released to the atmosphere.

Hemijski proces u kojem se nitrati u zemljištu redukuju do molekularnog azota, koji se otpušta u atmosferu.

density gradient centrifugation High-speed **centrifugation** in which molecules are separated on the basis of their different densities using a concentration gradient of caesium chloride or sucrose. The density gradient may either be formed before centrifugation by mixing two solutions of different density (as in sucrose density gradients) or it can be formed by the process of centrifugation itself (as in CsCl and Cs₂SO₄ density gradients).

Centrifugovanje velikom brzinom, u kojem se molekule izdvajaju na bazi njihove različite gustine, koristeći gradijent koncentracije cezijum hlorida ili saharoze. Gradijent brzine može biti formiran bilo pre centrifugiranja mešanjem dva rastvora različite gustine (kao u gradijentima gustine saharoze), ili može biti formiran putem procesa centrifugiranja (kao u CsCl i Cs₂SO₄ gradijenata gustine).

deoxyadenosine *See: adenosine, dATP.*

Vidi: adenosine, dATP.

deoxycytidine *See: cytidine, dCTP.*

Vidi: cytidine, dCTP.

deoxyguanosine *See: guanosine, dGTP.*

Vidi: guanosine, dGTP.

deoxyribonuclease *See: DNase.*

Vidi: DNase.

deoxyribonucleic acid *See: DNA.*

Vidi: DNK.

deoxyribonucleoside *See: nucleoside.*

Vidi: nucleoside.

deoxyribonucleotide *See: nucleotide.*

Vidi: nucleotide.

deoxyribose (2-deoxyribose) *See: ribose.*

Vidi: ribose.

deoxythymidine Strictly correct but rarely used synonym for **thymidine**.

Korektan, ali retko korišćen sinonim za timidin.

derepression The process of „turning on“ the expression of a gene or set of genes whose expression has been repressed (turned off), usually by the displacement of a **repressor** from a **promoter**, since, when attached to the **DNA**, the repressor prevents **transcription**.

Proces „obrtanja“ ekspresije gena ili niza gena čije je izražavanje bilo suzbijeno, obično putem premeštanja represora iz promotera, pošto, kada je prilepljen na DNK, represor sprečava transkripciju.

derivative 1. Resulting from or derived from. 2. Term used to identify a variant during meristematic **cell** division.

1. Nastajući od ili dobijen od. 2. Termin korišćen da identifikuje varijantu u toku deobe meristematskih ćelija.

desiccant Any compound used to remove moisture or water.

Bilo koje jedinjenje, korišćeno da odstrani vlagu ili vodu.

desoxyribonucleic acid Obsolete spelling of **deoxyribonucleic acid**.

Zastareo termin za deoxyribonucleic acid.

desulphurization *See: biodesulphurization.*

Vidi: biodesulphurization.

detergent Substance which lowers the surface tension of a solution, improving its cleaning properties.

Supstanca koja smanjuje površinski napon rastvora, poboljšavajući njene osobine čišćenja.

determinate growth Growth determined and limited in time, with a **bud** or flower terminating the growth of the main axis. Once established, it is usually irreversible. *Opposite: indeterminate growth.*

Rast, određen i ograničen vremenom, sa pupoljkom ili cvetom, završavajući rast glavne stabljike. Jednom obrazovan, obično je nepovratan. *Suprotno: indeterminate growth.*

determination Process by which undifferentiated cells in an **embryo** become committed to develop into specific **cell** types, such as neurons, fibroblasts or muscle cells.

Proces putem kojeg se nediferencirane ćelije u embrionu razvijaju u specifične tipove ćelija, kao što su neuroni, fibroblasti ili mišićne ćelije.

determined Describing embryonic tissue at a stage when it can develop only as a certain kind of tissue.

Embriono tkivo u stadijumu kada se ono može razviti samo kao određena vrsta tkiva.

development The sum total of events that contribute to the progressive elaboration of an organism. The two major aspects of development are growth and differentiation.

Suma ukupnih događaja koji doprinose progresivnom usavršavanju organi-

zma. Dva glavna aspekta razvića su rast i različitost.

deviation 1. An alteration from the typical form, function or behaviour. **Mutation** or **stress** are the common reasons behind deviation. 2. A statistical term describing the difference between an actual observation and the **mean** of all observations.

1. Promena od tipičnog oblika, funkcije ili ponašanja. Mutacija ili stres su uobičajeni razlozi za devijaciju. 2. Statistički izraz, opisujući razliku između stvarnog posmatranja i srednje vrednosti svih posmatranja.

dextrin An intermediate **polysaccharide** compound resulting from the **hydrolysis** of starch to maltose by **amylase** enzymes.

Intermedijarno polisaharidno jedinjenje koje nastaje usled hidrolize skroba u maltozu putem enzima amilaze.

dG - dC tailing *See: complementary homopolymeric tailing.*

Vidi: complementary homopolymeric tailing.

DGGE *See: denaturing gradient gel electrophoresis.*

Vidi: denaturing gradient gel electrophoresis.

dGTP Abbreviation for deoxyguanosine 5'-triphosphate. dGTP is required for **DNA** synthesis since it is a direct precursor molecule. *See: guanosine, guanylic acid.*

Skraćenica za deoksiguanozin 5'trifosfat. dGTP je potreban za sintezu DNK pošto je direktan prekursor. *Vidi: guanosine, guanylic acid.*

diagnostic procedure A test or **assay** used to determine the presence of a specific substance, organism or **nucleic acid** sequence alteration, etc.

Test ili ogled korišćen za određivanje prisustva specifične supstance, orga-

nizma, ili promene sekvence nukleinske kiseline, itd.

diakinesis A stage of **meiosis** at the end of **prophase I**, in which the contraction of the chromosomes is almost at a maximum, pairing configurations are well defined, the nucleolus normally disappears and the nuclear envelope is disrupted.

Stadijum mejoze na kraju profaze I, u kojem su hromozomi maksimalno kontrahovani, konfiguracije parenja su dobro definisane, nukleolus normalno iščezava, a nuklearna membrana je uništena.

dialysis A biochemical technique by which large molecules such as **proteins** in solution are separated from smaller species such as salts. The technique is based on the properties of certain membrane structures, which selectively only allow the passage of the smaller molecules. A frequently used method for the purification of proteins.

Biohemijska tehnika, putem koje se velike molekule, kao što je protein, u rastvoru odvajaju od sličnih, kao što su soli. Tehnika je zasnovana na osobinama izvesnih membranskih struktura, koje samo selektivno omogućavaju prolaz manjih molekula. Često korišćen metod za prečišćavanje proteina.

diazotroph An organism that can fix atmospheric nitrogen.

Organizam koji može da fiksira atmosferski azot.

dicentric chromosome A chromosome having two active **centromeres**.

Hromozom koji ima dve aktivne centromere.

dichogamy The condition in which the male and the female reproductive or-

gans of a flower (or certain hermaphroditic animals) mature at different times, thereby making self-fertilization improbable or impossible.

Stanje u kojem muški i ženski reproduktivni organi cveta (ili izvesnih hermafroditских životinja) sazrevaju u različito vreme, time sprečavaju samooplodnju.

dicot See: **dicotyledon**.

Vidi: dicotyledon.

dicotyledon (Abbreviation: dicot). A plant with two **cotyledons**. One of the two major classes of flowering plants (along with the **monocotyledons**). Examples include many crop plants (potato, pea, beans), ornamentals (rose, ivy) and timber trees (oak, beech, lime).

(Skraćenica: dicot) Biljka sa dva kotiledona. Jedna od dve glavne klase cvetnica (uz monokotiledone). Primeri uključuju mnoge useve (krompir, grašak, pasulj), ornamentalne biljke (ruža, bršljan) i drveće (hrast, bukva, lipa).

di-deoxynucleotide (Abbreviations: ddNTP, didN). A synthetic **deoxynucleotide** that lacks a 3'-hydroxyl group, and is thus unable to form the 3'?'5' **phosphodiester bond** necessary for chain elongation. Used as strand terminators in the Sanger **DNA** sequencing reaction and in the treatment of some viral diseases.

(Skraćenica: ddNTP, didN) Sintetički deoksinukleotid kojem nedostaje 3'-hidroksilna grupa, i tako nije u stanju da formira 3'?'5' fosfordiestersku vezu, potrebnu za elongaciju lanca. Koriste se kao terminatori lanca u Sanger DNK reakciji sekvenciranja, kao i u lečenju nekih virusnih bolesti.

didN See: **di-deoxynucleotide**.

Vidi: di-deoxynucleotide.

differential centrifugation A method for separating sub-cellular particles according to their sedimentation coefficients, which are roughly proportional to their size. Cell extracts are subjected to a succession of **centrifuge** runs at progressively faster rotation speeds. Large particles, such as nuclei or mitochondria, will be precipitated at relatively slow speeds; higher G forces will be required to sediment small particles, such as **ribosomes**.

Metod razdvajanja subćelijskih partikula prema njihovim sedimentacionim koeficijentima, koji su proporcionalni njihovoj veličini. Ćelijski ekstrakti su podvrgnuti redosledu hodova centrifuge pri progresivno bržim rotacijama. Veliki delići, kao što su nukleusi ili mitohondrije, talože se pri relativno sporim brzinama; veće G snage biće potrebne da sedimentiraju male partikule, kao što su ribozomi.

differential display A method to identify **mRNAs** which are present at different levels in different tissues, or in response to specific treatments. The **mRNAs** are converted to **cDNA**, and a defined proportion of these are amplified by the **polymerase chain reaction**, and separated by **electrophoresis**.

Metod identifikacije mRNK-e koje su prisutne na različitim nivoima različitih tkiva, ili u reagovanju na specifične tretmane. mRNK-e se pretvaraju u cDNK, a definisane proporcije istih su povećane putem lančane reakcije polimeraze, i razdvojene elektroforezom.

differentially permeable Referring to a membrane, through which different substances diffuse at different rates.

Some substances may be unable to diffuse through such a membrane, usually because they are too large to fit through the pores of the membrane.

Odnosi se na membranu, kroz koju različite supstance difunduju različitim brzinama. Neke supstance mogu da budu nesposobne da difunduju kroz takvu membranu, pošto su suviše velike da prodju kroz pore membrane.

differentiation A process as a result of which unspecialized cells develop structures and functions characteristic of a particular type of **cell**, typically during the process of **development** from one cell to many cells, accompanied by a modification of the new cells for the performance of particular functions. The process is generally irreversible *in vivo* in higher organisms. In tissue culture, the term is used to describe the formation of different cell types.

Proces čiji rezultat je da nespecijalizovane ćelije razvijaju strukture i funkcije karakteristične za poseban tip ćelije, tipično za vreme procesa razvića od ćelije do mnogo ćelija, praćenog modifikacijom novih ćelija za performansu posebnih funkcija. Proces je ireverzibilan *in vivo* u viših organizama. U kulturi tkiva, izraz se koristi da opiše formiranje različitih tipova ćelija.

diffusion The spontaneous movement of molecules from a region of higher concentration to a region of lower concentration.

Spontano kretanje molekula od regiona više ka regionu niže koncentracije.

digest To treat **DNA** molecules with one or more **restriction endonucleases** in order to **cleave** them into smaller fragments.

Tretirati molekule DNK sa jednim ili više restrikcionih endonukleaza, da bi ih podelili na manje fragmente.

dihaploid An individual which arises from a doubled **haploid**.

Individua koja nastaje od udvostručenog haploida.

dihybrid An individual that is heterozygous for two pairs of alleles; the **progeny** of a **cross** between homozygous parents differing at two loci.

Individua koja je heterozigotna za dva para alela; potomstvo ukrštanja između homozigotnih roditelja koji se razlikuju na dva lokusa.

dimer 1. A molecule formed by the covalent combination of two **monomers**, generally accompanied by elimination of water. 2. The reversible association of two similar (or nearly similar) molecules. The active form of many enzymes is as a dimer between two non-active monomeric subunits.

1. Molekul formiran kovalentnom kombinacijom dva monomera, praćenih eliminacijom vode. 2. Povratno ujedinjavanje dva slična (ili skoro slična) molekula. Aktivni oblik mnogih enzima je kao dimer (molekula dva monomera) između dve neaktivne monomerne podjedinice.

dimethyl sulphoxide (Abbreviation: DMSO). A highly hygroscopic liquid and powerful solvent with little odour, colour or **toxicity** when pure. It is employed in small quantities to dissolve organic substances in **tissue culture** media preparation and has uses as a **cryoprotectant** and in promoting the passage of chemicals through skin.

(Skraćenica: DMSO) Visoko higroskopna tečnost i jak rastvarač sa malo mi-

risa, boje ili toksičnosti u čistom stanju. Upotrebljava se u malim količinama da rastvori organske supstance u medijumu kulture tkiva i koristi se kao kriozastitnik i u pomaganju prolaza hemikalija kroz kožu.

dimorphism The existence of two distinctly different types of individuals within a species. An obvious example is sexual dimorphism in mammals.

Postojanje dva striktno različita tipa individua u okviru vrste. Očigledan primer je seksualni dimorfizam u sisara.

dinucleotide A nucleotide **dimer**.

Nukleotidni polimer od dva monomera.

dioecious A plant **species** in which male and female flowers form on different plants.

Biljna vrsta u kojoj se muški i ženski cvetovi formiraju na različitim biljkama.

diplochromosome *See: endoreduplication.*

Vidi: endoreduplication.

diploid The status of having two complete sets of **chromosomes**, most commonly one set of paternal origin and the other of maternal origin. **Somatic** tissues of higher plants and animals are ordinarily diploid in chromosome constitution, in contrast with the **haploid gametes**.

Pojava dva kompletna seta hromozoma, uobičajeno jedan set poreklom od oca a drugi poreklom od majke. Somatska tkiva viših biljaka i životinja su obično diploidna u hromozomskoj konstituciji, nasuprot haploidnim gametama.

diplonema Stage in **prophase I** of **meiosis** following the **pachytene** stage, but preceding **diakinesis**, in which

one pair of sister chromatids begin to separate from the other pair.

Stadijum profaze I mejoze, sledeći stadijum pahitena, ali prethodeći dijakinjezi, u kojoj jedan par sestrinskih hromatida počinje da se razdvaja od drugog para.

diplotene (adj.) *See* **diploonema**.

Vidi: diploonema.

direct embryogenesis The formation in culture, on the surface of zygotic or **somatic** embryos or on **explant** tissues (leaf section, root tip, etc.), of embryoids without an intervening **callus** phase. *Opposite*: **indirect embryogenesis**.

Formiranje u kulturi, na površini zigotnih ili somatskih embriona ili na tkivima eksplantata (dela lista, korenovog vrha, itd.), od embriona bez kalusne faze. *Suprotno*: indirect embryogenesis.

direct organogenesis Formation of organs directly on the surface of cultured intact **explants**. The process does not involve **callus** formation. *Opposite*: **indirect organogenesis**.

Formiranje organa direktno na površini kultivisanih eksplantata. Proces ne uključuje formiranje kalusa. *Suprotno*: indirect organogenesis.

direct repeat Two or more stretches of **DNA** within a single molecule which have the same **nucleotide sequence** in the same orientation. Direct repeats may be either adjacent to one another or far apart on the same molecule.

Dva ili više DNK u okviru jedne molekule, koji imaju istu sekvencu nukleotida u istoj orijentaciji. Direktna ponavljanja mogu biti bilo susedna jedna drugom, ili udaljena na istom molekulu.

directed amplification of minisatellite DNA (Abbreviation: DAMD). A **polymerase chain reaction** technique used for obtaining molecular markers in the region of **minisatellites**. To target these regions, one of the **primers** is directed to a **VNTR** core sequence.

(Skracenicica: DAMD) Tehnika lančane reakcije polimeraze, korišćena za dobijanje molekularnih markera u regionu minisatelita. Da bi markirali te regione, jedan od prajmera je usmeren ka VNTR sekvenci jezgra.

directed mutagenesis The generation of changes in the **nucleotide sequence** of a cloned **gene** by one of several procedures. Undertaken to explore the relationship between nucleotide sequence and gene function, and to modify gene products. *Synonym*: **in vitro mutagenesis**.

Niz promena u sekvenci nukleotida kloniranog gena jednim od nekoliko postupaka. Preduzeta da ispita odnos između sekvence nukleotida i funkcije gena, i da modifikuje proizvode gena. *Sinonim*: *in vitro* mutagenesis.

directional cloning The technique by which a vector and a **DNA** insert are both digested with two different **restriction endonucleases** to create non-complementary **sticky ends** at either end of both molecules, so favouring the **insert** to be ligated into the **vector** in a specific orientation, while also preventing the vector from re-circularizing.

Tehnika kojom se vektor i isečak DNK asimiluju sa dve različite restrikcione endonukleaze, u cilju stvaranja nekomplementarnih lepljivih krajeva na bilo kojem kraju oba molekula, tako potpomažući isečak da bude po-

vezan u vektor u specifičnoj orijentaciji, i takođe sprečavajući vektor od ponovnog cirkulisanja.

disaccharide A **dimer** consisting of two covalently linked **monosaccharides**. Molekul od dva monomera koji se sastoji od dva kovalentno povezana monosaharida.

disarm The **deletion** from a **plasmid** or **virus** of genes that are pathogenic. Delecija gena koji su patogeni iz plazmida ili virusa.

discontinuous variation Variation where individuals can be classified as belonging to one of a set of discrete, non-overlapping classes. Generated by simple genetic control of a **trait** (one or a small number of genes, each of large effect) and involving minimal non-genetic effect. Characters showing discontinuous variation are referred to as qualitative. *Opposite: continuous variation.*

Varijacija gde individue mogu da se klasifikuju kao pripadajuće jednom od niza odvojenih, nepreklapajućih klasa. Postala jednostavnom genetičkom kontrolom osobine (jedan ili mali broj gena, svaki velikog efekta), i uključujući minimalan ne-genski uticaj. Osobine koje pokazuju diskontinuiranu varijaciju označene su kao kvalitativne. *Suprotno: continuous variation.*

discordant Members of a pair showing different, rather than similar, characteristics.

Članovi para koji pokazuju različite, pre nego slične karakteristike.

disease resistance The genetically determined ability to prevent the reproduction of a **pathogen**, thereby remaining healthy. Some resistances operate by pathogen exclusion, some

by preventing pathogen spread, and some by tolerating pathogen **toxin**.

Genetički određena sposobnost da se spreči reprodukcija patogena, i time ostajući zdrav. Neke otpornosti deluju putem isključenja patogena, neke putem sprečavanja širenja patogena, a neke tolerisanjem toksina patogena.

disease-free A plant or animal certified through specific tests as being free of specified **pathogens**. Should be interpreted to mean „free from any *known* disease“ as „new“ diseases may yet be discovered to be present.

Biljka ili životinja potvrđeni putem specifičnih testova da su slobodni od specifičnih patogena. Moglo bi da se interpretira „slobodna od bilo koje *poznate* bolesti“, pošto „nove“ bolesti još može biti otkriveno prisustvo.

disease-indexing Disease-indexed organisms have been assayed for the presence of known diseases according to standard testing procedures.

Organizmi upisani u spisak su analizirani za prisustvo poznate bolesti prema standardnim postupcima testiranja.

disinfection Attempted elimination by chemical means of internal micro-organisms (particularly pathogens) from a **culture** or sample; rarely attained. *See: sterilize* (1).

Pokušaj eliminacije unutrašnjih mikroorganizama (posebno patogenih) hemijskim sredstvima iz kulture ili uzorka; retko se stiče. Vidi: sterilize.

disinfestation The elimination or inhibition of the activity of surface-adhering micro-organisms and removal of insects.

Eliminacija ili inhibicija aktivnosti površinski prionjenih mikroorganizama i odstranjenje insekata.

disjunction Separation of **homologous** chromosomes during **anaphase I** of **meiosis**, or of sister chromatids during anaphase of **mitosis** and anaphase II of meiosis.

Izdvajanje homolognih hromozoma tokom anafaze I mejoze, ili sestrinskih hromatida tokom anafaze mitoze i anafaze II mejoze.

disomic (adj.) *See* **disomy**.

Vidi: disomy.

disomy The presence of a pair of a specific homologous chromosomes. This is the norm for **diploids**.

Prisustvo para specifičnih homolognih hromozoma. To je pravilo za diploide.

dispense The transfer of a measured volume of a solution.

Transfer merene zapremine rastvora.

disrupter gene Used to enforce the sterility of seed saved from a genetically engineered crop. *See*: **genetic use restriction technology**.

Korišćen da pojača sterilnost semena sačuvanog od genetički stvorenog useva. *Vidi*: genetic use restriction technology.

dissecting microscope A microscope with a magnifying power of about 50x, used as an aid in the manipulation of small objects, e.g. **excision** of embryos from young zygotes.

Mikroskop sa uvećanjem od oko 50x, korišćen kao pomoć u manipulaciji malih objekata, na pr.isečaka embriona od mladih zigota.

dissection Separation of a tissue by cutting into components, for analysis or observation.

Odvajanje tkiva sečenjem na komponente, za analizu ili posmatranje.

distillation The process of heating a mixture to separate the more volatile

from the less volatile parts, and then condensing fractions of the resulting vapour so as to produce a more nearly pure or refined substance.

Proces zagrevanja smeše, da se izdvoje isparljiviji od manje isparljivih delova, a zatim kondezovanje frakcija od nastale pare, tako da se proizvede više čiste ili rafinisane supstance.

disulphide bond *See*: **disulphide bridge**.

Vidi: disulphide bridge.

disulphide bridge A chemical bond between pairs of sulphur atoms that stabilizes the three-dimensional structure of proteins, and hence the **protein**'s normal function. These form particularly readily between cysteine **residues** in the same or different **peptide** molecules. *Synonym*: **disulphide bond**.

Hemijska veza između parova atoma sumpora koja stabilizuje trodimenzionalnu strukturu proteina, i normalnu funkciju proteina. One se formiraju posebno lako između rezidua cisteina u istim ili različitim peptidnim molekulima. *Sinonim*: disulphide bond.

ditype In fungi, a **tetrad** that contains two kinds of meiotic products (spores), e.g. 2AB and 2ab.

U gljiva, tetrada koja sadrži dve vrste mejotičkih produkata (spora), na pr.2AB i 2ab.

diurnal An event that occurs repetitively on a daily basis, generally during daylight hours.

Pojava koja se dešava ponavljajući se dnevno, tokom časova dnevne svetlosti.

dizygotic twins Two-egg twins, i.e. a pair of individuals that shared the same uterus at the same time, but

which arose from separate and independent **fertilization** of two ova.

Dvojajčani blizanci, tj. par individua koji deli isti uterus u isto vreme, ali koji nastaju od posebnog i nezavisnog oplodjenja dve jajne ćelije.

DMSO *See: dimethyl sulphoxide.*

Vidi: dimethyl sulphoxide.

DNA Abbreviation for deoxyribonucleic acid, former spelling desoxyribonucleic acid. A long chain polymer of **deoxyribonucleotides**. **DNA** constitutes the genetic material of most known organisms and organelles, and usually is in the form of a **double helix**, although some viral genomes consist of a single strand of **DNA**, and others of a single- or a double-stranded **RNA**. *See: base pair, genetic code.*

Skraćenica za deoksiribobukleinsku kiselinu, raniji termin dezoksiribonukleinska kiselina. Polimer dugog lanca od deoksiribonukleotida. DNK sadrži genetički materijal najpoznatijih organizama i organela, i obično je u obliku dvostruke spirale, iako se neki virusni genomi sastoje od jednostrukog lanca DNK, a drugi od jednostrukog ili dvostrukog lanca RNK. *Vidi: bazni par, genetički kod.*

DNA amplification Many-fold multiplication of a particular **DNA sequence** either *in vivo* in a **plasmid**, **phage** or other **vector**; or *in vitro* using, most commonly, the **polymerase chain reaction**.

Višestruko umnožavanje posebne sekvence DNK bilo *in vivo* u plazmidu, fagi ili drugom vektoru, ili *in vitro*, koristeći najčešće lančanu reakciju polimeraze.

DNA amplification fingerprinting (Abbreviation: DAF). A **arbitrarily**

primed polymerase chain reaction technique for obtaining molecular markers using very short (5–8 bp) **primers**.

(Skraćenica: DAF) Proizvoljno tehnika lančane reakcije polimeraze za dobijanje molekularnih markera, koristeći vrlo kratke (5–8 bp) prajmere.

DNA chip *See: micro-array.*

Vidi: micro-array.

DNA cloning *See: gene cloning.*

Vidi: gene cloning.

DNA construct A chimeric **DNA** molecule, carrying all the genetic information necessary for its **transgenic** expression in a host cell.

Himerna molekula DNK koja nosi sve genetičke informacije potrebne za njegovo transgeno ispoljavanje u ćeliji domaćinu.

DNA delivery system A generic term for any procedure that transports **DNA** into a recipient cell.

Opšti izraz za bilo koji postupak koji transportuje DNK u ćeliju recipijenta.

DNA diagnostics The use of **DNA** polymorphisms to detect the presence of a specific sequence, which could indicate the presence of a contaminant, of a pathogen, or of a particular allele at a target gene. Most commonly utilises the **polymerase chain reaction**.

Korišćenje polimorfizama DNK za otkrivanje prisustva specifične sekvence, koja bi mogla da ukaže na prisustvo zagađivača, patogena ili posebnog alela na određenom genu. Najčešće koristi lančanu reakciju polimeraze.

DNA fingerprint A description of the **genotype** of an individual from the pattern of **DNA** fragments obtained

from **DNA fingerprinting**. *Synonym*: **DNA profile**.

Opis genotipa neke individue zavisno od tipa fragmenata DNK, dobijenih od DNK metoda otisaka prstiju. *Sinonim*: DNK profile.

DNA fingerprinting The derivation of unique patterns of **DNA** fragments obtained using a number of marker techniques; historically these were **RFLPs**, but latterly they are generally **polymerase chain reaction** based. *Synonym*: **genetic fingerprinting**.

Proizlaženje jedinstvenih tipova fragmenata DNK, dobijenih korišćenjem određenog broja markerskih tehnika; prvobitno one su bile RFLP tehnike, ali kasnije, one su zasnovane na lančanoj reakciji polimeraze. *Sinonim*: genetic fingerprinting.

DNA helicase An enzyme that catalyses the unwinding of the complementary strands of a **DNA** double helix. *Synonym*: **gyrase**.

Enzim koji katalizuje razmotavanje komplementarnih lanaca dvostruke spirale DNK. *Sinonim*: gyrase.

DNA hybridization The annealing of two **single-stranded DNA** molecules, possibly of different origin, to form a partial or complete **double helix**. The degree of hybridization varies with the extent of **complementarity** between the two molecules, and this is exploited to test for the presence of a specific **nucleotide** sequence in a **DNA** sample.

Kaljenje dva jednolančana molekula DNK, koji mogu biti od različitog porekla, da se formira parcijalna ili kompletna dvostruka spirala. Step en hibridizacije varira u zavisnosti od obima komplementarnosti između

dva molekula, a to se koristi za testiranje prisustva specifične sekvence nukleotida u uzorku DNK.

DNA ligase An enzyme that catalyses a reaction to link two separate **DNA** molecules via the formation of a **phosphodiester bond** between the 3'-hydroxyl end of one and the 5'-phosphate of the other. Its natural role lies in **DNA repair** and replication. An essential tool in recombinant **DNA** technology, as it enables the incorporation of foreign DNA into vectors.

Enzim koji katalizuje reakciju vezivanja dva posebna molekula DNK formiranjem fosfodiesterske veze, između 3'-hidroksilnog kraja jedne, i 5'-fosfatnog druge. Njegova prirodna uloga leži u obnovi reparacije i replikacije DNK. Bitno oruđe u tehnologiji rekombinantne DNK kad ona omogućava uključivanje strane DNK u vektore.

DNA micro-array *See*: **micro-array, somatic cell hybrid panel, radiation hybrid cell panel**

Vidi: micro-array, somatic cell hybrid panel, radiation hybrid cell panel.

DNA polymerase *See*: **polymerase**.

Vidi: polymerase.

DNA polymorphism The existence of two or more alternative **alleles** at a **DNA**-based marker locus.

Postojanje dva ili više alternativna alela na DNK-zasnovanom lokusu markera.

DNA primase An enzyme that catalyses the synthesis of the short strands of **RNA** that initiate the synthesis of **DNA** strands.

Enzim koji katalizuje sintezu kratkih lanaca RNK, koji započinje sintezu lanaca DNK.

DNA probe *See: probe.*

Vidi: probe.

DNA profile *See: DNA fingerprint.*

Vidi: DNA fingerprint.

DNA repair A variety of mechanisms that repair errors (e.g. the incorporation of a non-complementary nucleotide) that occur naturally during **DNA replication**.

Mehanizmi koji popravljaju greške (na pr.prisajedinjenje nekomplementarnog nukleotida) koje se prirodno dešavaju tokom replikacije DNK.

DNA replication The process whereby **DNA** copies itself, under the action of and control of **DNA polymerase**.

Proces kojim DNK sebe kopira, posredstvom i pod kontrolom DNK polimeraze.

DNA sequencing Procedures for determining the nucleotide sequence of a **DNA** fragment. Two common methods available: 1. The Maxam Gilbert technique, which uses chemicals to **cleave DNA** into fragments at specific bases; or, most commonly, 2. the Sanger technique (also called the di-deoxy or chain-terminating method) which uses **DNA polymerase** to make new DNA chains, in the presence of **di-deoxynucleotides** (chain terminators) to stop the chain randomly as it grows. In both cases, the **DNA** fragments are separated according to length by **polyacrylamide gel electrophoresis**, enabling the sequence to be read directly from the gel. The procedure has become increasingly automated and large-scale in recent years.

Postupci za određivanje sekvence nukleotida, fragmenta DNK. Postoje dva metoda: 1. Maxam Gilbert-ova tehnika, koja koristi hemikalije da

deli DNK na fragmente u specifičnim bazama ili više uobičajeno, 2. Sanger-ova tehnika (takođe nazvana di-deoksi ili lančano-završni metod) koja koristi DNK polimerazu da formira nove lance DNK, u prisustvu di-deoksinukleotida (koji završavaju lanac) da zaustave lanac prilikom njegovog uvećavanja. U oba slučaja, DNK fragmenti se odvajaju dužinom, putem elektroforeze poliakrilamidnog gela, omogućavajući da sekvencu bude očitana direktno sa gela. Postupak je u poslednjim godinama postao više automatizovan i mnogo korišćen.

DNA topo-isomerase An enzyme that catalyses the introduction or removal of supercoils in **DNA**. *Synonym: topo-isomerase.*

Enzim koji katalizuje uvođenje ili odstranjenje superspiralizacije u DNK. *Sinonim: topo-isomerase.*

DNA transformation *See: transformation.*

Vidi: transformation.

DNA vaccine A vaccine generated by the injection of specific **DNA** fragments to stimulate an immune response.

Vakcina poreklom od injekcije specifičnih DNK fragmenata, radi stimulacije imunoreagovanja.

DNAase *See DNase.*

Vidi: DNase.

DNase Abbreviation for deoxyribonuclease. Any enzyme that catalyses the cleavage of **DNA phosphodiester bonds**. DNase I is a digestive **endonuclease** secreted by the pancreas, that degrades **DNA** into shorter fragments. Many other endonucleases and **exonucleases** are involved in **DNA repair** and replication. *Syno-*

nym: DNAase. *See*: **restriction endonuclease**.

Skraćenica za deoksiribonukleazu. Bilo koji enzim koji katalizuje podelu fosfodiesterских veza DNK. DNKse I je digestivna endonukleaza, koju luči pankreasa koja razlaže DNK na kraće fragmente. Mnoge druge endonukleaze i egzonukleaze su uključene u obnovu DNK i ponavljanje iste. *Sinonim*: DNAase. *Vidi*: restriction endonuclease.

Dolly The first mammal (a sheep) to be created (via **nuclear transfer**) by the **cloning** of an adult **cell** (from the mammary tissue of a ewe). This showed that the process of differentiation into adult tissue is not, as previously thought, irreversible.

Prvi sisar (ovca) koji je stvoren (preko nuklearnog transfera) putem kloniranja jedne odrasle ćelije (od tkiva višnja ovce). To je pokazalo da proces diferencijacije u odraslog tkiva nije kako se prethodno mislilo, ireverzibilan.

domain A portion of a **protein** or **DNA** molecule that has a discrete function or **conformation**. At the **protein** level, can be as small as a few **amino acid residues** or as large as half of the entire **protein**.

Deo proteina ili molekule DNK koji ima striktnu funkciju ili konformaciju. Na nivou proteina, može biti malen kao nekoliko aminokiselinskih ostataka, ili tako velik, kao polovina celog proteina.

dominance The gene action exhibited by a **dominant allele**.

Delovanje gena uslovljeno dominantnim alelom.

dominant 1. Of alleles, one whose effect with respect to a particular trait

is the same in **heterozygotes** as in **homozygotes**. The opposite is **recessive**. 2. Of an individual animal, one that is allowed priority in access to food, mates, etc., by others of its species because of its success in previous aggressive encounters. 3. Of an animal or plant species, the most conspicuously abundant and characteristic in a particular location or environment.

1. Jedan od alela čiji je efekt, u vezi sa posebnom osobinom, isti u heterozigota kao u homozigota. Suprotno je recesivan. 2. Kod individualne životinje, onaj koji ima prioritet u pristupu hrani, mužjaku (ili ženki), itd., sa drugima iz svoje vrste, zbog uspeha u prethodnim agresivnim sukobima. 3. Od vrste životinje ili biljke, najviše vidljivo obilnih i karakterističnih u posebnoj lokaciji ili spoljnoj sredini.

dominant (-acting) oncogene A gene that stimulates **cell proliferation** and contributes to **oncogenesis** when present in a single copy.

Gen koji stimulira umnožavanje ćelija i doprinosi onkogenezi kada je prisutan u pojedinačnoj kopiji.

dominant marker selection Selection of cells via a **gene** encoding a product that enables only the cells that carry the gene to grow under particular conditions. For example, plant and animal cells that express the introduced **neo^r** gene are resistant to neomycin and analogous antibiotics, while cells that do not carry **neo^r** are killed. *See*: **positive selection**.

Odabiranje ćelija putem gena, enkodirajući produkt koji omogućava samo ćelijama koje nose gen da rastu pod posebnim uslovima. Na primer, bilj-

ne i životinjske ćelije koje ispoljavaju uneti *neo'* gen, rezistentne su na neomicin i analogne antibiotike, dok ćelije koje ne nose *neo'*, budu ubijene. *Vidi*: positive selection.

dominant selectable marker A gene that allows the host cell to survive under conditions where it would otherwise die. *Synonym*: **positive selectable marker**.

Gen koji omogućava ćeliji domaćinu da preživi pod uslovima pod kojima bi inače uginula. *Sinonim*: positive selectable marker.

donor junction site The junction between the 5' end of an **exon** and the 3' end of an **intron**. *See*: **acceptor junction site**.

Spajanje između 5' kraja jednog egzona i 3' kraja jednog introna. *Vidi*: acceptor junction site.

donor plant *See*: **ortet**.

Vidi: ortet.

dormancy A period in the life of an animal (hibernation and aestivation) or plant during which growth slows or completely ceases. Evolved to allow survival of adverse environmental conditions. Annual plants survive the winter as dormant seeds, while many perennial plants survive as dormant tubers, rhizomes, or bulbs. Premature breaking of seed dormancy post harvest can be a major problem for maintaining nutritional and/or functional quality, while difficulties in breaking dormancy will lead to poor **germination** of the crop. *See*: **quiescent**.

Period u životu neke životinje (hibernacija i estivacija) ili biljke, tokom kojeg se rast usporava, ili potpuno prestaje. Razvijen da omogući preživljavanje nepovoljnih uslova spoljne sre-

dine. Jednogodišnje biljke prežive zimu kao dormantna semena, dok mnoge višegodišnje biljke prežive kao gomolji, rizomi ili lukovice. Pre-rani prekid mirovanja semena posle žetve može da bude glavni problem za održavanje ishranbenog i funkcionalnog kvaliteta, dok će teškoće u prekidu mirovanja voditi do lošeg klijanja useva. *Vidi*: quiescent.

dosage compensation A regulatory mechanism for sex-linked genes, to allow equivalent levels of gene expression from (in mammals) XY or XX genotypes, even though the gene **copy number** in XX is double that in XY. *See*: **sex linkage**, **Barr body**.

Regulacioni mehanizam za polno-vezane gene, kako bi omogućio ekvivalentne nivoe ispoljavanja gena od (u sisara) XY ili XX genotipova, čak iako je broj kopija gena u XX dvostruk od onog XY. *Vidi*: sex linkage, Barr body.

double crossing-over The formation of two chiasmata within a **chromosome** arm, leading to the generation of a double **recombinant** gamete with respect to genes located within the segment defined by the two genes concerned.

Formiranje dve hiazme u okviru kraka hromozoma, dovodi do stvaranja dvostruke rekombinantne gamete, u odnosu na gene locirane u okviru segmenta definisanog sa dva gena.

double fertilization A process, unique to flowering plants, in which two male nuclei, which have travelled down the **pollen** tube, separately fuse with different female nuclei in the **embryo** sac. The first male **nucleus** fuses with the **egg cell** to form the **zygote**; the second male nucleus fu-

ses with the two **polar nuclei** to form a **triploid** nucleus that develops into the endosperm.

Proces, jedinstven za biljke cvetnice, u kojima se dva muška nukleusa, koji su putovali duž cevi polena, posebno spoje sa različitim ženskim nukleusima u embrionoj kesi. Prvi muški nukleus spoji se sa jajnom ćelijom, obrazuje zigot; drugi muški nukleus spaja se sa dva polarna nukleusa, da formira triploidni nukleus koji se razvija u endosperm.

double helix Describes the coiling of the two strands of the **double-stranded DNA** molecule, resembling a spiral staircase in which the **base pairs** form the steps and the sugar-phosphate backbones form the rails on each side. One strand runs 3'→5', while the complementary one runs 5'→3'

Opisuje uvijanje dva lanca dvostruke DNK molekule, podsećajući na spiralne stepenice, u kojima bazni parovi formiraju stepenice, a šećerno-fosfatne komponente formiraju pruge na svakoj strani. Jedan lanac ide 3'→5', dok onaj dopunski ide 5'→3'.

double recessive An organism homozygous for a **recessive allele** at each of two loci.

Organizam homozigotan za recesivan alel na svakom od dva lokusa.

double-stranded complementary DNA (Abbreviation: **dscDNA**). A double-stranded **DNA** molecule created from a **cDNA** template.

(Skraćenica: **dscDNK**) Molekul DNK sa dva lanca, stvoren od **cDNK** kalupa.

double-stranded DNA (Abbreviation: **dsDNA**). Two **complementary** strands of **DNA** annealed in the form of a **double helix**. *Synonym*: duplex **DNA**.

(Skraćenica: **dsDNK**) Dva komplementarna lanca DNK, uvijena u obliku dvostruke spirale. *Sinonim*: duplex DNK.

doubling time *See*: **cell generation time**.

Vidi: cell generation time.

down promoter mutation A mutation that decreases the frequency of initiation of **transcription**. This leads to a fall in the level of **mRNA** compared to the **wild type** state.

Mutacija koja smanjuje učestalost inicijacije transkripcije. To vodi padu u nivou mRNK, u poređenju sa stanjem divljim tipom.

down-regulate To induce genetically a reduction in the level of a gene's expression.

Genetički izazvati smanjenje u nivou ispoljavanja gena.

downstream 1. With respect to **DNA**, the **nucleotides** that lie in the 3' direction from the point of reference, which is frequently the site at which **transcription** is initiated. This is generally designated +1, with downstream nucleotides numbered +2, +10 etc. 2. In chemical engineering, those phases of a manufacturing process that follow the **biotransformation** stage. Usually refers to the recovery and purification of the product of a **fermentation** process. *See*: **downstream processing**.

1. U odnosu na DNK, nukleotidi koji se nalaze u 3' pravcu od repera, što je često mesto na kojem se započinje transkripcija. To je uopšte označeno sa +1, sa donjim tokom nukleotida numerisanim +2, +10 itd. 2. U hemijskom inženjerstvu, one faze proizvodnog procesa koje slede biotransformacioni stadijum. Obično se odnosi na oporavak i prečišćavanje pro-

dukta fermentacionog procesa. *Vidi:* downstream processing.

downstream processing A general term for biotechnological processes which follow the biology, i.e. fermentation of a **micro-organism** or growth of a plant. Particularly relevant to **fermentation** processes, which produce a large quantity of a dilute mixture of substances, products and micro-organisms. These must be separated, and the product concentrated, purified and converted into a useful form.

Opšti izraz za biotehnološke procese koji slede biologiju, t.j. fermentaciju mikroorganizama, ili rast biljke. Posebno relevantno za fermentacione procese, koji proizvode veliku količinu razređene smeše supstanci, produkata i mikroorganizama. Ovi moraju biti izdvojeni, i proizvod koncentrisan, prečišćen i pretvoren u korisnu formu.

drift *See:* genetic drift.

Vidi: genetički drift.

Drosophila melanogaster The fruit fly, used for many years as a **model** for eukaryotic genetics. Of the nearly 300 disease-causing genes in the human genome, more than half have an analogous gene in the *Drosophila* genome.

Vinska mušica, korišćena niz godina kao model u genetici eukariota. Od skoro 300 gena izazivača bolesti u ljudskom genomu, više od polovine ima analogni gen sa genomom *Drosophila-e*

drug *See:* therapeutic agent.

Vidi: therapeutic agent.

drug delivery Method by which a drug is delivered to its site of action. For traditional drugs this is another name for *formulation*. However, biotec-

hnology has allowed the development of a range of new therapeutic-agent delivery systems, such as **liposomes** and other **encapsulation** techniques, and a range of mechanisms that target a **therapeutic** agent to a particular cell or tissue.

Metod kojim se lek predaje na njegovo mesto delovanja. Za tradicionalne lekove, to je drugo ime za *formulaciju*. Međutim, biotehnologija je dopustila razvoj raspona novih sistema predaje terapijskog agensa, kao što su lipozomi i druge tehnike enkapsulacije, i raspon mehanizama koji usmeravaju terapijski agens na određenu ćeliju ili tkivo.

dry weight The weight of **tissue** obtained following sufficiently prolonged oven-drying at high temperature to remove all water. **Freeze-drying** may also be employed but generates a slightly different result because **bound water** is not removed. *See:* free water.

Težina tkiva, dobijena dovoljno dugim sušenjem u peći na visokoj temperaturi, da bi se odstranila sva voda. Sušenje zamrzavanjem može takođe biti primenjeno, ali stvara neznatno različit rezultat, pošto vezana voda nije odstranjena. *Vidi:* free water.

dscDNA *See:* double-stranded complementary DNA.

Vidi: double-stranded complementary DNA.

dsDNA *See:* double-stranded DNA.

Vidi: double-stranded DNA.

dTTP Rarely used but strictly correct abbreviation for **deoxythymidine 5'-triphosphate**. Required for **DNA** synthesis since it is a direct precursor molecule. *See:* **TTP**.

Retko korišćena, ali vrlo ispravna skraćenica za deoxythymidine 5'-trip-

hosphate. Potreban za sintezu DNK, pošto je direktan prekursor. *Vidi:* TTP.

dual culture A culture made of a plant tissue and one organism (such as a nematode) or an obligate parasite/micro-organism (such as a fungus). Dual culture techniques are used for a variety of purposes, including assessing host-parasite interactions and the production of **axenic cultures**.

Kultura koja se sastoji od biljnog tkiva i jednog organizma (kao što je nematoda), ili neki obavezni parazit/mikroorganizam (kao što je gljiva).

Tehnike dvojne kulture se koriste u različite svrhe, uključujući i ocenu interakcije domaćin-parazit i proizvodnju akseničnih kultura.

duplex DNA *See:* **double-stranded DNA**.

Vidi: double-stranded DNA.

duplication Multiple occurrence of: 1. A **DNA sequence** within a defined length of **DNA**; or 2. A specific segment in the same **chromosome** or **genome**.

Višestruka pojava. 1. Sekvence DNK u okviru određene dužine DNK; ili 2. Specifičnog segmenta u istom hromozomu ili genomu.

E

E site *See: exit site.*

Vidi: exit site.

E. coli *See: Escherichia coli.*

Vidi: *Escherichia coli.*

EBV *See: estimated breeding value.*

Vidi: estimated breeding value.

EC *See: Enzyme Commission number.*

Vidi: Enzyme Commission number.

ecdysone A steroid **hormone** in insects stimulating the synthesis of **proteins** involved in moulting and metamorphosis.

Steroidni hormon u insekata koji stimulira sintezu proteina uključenih u mitarenje i metamorfozu.

eclosion 1. Emergence of an adult insect from the pupal stage. 2. Initial phase of germination of fungal spores.

1. Pojavljivanje odraslog insekta iz stadijuma lutke. 2. Početna faza klijanja gljivičnih spora.

ecological diversity *See: biodiversity.*

Vidi: biodiversity.

economic trait locus (Abbreviation: ETL). A locus influencing a trait that contributes to producer's income.

(Skrtačnica: ETL) Lokus koji utiče na osobinu koja doprinosi dohotku proizvođača.

ecosystem The complex of a living community and its environment, functioning as an ecological unit in nature. *See: abiotic; biotic factors.*

Kompleks žive zajednice i njene spoljne sredine, funkcionirajući kao jedna eko-

loška jedinica u prirodi. *Vidi: abiotic; biotic factors.*

ecotype A population or a strain of an organism that is adapted to a particular habitat.

Populacija ili soj nekog organizma koji je adaptiran na posebno stanište.

ectopic Anomalous situation or relation, particularly with respect to pregnancy, where the **foetus** is implanted outside the uterus.

Nenormalna situacija ili odnos, posebno u vezi sa bremenitošću, gde je fetus usađen izvan uterusa.

edible vaccine Edible antigen-containing material, that activates the immune system via gut-associated lymphoid tissues. A preferred route for vaccine administration, particularly in areas where the technological infrastructure needed for maintenance of vaccines is absent. The vaccine is synthesized *in vivo* in the edible parts of **transgenic** plants (e.g. grains, tubers, fruits, etc.) or eggs.

Jestivi materijal koji sadrži antigen, koji aktivira imuni sistem preko limfoidnih tkiva povezanih sa alimentarnim kanalom. Poželjan put za davanje vakcine, posebno u oblastima gde je tehnološka infrastruktura potrebna za održavanje vakcina odsutna. Vakcina je sintetisana *in vivo* u jestivim delovima transgeničnih biljaka (t.j.zrna, krtole, plodovi, itd.) ili jaja.

editing *See: splicing* (1).

Vidi: splicing (1).

EDTA *See: ethylenediamine tetraacetic acid.*

Vidi: ethylenediamine tetraacetic acid.

EDV Abbreviation for **essential derivation of varieties.**

Skraćenica za essential derivation of varieties.

effector cells Cells of the immune system that are responsible for the production of cell-mediated **cytotoxicity.**

Ćelije imunog sistema koje su odgovorne za proizvodnju citotoksičnosti posredstvom ćelija.

effector molecule A molecule that influences the behaviour of a regulatory molecule, such as a **repressor protein**, thereby influencing **gene** expression.

Molekul koji utiče na ponašanje regulatornog molekula, kao što je represor protein, time utičuće na ekspresiju gena.

egg 1. The fertilized **zygote** in egg-laying animals. 2. The mature female reproductive cell in animals and plants.

1. Oplođeni zigot u životinja nosilja. 2. Reproaktivna ćelija odrasle ženke u životinja i biljaka.

EGS *See: external guide sequence.*

Vidi: external guide sequence.

EIA *See: enzyme immunoassay, ELISA.*

Vidi: enzyme immunoassay, ELISA.

elastin A fibrous **protein** that is the major constituent of the yellow elastic fibres of animal connective tissue.

Fibrozni protein koji je glavni sastojak žutih elastičnih vlakana životinjskog vezivnog tkiva.

electro-blotting The electrophoretic transfer of **DNA, RNA** or **protein**

from a gel, in which they have been separated, to a support matrix, such as **nitrocellulose.** A transfer technique employed in **Southern** and **northern blotting.**

Elektroforetski transfer DNK, RNK, ili proteina iz gela u kojem su bili izdvojeni, da podrže matricu, kao što je nitroceluloza. Tehnika transfera primjenjena u southern i northern blotting-u.

electrochemical sensor Biosensors, such as an **enzyme electrode**, in which a biological process is harnessed to an electrical sensor system. Other types couple a biological event to an electrical one via a range of mechanisms, including the reduction of oxygen or **pH** change.

Biosenzori, kao što je enzimski elektroda u kojoj je biološki proces povezan za električni senzorski sistem. Ostali tipovi spajaju biološki događaj za električni preko raspona mehanizama, uključujući redukciju kiseonika ili promenu pH.

electron microscope (Abbreviation: EM). A microscope that uses an electron beam focussed by magnetic 'lenses'. *See: scanning electron microscope.*

(Skraćenica: EM) Mikroskop koji koristi elektronsku struju dovedenu putem magnetskih „sočiva“. *Vidi: scanning electron microscope.*

electrophoresis A ubiquitous molecular biology technique, with many variants, used to resolve complex mixtures of macromolecules into their components. Its principle is to subject samples to an electric field applied across a porous matrix. Molecules will migrate under these conditions at a rate dependent on their net

electric charge and/or their molecular weight. *See*: **agarose gel electrophoresis**, **polyacrylamide gel electrophoresis**, **denaturing gradient gel electrophoresis**, **capillary electrophoresis**, **sodium dodecyl sulphate polyacrylamide gel electrophoresis**, **thermal gel gradient electrophoresis** **pulsed-field gel electrophoresis**, and **iso-electric focusing gel**.

Savremena tehnika molekularne biologije, sa mnogo varijanata, korišćena da razloži kompleksne smeše makromolekula na njihove komponente. Njen princip je da podvrgne uzorke električnom polju, primenjenom na poroznu matricu. Molekuli će se pod tim uslovima seliti, brzinom zavisnom od njihovog neto električnog napona i/ili njihove molekularne težine. *Vidi*: agarose gel electrophoresis, polyacrylamide gel electrophoresis, denaturing gradient gel electrophoresis, capillary electrophoresis, sodium dodecyl sulphate polyacrylamide gel electrophoresis, thermal gel gradient electrophoresis pulsed-field gel electrophoresis i isoelectric focusing gel.

electroporation The induction of transient pores in bacterial cells or protoplasts by the application of a pulse of electricity. These pores allow the entry of **exogenous DNA** into the cell. Widely used for the **transformation** of bacteria.

Uvođenje nestalnih pora u bakterijske ćelije ili protoplaste putem primene pulsa elektriciteta. Te pore omogućavaju ulazak egzogene DNK u ćeliju. Široko korišćene za transformaciju bakterija.

ELISA Abbreviation for enzyme-linked immunosorbent assay. An **immuno-**

assay, i.e. an **antibody**-based technique for the diagnosis of the presence and quantity of specific molecules in a mixed sample. It combines the specificity of an **immunoglobulin** with the detectability of an enzyme-generated coloured product. In one form, the primary **antibody** (specific to the test **protein**) is adsorbed onto a solid substrate, and a known amount of the sample is added; all the **antigen** in the sample is bound by the antibody. A second antibody (conjugated with an enzyme) specific for a second site on the test protein is added; and the **enzyme** generates a colour change in the presence of a substrate reagent.

Skraćenica za enzimski vezanu imunosorbentnu probu. Imunoproba, t.j. tehnika zasnovana na antitelu, za dijagnozu prisustva i količine specifičnih molekula u mešanom uzorku. Ona kombinuje specifičnost imunoglobulina uz prisustvom enzimski stvorenog obojenog produkta. U jednom obliku, primarno antitelo (specifično za testni protein) je adsorbavano na čvrsti supstrat i dodata je poznata količina uzorka; sav antigen u uzorku je vezan putem antitela. Drugo antitelo (sjedinjeno sa enzimom), specifično se dodaje za drugo mesto na testnom proteinu; i enzim izaziva promenu boje u prisustvu reagensa supstrata.

elite tree A phenotypically superior tree in a tree **breeding** programme.

Fenotipski superiorno drvo u programu gajenja drveta.

elongation factors Soluble **proteins** required for the elongation of **polypeptide** chains on **ribosomes**.

Rastvorljivi proteini potrebni za elongaciju polipeptidnih lanaca na ribozomima.

embryo An immature organism in the early stages of development. In mammals, develops in the first months in the uterus. In plants, it is the structure that develops in the **megagametophyte**, as result of the **fertilization** of an **egg** cell, or occasionally without fertilization. **Somatic embryos** can often be induced in *in vitro* plant cell cultures.

Nezreli organizam u ranim stadijumima razvica. U sisara, razvija se u prvim mesecima u uterusu. U biljaka, to je struktura koja se razvija u megagametofitu, kao rezultat oplodjenja jajne celije, ili povremeno bez oplodjenja. Somatski embrioni mogu često da budu izazvani u *in vitro* biljnim ćelij-skim kulturama.

embryo cloning The creation of identical copies of an **embryo** by **embryo splitting** or by **nuclear transfer** from undifferentiated embryonic cells.

Stvaranje identičnih kopija embriona putem cepanja embriona, ili pomoću transfera nukleusa od nediferenciranih embrionskih ćelija.

embryo culture The culture of embryos on nutrient media.

Kultura embriona na medijima hranljivih materija.

embryo multiplication and transfer (Abbreviation: EMT). The cloning of animal embryos and their subsequent transfer to recipients via **artificial inembryonation**. The cloned embryos can be derived from embryonic or adult tissue.

(Skracenicica: EMT) Kloniranje životinjskih embriona i njihov potonji transfer recipijentima preko veštačke inembriacionije. Klonirani embrioni mogu biti izvedeni od embrionog, ili odraslog tkiva.

embryo rescue A sequence of **tissue culture** techniques utilized to enable a fertilized immature embryo resulting from an **interspecific cross** to continue growth and development, until it can be regenerated into an adult plant.

Sekvenca tehnike kulture tkiva, korišćena da osposobi oplodeni nezreli embrion koji nastaje od međuspecifičnog ukrštanja, da nastavi rast i razvica, dok ne bude regenerisan u odraslu biljku.

embryo sac The mature female **gametophyte** in angiosperms. Generally a seven-celled structure - two synergids, one **egg** cell, three antipodal cells (each with a single haploid nucleus) and one **endosperm** mother cell with two **haploid** nuclei.

Odrasli ženski gametofit u angiospermijima. Uopšte, sedmoćelijska struktura-dva sinergida, jedne jajane ćelije, tri antipodalne ćelije (svaka sa jednim haploidnim nukleusom), i jedne majčinske ćelije endosperma, sa dva haploidna nukleusa.

embryo sexing The determination of the sex of an embryo prior to birth. Typically achieved by the **polymerase chain reaction**-mediated amplification of **DNA** extracted from a sample of embryonic tissue. Dependent on the availability of reliable markers for the differential sex chromosome.

Određivanje pola nekog embriona pre rođenja. Obično postignuto putem umnožavanja DNK, posredstvom lančane reakcije polimeraze, ekstrahovane iz uzorka tkiva embriona. Zavisno od raspoloživosti pouzdanih markera za diferencirani polni hromozom.

embryo splitting The splitting of young embryos into several sections, each of which develops into an animal. A form of animal cloning, i.e. of producing animals that are genetically identical. In practice, the number of animals that can be produced from a single embryo is less than 10.

Podela mladih embriona na nekoliko delova od kojih se svaki razvije u životinju. Oblik životinjskog kloniranja, t.j. proizvodnje životinja koje su genetički identične. U praksi, broj životinja koji se može proizvesti od jednog embriona je manji od 10.

embryo storage Cryogenic preservation of animal embryos, allowing **inembryonation** or other manipulations long after embryo formation.

Kriogena konzervacija životinjskih embriona, omogućavajući dugo posle formiranja embriona inembrionaciju ili druge manipulacije.

embryo technology Generic name for any modification of mammalian embryos. It encompasses **embryo cloning**, **embryo splitting**, **embryo storage**, and **in vitro fertilization**.

Opšti naziv za bilo kakvu modifikaciju embriona sisara. Obuhvata kloniranje embriona, podelu embriona, skladištenje embriona, i *in vitro* oplodjenje.

embryo transfer (Abbreviation: ET). *See: embryo multiplication and transfer, multiple ovulation and embryo transfer.*

(Skraćenica: ET) *Vidi: embryo multiplication and transfer, multiple ovulation and embryo transfer.*

embryogenesis 1. (General) Development of an embryo. 2. (In plants) *In vitro* formation of plants from plant tissues, through a pathway closely resembling normal embryogeny from

the zygote. **Somatic cell embryogenesis** is an alteRNative technique. The generation of embryos has two stages: initiation and maturation. Initiation needs a high level of the group of plant hormones called auxins; maturation needs a lower level.

1. (Opšte) Razviće embriona. 2. (U biljaka) *In vitro* formiranje biljaka iz biljnih tkiva, kroz putanju koja je veoma nalik na normalnu embriogeniju iz zigota. Somatska ćelijska embriogeneza je alternativna tehnika. Stvaranje embriona ima dva stadijuma: začetak i sazrevanje. Začetak zahteva visoki nivo grupe biljnih hormona, zvanih auksina; sazrevanje treba niži nivo.

embryoid Plant biotechnology term no longer commonly used. An embryo-like body developing *in vitro*, forming a complete, self-contained plantlet with no **vascular** connection with the **callus**.

Izraz biljne biotehnologije koji se obično više ne koristi. Telo slično embrionu koje se razvija *in vitro*, formirajući kompletnu, samostalnu biljčicu bez vaskularne veze sa kalusom.

embryonic stem cells (Abbreviation: ES cells). Cells of the early embryo that can give rise to all differentiated cells, including **germ line** cells.

(Skraćenica: ES cells) Embrionalne matične ćelije. Ćelije ranog embriona koje mogu da pruže uspon svim diferenciranim ćelijama, uključiv klicnicu ćelije.

emission wavelength The specific wavelength of light emitted by a fluorescent molecule, such as a labelled **probe**, upon absorption of light at the (higher) **excitation wavelength**.

Specifična talasna dužina svetlosti, emitovana od fluorescentnog molekula,

kao što je obeležena proba, posle apsorpcije svetlosti pri (višoj) eksitacionoj talasnoj dužini.

EMT *See:* **embryo multiplication and transfer.**

Vidi: embryo multiplication and transfer.

encapsidation The process by which the **nucleic acid** of a **virus** is enclosed in a **capsid**.

Proces, kojim se nukleinska kiselina virusa zatvara u omotač.

encapsulating agents Anything which forms a shell around an **enzyme** or bacterium, common agents being **polysaccharides** such as **alginate** or agar. The agents are inert and allow nutrients and oxygen to diffuse readily into and out of the sphere, and are easy to convert from gel (solid) to sol (liquid) or solution form by altering the temperature or the concentration of ions.

Bilo šta što obrazuje školjku oko enzima ili bakterije, obični agensi bivajući polisaharidi, kao što je alginat ili agar. Agensi su inernтни i omogućavaju hranljivim materijama i kiseoniku da lako difunduju u, i iz sfere, i lako se prevode od gela (čvrstog) do sola (tečnog), ili oblika rastvaranja, menjajući temperaturu ili koncentraciju jona.

encapsulation Any method packaging an **enzyme** or bacterium and maintaining its normal functions. Used to immobilize cells in a bioreactor.

Bilo koji metod pakovanja nekog enzima ili bakterije i održavanja njihovih normalnih funkcija. Korišćen da imobilizuje ćelije u bioreaktoru.

encode The gene product specified by a particular **nucleic acid** sequence. *See:* **genetic code.**

Produkt gena, specifikovan putem posebne sekvence nukleinske kiseline. *Vidi:* genetic code.

endangered species A plant or animal species in immediate danger of extinction because its **population** number has reached a critical level, or its habitat has been drastically reduced.

Biljna ili životinjska vrsta u neposrednoj opasnosti od izumiranja, zbog veličine populacije koji je dostigao kritičan nivo, ili je njeno stanište drastično smanjeno.

endemic Describing an organism, often a disease or pest, that is always present in a stated area.

Opisujući neki organizam, često bolest ili štetočinu, koji su uvek prisutni u određenoj oblasti.

end-labelling The introduction of a readily-visualized **tag** at the end of a **DNA** or **RNA** molecule. A commonly used method is to introduce a ^{32}P atom onto the end of a **DNA** molecule by means of the enzyme T4 **polynucleotide** kinase.

Uvođenje lako vidljivog priveska na kraju DNK ili RNK molekula. Uobičajeno korišćen metod je da se uvede jedan ^{32}P atom na kraj molekule DNK, putem enzima T4 polinukleotidne kinaze.

endocrine gland Any **gland** in an animal that manufactures hormones and secretes them directly into the bloodstream to act at distant sites in the body, known as target organs or cells.

Bilo koja žlezda u životinje koja proizvodi hormone i luči ih direktno u krvotok, da deluje na daleka mesta u telu, poznata kao ciljni organi ili ćelije.

endocrine interference Interference with the normal balance of hormones. Remećenje normalnog bilansa hormona.

endocytosis The process by which materials enter a **cell** without passing through the cell membrane. The membrane folds around material outside the cell, resulting in the formation of a sac-like vesicle inside which the material is entrapped. This vesicle is then pinched off from the cell surface so that it lies within the cell. *See: phagocytosis, pinocytosis.*

Proces kojim materijali ulaze u ćeliju bez prolaska kroz ćelijsku membranu. Membrana se savija oko materijala izvan ćelije, dovodeći do formiranja kesastog mehurića, unutar kojeg je materijal uhvaćen u klopku. Mehurić je zatim otkinut od površine ćelije, tako da leži u okviru ćelije. *Vidi: phagocytosis, pinocytosis.*

endoderm The internal layer of cells of the **gastrula**, which develops into the alimentary canal (gut) and digestive glands of the adult.

Unutrašnji sloj ćelija gastrule, koja se razvija u alimentarnom kanalu i digestivnim žlezdama odraslih.

endodermis The layer of living cells, with various characteristically thickened walls and no intercellular spaces, which surrounds the **vascular tissue** of certain plants and occurs in nearly all roots and certain stems and leaves. It separates the cortical cells from cells of the **pericycle**.

Sloj živih ćelija, sa različitim karakteristično zadebljanim zidovima i bez interćelijskih prostora, koji okružuje vaskularno tkivo izvesnih biljaka, i nastaje u skoro svim korenjima i stablima i listovima. Odvaja ćelije kore od ćelija pericikla.

endogamy *See: inbreeding.*

Vidi: inbreeding.

endogenous Derived from within; from the same **cell** type or organism. *Opposite: exogenous.*

Nastao iznutra; od istog tipa ćelije ili organizma. *Suprotno: exogenous.*

endomitosis Duplication of chromosomes without division of the nucleus, resulting in a doubling (or more) in the **chromosome** number within a cell.

Udvostručavanje hromozoma bez podele nukleusa, dovodeći do udvostručavanja (ili više) u broju hromozoma u okviru ćelije.

endonuclease An enzyme that cleaves a **phosphodiester bond** within a **DNA** strand, forming two smaller strands. *See: exonuclease, restriction endonuclease.*

Enzim koji raskida fosfodiestersku vezu u lancu DNK, formirajući dva manja lanca. *Vidi: exonuclease, restriction endonuclease.*

endophyte An organism that lives inside a plant.

Organizam koji živi unutar biljke.

endoplasmic reticulum (Abbreviation: ER). A cytoplasmic net of membranes, adjacent to the nucleus, visible under the electron microscope. The sites of **protein** synthesis.

(Skraćenica: ER) Citoplazmatična mreža membrana, granična sa nukleusom, vidljiva pod elektronskim mikroskopom. Mesta sinteze proteina.

endopolyploidy The net result of **endomitoses**. The somatic **chromosome** number has doubled (or more), forming a **polyploid** cell line. If these differentiate into a **germ line**, then the gametic number will have also increased proportionately, giving rise to homogeneously polyploid individuals, termed endopolyploids.

Neto rezultat endomitoza. Broj somatskih hromozoma se udvostručio (ili više), formirajući poliploidnu ćelijsku liniju. Ako se one diferenciraju u klicinu liniju, tada će gametski broj takođe proporcionalno da se poveća, dajući izvor homogeno poliploidnim individuama, nazvanim endopoliploidima.

endoprotease An enzyme that cleaves internal **peptide** bonds within a **polypeptide** molecule. Site of cleavage is usually specific to certain amino acid **residues**.

Enzim koji prekida unutrašnje peptidne veze u okviru polipeptidnog molekula. Mesto prekida je obično specifično za izvesne rezidue aminokiselina.

Endoreduplication Chromosome reproduction during interphase. Four-chromatid chromosomes (diplochromosomes) are seen during this phase. Reprodukcijska hromozoma tokom međufaze. Hromozomi sa četiri hromatida (diplohromozomi) vide se tokom te faze.

endosperm The nutritive tissue that develops in the seed of most angiosperms, containing varying proportions of **carbohydrate** (usually starch), **protein** and lipid. In most **diploid** plants, the endosperm is **triploid**.

Hranljivo tkivo koje se razvija u semenu većine angiospermi, sadržavajući različite proporcije ugljenih hidrata (obično skroba), proteina i lipida. U većini diploidnih biljaka, endosperm je triploid.

endosperm mother cell One of the seven cells of the mature plant **embryo sac**, containing the two **polar nuclei** and, which, following fertilization, gives rise to the primary endosperm

cell from which the **endosperm** develops.

Jedna od sedam ćelija embrionove kесе zrele biljke, koja sadrži dva polarna nukleusa, i koja posle oplodjenja daje uspon primarnoj ćeliji endosperma od koje se endosperm razvija.

endotoxin A component of the cell wall of gram-negative bacteria that elicits, in mammals, an inflammatory response and fever.

Komponenta ćelijskog zida gram-negativnih bakterija, koja u sisara izaziva zapaljivo reagovanje i groznicu.

end-product inhibition The inhibition of an **enzyme** by a **metabolite**. Typically, the enzyme is the first enzyme in a biosynthetic pathway, and the metabolite the product of the last step in the pathway. *See: feedback inhibition.*

Suzbijanje nekog enzima putem metabolita. Karakteristično, enzim je prvi enzim u biosintezi a metabolit je produkt poslednjeg koraka u putanji. *Vidi: feedback inhibition.*

enhancer 1. A substance or object that increases a chemical activity or a physiological process. 2. A eukaryotic **DNA** sequence (also found in some eukaryotic viruses) which increases the **transcription** of a gene. Located up to several kbp, usually (but not exclusively) **upstream** of the gene in question. In some cases can activate transcription of a gene with no (known) **promoter**. *Synonyms: enhancer element; enhancer sequence.* 3. A major or modifier gene that increases the rate of a physiological process.

1. Supstanca ili objekt, koji povećava hemijsku aktivnost ili fiziološki proces. 2. Eukariotska sekvenca DNK (tako-

đe nađena u nekih eukariotskih virusa) koja povećava transkripciju gena. Locirana na nekoliko kbp, obično (ali ne isključivo) podstiče određene gene. U nekim slučajevima može da aktivira transkripciju gena bez (poznatog) promotera. *Sinonimi*: enhancer element, enhancer sequence. 3. Glavni ili modifikujući gen koji povećava stepen fiziološkog procesa.

enhancer element *See*: **enhancer**.

Vidi: enhancer.

enhancer sequence *See*: **enhancer**.

Vidi: enhancer.

enolpyruvyl-shikimate-3-phosphate synthase (Abbreviation EPSP synthase or EPSPS). An enzyme produced by virtually all plants, which is essential for normal metabolism, and for the **biosynthesis** of aromatic amino acids. **Glyphosate**- and sulfosate-containing herbicides act by inhibiting **EPSP synthase** activity, but because strain CP4 of *Agrobacterium* sp. is unaffected by glyphosate, the introduction of the **CP4 EPSPS** gene into crop plants generates a tolerance of glyphosate-containing herbicides.

(Skracjenica: EPSP synthase ili EPSPS)

Enzim, proizveden od gotovo svih biljaka, koji je bitan za normalan metabolizam, i za biosintezu aromatičnih aminokiselina. Glifosat-i sulfosat sadržavajući herbicidi, deluju putem sprečavanja aktivnosti EPSP sintaze, ali pošto je soj CP4 *Agrobacterium*-a sp. van uticaja glifosata, uvođenje CP4 EPSP gena u useve izaziva toleranciju herbicida koji sadrže glifosat.

enterotoxin A bacterial **protein** that, following release into the intestine, causes cramps, diarrhoea and nausea.

Bakterijski protein koji, sledeći otpuštanje u creva, izaziva grčeve, diareju i muku.

enucleated ovum Egg cell from which the **nucleus** has been removed, usually as a preparatory step for **nuclear transfer**.

Jajna ćelija iz koje je nukleus odstranjen, obično kao pripremni korak za transfer nukleusa.

enzyme A protein which, even in very low concentration, catalyses specific chemical reactions but is not used up in the reaction. Enzymes are classified into six major groups (1–6), according to the type of reaction they catalyse: 1. oxidoreductases; 2. transferases; 3. hydrolases; 4. lyases; 5. isomerases; 6. ligases. Generally enzymes are named by the addition of the suffix -ase to the name of their **substrate**, and are classified by a standard numerical system: the **Enzyme Commission (EC) number**.

Protein, koji, čak i u vrlo niskoj koncentraciji, katalizuje specifične hemijske reakcije, ali nije iscrpen u reakciji. Enzimi su klasifikovani u šest glavnih grupa (1–6), prema tipu reakcije koju katalizuju; 1. oksidoreduktaze; 2. transferaze; 3. hidrolaze; 4. liaze; 5. izomeraze; 6. ligaze. Enzimi su nazvani dodavanjem nastavka -aze imenu njihovih supstrata, a klasifikovani su putem standardnog numeričkog sistema: Enzyme Commission (EC) number.

enzyme bioreactor A reactor in which a chemical **conversion** reaction is catalysed by an **enzyme**.

Reaktor u kojem je hemijska reakcija konverzije katalizovana putem nekog enzima.

Enzyme Commission number (Abbreviation: EC number). Systematic **label** which identifies an enzyme in the

technical literature. Consists of four numbers separated by dots: the first classifies the enzyme into one of the six broad enzyme groups (*see: enzymes*); each group is subdivided into sub-groups, each sub-group into sub-sub-groups, and the last number is specific for the enzyme, e.g. EC 3.1.21.1 is **deoxyribonuclease I**.

(Skrtaćenica: EC number) sistematička oznaka koja identifikuje neki enzim u tehničkoj literaturi. Sastoji se od četiri broja razdvojena tačkama: prvi klasifikuje enzim u jednu od 6 širokih enzimskih grupa (*Vidi enzymes*); svaka grupa je ponovo podeljena u podgrupe, svaka podgrupa podpodgrupe, a poslednji broj je specifičan za enzim, na pr. EC 3.1.21.1 je deoksiribonukleaza I.

enzyme electrode A type of biosensor, in which an **enzyme** is immobilized onto the surface of an electrode. When the enzyme catalyses its reaction, electrons are transferred from the reactant to the electrode, and so a current is generated. There are two types of enzyme electrodes: 1. **Ampometric** (measuring current flow) where the electrode is kept as near zero voltage as possible. When the enzyme catalyses its reaction, electrons move into the electrode, and so a current flows; 2. **Potentiometric** (measuring changes in electrical potential) when the electrode is held at a voltage which counteracts the voltage determined by the enzyme's tendency to push electrons into it. Usually enzymes transfer their electrons inefficiently to the electrode, so a mediator compound is coated onto the electrode to help the transfer.

Tip biosenzora, u kojem je neki enzim imobilisan na površini neke elektro-

de. Kada enzim katalizuje njenu reakciju, elektroni se prenose od reaktanta do elektrode, i tako je stvorena struja. Ima dva tipa enzimskih elektroda: 1. **Ampometrički** (mereći tok struje) gde se elektroda drži što je moguće bliže nultoj voltaži. Kada enzim katalizuje njenu reakciju, elektroni se pomere u elektrodu i tako teče struja. 2. **Potenciometrički** (mereći promene u električnom potencijalu) kada se elektroda drži na voltaži koja umanjuje voltažu određenu tendencijom enzima da prenese elektrone u nju. Obično enzimi prenose neefikasno njihove elektrone na elektrodu, tako da je medijatorsko jedinjenje na elektrodi pokriveno da pomogne prenos.

enzyme immunoassay A range of immunoassay techniques employing enzymes, which includes **ELISA**.

Raspon tehnika imunoprobe koristeći enzime, koje uključuju ELISA.

enzyme kinetics The quantitative characteristics of enzyme reactions.

Kvantitativna karakteristika enzimskih reakcija.

enzyme stabilization Maintaining the active **conformation** of an **enzyme**. This can be achieved *in vitro* by providing the appropriate chemical environment and cofactors. In some cases the criticality of these factors can be reduced by binding an **antibody** to the enzyme, in such a way that the active site of the enzyme is left unblocked.

Održavanje aktivne konformacije nekog enzima. To se može postići *in vitro*, obezbeđujući odgovarajuću hemijsku sredinu i kofaktore. U nekim slučajevima kritičnost tih faktora može biti smanjena vezivanjem nekog an-

titela za enzim, na takav način da se aktivno mesto enzima ostavi deblokirano.

enzyme-linked immunosorbent assay

See: **ELISA**.

Vidi: **ELISA**.

EPD See: **expected progeny difference**.

Vidi: **expected progeny difference**.

epicotyl The upper portion of the axis of a plant **embryo** or seedling, above the **cotyledons**.

Gornji deo biljnog embriona ili klijanca, iznad kotiledona.

epidermis 1. The outmost layer of cells of the body of an animal. In invertebrates the epidermis is normally only one **cell** thick and is covered by an impermeable **cuticle**. In vertebrates the epidermis is the thinner of the two layers of skin. 2. The outermost layer of cells covering a plant. It is overlaid by a cuticle and its functions are principally to protect the plant from injury and to reduce water loss. Some epidermal cells are modified to form **guard cells** or hairs of various types. In woody plants the functions of the shoot epidermis are taken over by the periderm tissues and in mature roots the epidermis is sloughed off and replaced by the hypodermis.

1. Spoljnji sloj ćelija tela neke životinje. U beskičmenjaka, epiderm je normalno samo jedna ćelija, debela i pokrivena nepropusnom kutikulom. U kičmenjaka, epiderm je tanji i sastoji se od dva sloja kože. 2. Krajnji spoljašnji sloj ćelija koji pokriva biljku. On je prekriven kutikulom i njene funkcije su uglavnom da zaštite biljku od povrede, i da smanje gubitak vode. Neke ćelije epiderma su izmenjene kako bi formirale kontrolne će-

lije koje formiraju stromu, ili dlake različitih tipova. U drvenastih biljaka, funkcije epidermisa su preuzete od tkiva periderma i u starih korenova epiderm je pomeren i zamenjen hipodermisom.

epigenesis Describes the developmental process whereby each successive stage of normal development is built up on the foundations created by the preceding stages of **development**; an embryo is built up from a zygote, a seedling from an **embryo**, and so on. Opisuje razvojni proces kojim je svaki sukcesivni stadijum normalnog razvića ugrađen na osnovu stvorene prethodnim stadijumima razvića; embrion je izgrađen od zigota, klijanac od embriona itd.

epigenetic variation Non-hereditary and reversible variation; often the result of a change in **gene expression** due to **methylation** of DNA.

Nenasledna i povratna varijacija; često rezultat promene u ekspresiji gena usled metilacije DNK.

epinasty A process by which the growth of branches or petioles is abnormally pointing downward. This phenomenon is caused by the more rapid growth of the upper side. Epinasty may result from either nutritional deficiencies or irregularities at the plant **growth regulator** level. Not to be confused with wilting, as epinastic tissues are turgid.

Proces kojim je rast grana ili lisnih drški abnormalno usmeren na dole. Ovaj fenomen je izazvan bržim rastom gornje strane. Epinastija može nastati bilo deficitarnošću u ishiani ili nepravilnostima na nivou regulatora rasta biljke. Ne treba mešati sa venjenjem, pošto su epinastička tkiva sa visokim turgorom.

epiphyte A plant that grows upon another plant, but is neither parasitic on it nor rooted in the ground.

Biljka koja raste nad drugom biljkom ali, niti je parazitska, niti ukorenjena u zemljištu.

episome A genetic **extrachromosomal** element (e.g. the **F factor** in *Escherichia coli*) which replicates within a cell independently of the chromosome and is able to integrate into the **host** chromosome. The step of integration may be governed by a variety of factors and so the term episome has lost favour and been superseded by the wider term **plasmid**.

Genetički element izvan hromozoma (na pr. F faktor u *Escherichia coli*), koji se umnožava u okviru ćelije, nezavisno od hromozoma, i u stanju je da se integriše u hromozom domaćina. Na integraciju mogu uticati razni faktori, i tako je izraz epizom zamenjen širim izrazom plazmid.

epistasis Interaction between genes at different loci, e.g. one **gene** suppresses the effect of another gene that is situated at a different locus. **Dominance** is associated with members of **allelic** pairs, whereas epistasis describes an interaction among products of non-alleles.

Interakcija između gena na različitim lokusima, na pr. jedan gen suzbija efekt drugog gena koji se nalazi na različitom lokusu. Dominantnost je povezana sa alelnim parovima, dok epistaza opisuje interakciju između alela.

epitope Synonym for **antigenic determinant**.

Sinonim za antigenic determinant.

epizootic A disease simultaneously affecting a large number of animals.

Bolest koja simultano napada veliki broj životinja.

EPSP synthase Abbreviation for **enolpyruvyl-shikimate 3-phosphate synthase**.

Skraćenica za enolpyruvyl-shikimate 3-phosphate synthase.

EPSPS Abbreviation for **enolpyruvyl-shikimate 3-phosphate synthase**.

Skraćenica za enolpyruvyl-shikimate 3-phosphate synthase.

equational division A chromosome division in which the two chromatids of each duplicated chromosome separate longitudinally, prior to being incorporated into two daughter nuclei. Seen at the mitotic-type second division of **meiosis**; also in somatic **mitosis** and the non-reductional division of meiosis. The number of chromosomes is the same at the end of the division as at the beginning.

Podela hromozoma, u kojoj se dve hromatide od svakog udvostručenog hromozoma podele po dužini, pre nego što se pripoje u dva nukleusa ćerki. Vidljiva je u drugoj mejotičkoj deobi, takođe u somatskoj mitozu i neredukcionoj deobi mejoze. Broj hromozoma je na kraju deobe isti kao na početku.

equilibrium density gradient centrifugation A procedure used to separate macromolecules based on their density (mass per unit volume).

Postupak, korišćen za razdvajanje makromolekula, zasnovan na njihovoj gustini (masi po jedinici zapremine).

ER See: **endoplasmic reticulum**.

Vidi: endoplasmic reticulum.

Erlenmeyer flask A conical flat-bottomed laboratory flask with a narrow neck, widely used for culturing micro-organisms.

Konična, laboratorijska flaša sa ravnim dnom, uskim vratom, koja se koristi za kultivisanje mikroorganizama.

ES cells *See: embryonic stem cells.*

Vidi: embryonic stem cells.

Escherichia coli A commensal bacterium inhabiting the colon of many animal species, including human. *E. coli* is widely used as a **model** of cell biochemical function, and as a host for **cloning DNA**. In environmental studies, its presence is a key indicator of water pollution due to human sewage effluent. Some strains, notably *E. coli* 0157:H7, are significant **pathogens**.

Komenzalitska bakterija koja inhibira koloniju mnogih životinjskih vrsta, uključujući humanu. *E. coli* se široko koristi kao model ćelijske biohemijske funkcije, i kao domaćin za kloniranje DNK. U proučavanju sredine, njeno prisustvo je ključni indikator zagađenja vode usled efluenta ljudske kanalizacije. Neki sojevi, posebno *E. coli* 0157:H7, su značajni patogeni.

essential amino acid An amino acid required for normal metabolism, but which cannot be synthesized by an organism. It therefore has to be supplied via feed or food.

Aminokiselina, potrebna za normalan metabolizam, ali koju ne može sintetisati organizam. Zbog toga se mora obezbediti putem hrane.

essential derivation of varieties (Abbreviation: EDV). Genotypes very similar to an originating **cultivar**, obtained, for example, by the **selection** of a **mutant** or a variant individual from plants of the initial variety, or by backcrossing or **transformation**.

(Skraćenica: EDV) Genotipovi, vrlo slični stvorenoj sorti, dobijenoj, na pr.,

putem selekcije mutanta ili od biljaka početnog varijeteta, ili putem povratnog ukrštanja ili transformacije.

essential element Any of a number of elements required by living organisms to ensure normal growth, development and maintenance.

Bilo koji od brojnih elemenata potrebnih živim organizmima da osiguraju normalan rast, razviće i održavanje.

essential nutrient Any substance required by living organisms to ensure normal growth, development and maintenance.

Bilo koja supstanca, potrebna za žive organizme, da osigura normalan rast, razviće i održavanje.

essential requirement In plant cell **tissue culture**, comprises inorganic salts, including all of the elements necessary for plant metabolism; organic factors (amino acids, vitamins); usually also endogenous plant growth regulators (auxins, cytokinins and often gibberellins); as well as a carbon source (sucrose or glucose).

U kulturi tkiva biljke, obuhvata neorganske soli, uključujući sve elemente potrebne za biljni metabolizam, organska jedinjenja (aminokiseline, vitamine); takođe endogene regulatore rasta biljke (auksine, citokinine, i često gibereline); kao i izvore ugljenika (saharozu ili glukozu).

EST *See: expressed sequence tag.*

Vidi: expressed sequence tag.

established culture 1. An aseptic viable **explant** (*See: micropropagation*).

2. A **suspension culture** subjected to several **passages** with a constant cell number per unit time.

1. Aseptički životni eksplantant (*Vidi: micropropagation*). 2. Suspenzionna kultura, podvrgnuta prolazima sa

konstantnim brojem ćelija po jedinici vremena.

estimated breeding value (Abbreviation: EBV). Twice the **expected progeny difference**. The difference is doubled because breeding value is a reflection of all the genes of an individual, in contrast to **progeny** difference, which is a reflection of a sample half of an individual's genes. The predicted performance of the **offspring** of the mating between any two parents is the average of their EBVs (averaged because each parent makes an equal contribution to each offspring).

(Skraćenica: EBV) Dvostruko očekivana razlika potomstva. Razlika je udvostručena, pošto je oplemenjivačka vrednost odraz svih gena neke individue, nasuprot razlike potomstva, koja je odraz polovine gena individue. Predviđena performansa potomstva, od parenja između bilo koja dva roditelja, je prosek njihovih EBV-a (prosek, pošto svaki roditelj daje jednak doprinos svakom potomstvu).

estrogen *See: oestrogen*.

Vidi: oestrogen.

ET Abbreviation for **embryo transfer**.

See: multiple ovulation and embryo transfer.

Skraćenica za embryo transfer. *Vidi: multiple ovulation and embryo transfer.*

ethanol Commonly used to disinfect plant tissues, glassware utensils and working surfaces in tissue culture manipulations; to precipitate aqueous solutions of nucleic acids; and to dissolve water-insoluble components of culture media. *Synonym: ethyl alcohol.*

Koristi se za dezinfekciju biljnih tkiva, staklarije i radnih površina u laboratoriji da se talože vodeni rastvori nukleinskih kiselina; i da rastvori komponente medija kulture koje su u vodi nerastvorljivi. *Sinonim: ethyl alcohol.*

ethephon A synthetic compound commonly used as a source of **ethylene**, a gaseous plant growth regulator.

Sintetičko jedinjenje, obično korišćeno kao izvor etilena, gasnog regulatora rasta biljke.

ethidium bromide A fluorescent dye which can intercalate between base pairs of **double-stranded DNA**, and hence is much used to stain DNA in gels. The dye fluoresces when exposed to UV light. It is known to be a strong **mutagen** and is also possibly both a **carcinogen** and a teratogen.

Fluorescentna boja, koja se može umetati između baznih parova dvostrukog lanca DNK, i stoga se mnogo koristi da oboji DNK u gelima. Boja fluorescira kada je izložena UV svetlost. Takođe je poznata kao jak mutagen, a takođe, kao karcinogen i teratogen.

ethyl alcohol *See: ethanol.*

Vidi: ethanol.

ethylene A gaseous plant **growth regulator** acting on various aspects of vegetative growth, fruit ripening and abscission of plant parts. *Synonym: ethene.*

Gasoviti regulator rasta biljke delujući na različite aspekte vegetativnog rasta, zrenja voća i opadanje biljnih delova. *Sinonim: ethene.*

ethylenediamine tetraacetic acid (Abbreviation: EDTA). A chelating compound. Used to keep nutrients, such as iron, bound in a soluble form that

leaves them still available to the plant cells *in vitro*. Also a potent **inhibitor** of **DNase** activity and therefore used as an additive for long-term storage of dissolved **DNA**.

(Skracenica: EDTA) Helatno jedinjenje.

Korišćeno da drži hranljive materije, kao što je gvožđe, vezano u rastvorljivom obliku, koje još uvek stoji na raspolaganju biljnim ćelijama *in vitro*. Takođe, moćan inhibitor aktivnosti DNaze, i zbog toga korišćen kao aditiv za dugoročno skladištenje rastvorene DNK.

etiolation An abnormal increase in **stem** elongation, accompanied by poor (if any) leaf development. Physiological etiolation is caused by a lack of chlorophyll, and is typical of plants growing under low light intensity or in complete darkness. It can also be induced by some fungal pathogens.

Abnormalno izduženje stabla, praćeno slabim (ili bilo kakvim) razvićem listova. Fiziološka etioloacija izazvana je nedostatkom hlorofila, i tipična je za biljke koje rastu pod niskim svetlosnim intenzitetom, ili u potpunoj tami. Može takođe da bude izazvano nekim gljivičnim patogenima.

ETL *See: economic trait locus.*

Vidi: economic trait locus.

eucaryote *See: eukaryote.*

Vidi: eukaryote.

eucaryotic (adj.) *See: eukaryote.*

Vidi: eukaryote.

euchromatin Chromosomal material that is stained less intensely by certain dyes. Thought to be the chromosomal domains which are gene-rich, since the **DNA** in these regions remains less contracted than those rich in **repetitive DNA** - the **heterochromatin**.

Hromozomski materijal koji je slabije obojen. Smatra se da su regije hromozoma koje su bogate genima, pošto DNK u tim regionima ostaje manje spiralizovana nego u onim koji su bogati u repetitivnoj DNK - heterochromatinu.

eugenics The application of the principles of genetics to the 'improvement' of humankind. Wholly discredited as a scientific approach since the Nazi period.

Primena principa genetike u smislu „poboljšanja“ ljudske vrste. Potpuno diskreditovana kao naučni pristup od Nacističkog perioda.

eukaryote One of the two major evolutionary clades, characterized by having the **nucleus** enclosed by a membrane, and possessing chromosomes that undergo **mitosis** and **meiosis**. Eukaryotic organisms include animals, plants, fungi and some algae. *See: prokaryote.*

Jedna od dve glavne evolucionarne grupe, karakterisane da imaju nukleus okružen membranom, i hromozome koji prolaze mitozu i mejozu. Eukariotski organizmi uključuju životinje, biljke, gljive i neke alge. *Vidi: prokaryote.*

euploid An organism or cell having a **chromosome** number that is an exact multiple of the haploid number. Terms used to identify different levels in an euploid series are **diploid** (2x), **triploid** (3x), **tetraploid** (4x) etc. *Opposite: aneuploid.*

Organizam ili ćelija koja ima hromozomski broj koji je tačan multipli od haploidnog broja. Izrazi, korišćeni da identifikuju različite nivoe u seriji euploida su diploid (2x), triploid (3x), tetraploid (4x) itd. *Suprotno: aneuploid.*

evapotranspiration The net water loss (in vapour form) per unit area of land, both directly from the land surface, and indirectly through transpiring leaves.

Čist gubitak vode (u obliku pare) po jedinici površine zemljišta direktno, sa površine zemlje, i indirektno, preko transpiracije listova.

evolution The process by which the present diversity of plant and animal life has arisen, and which continues to drive changes in form and mode of existence of all living organisms.

Proces, putem kojeg se pojavio sadašnji diverzitet biljnog i žiotinjskog sveta, i koji i dalje izaziva promene u obliku i načinu postojanja svih živih organizama.

ex-situ conservation The conservation of components of biological diversity outside their natural habitats.

Zaštita komponenata biološkog diverziteta izvan njihovih prirodnih staništa.

ex vitro Organisms removed from **tissue culture** and transplanted; generally plants to soil or potting mixture. Organizmi, odstranjeni iz kulture tkiva i presađeni obično biljaka u smeši zemlje, ili rasada.

ex vivo gene therapy The delivery of a gene or genes to the isolated cells of an individual, with the intention of alleviating a genetic disorder. After culturing, the transformed cells are re-introduced into the individual by transfusion, infusion or injection.

Prenošenje gena na izolovane ćelije jedne individue, sa namerom smanjenja genetičkog poremećaja. Posle kultivacije, transformisane ćelije se ponovo uvode u individu u putem transfuzije, infuzije ili injekcije.

excinuclease The **endonuclease**-containing **protein** complex that excises a

segment of damaged **DNA** during **excision** repair.

Proteinski kompleks koji sadrži endonukleazu, koji iseca segment oštećene DNK za vreme popravke isecanjem.

excision 1. The natural or *in vitro* enzymatic removal of a **DNA** segment from a **chromosome** or **cloning** vector. 2. The cutting out and preparation of a tissue, organ, etc., for culture. 3. The removal of adventitious shoots from callus tissue.

1. Prirodno ili *in vitro* enzimatsko odstranjenje segmenta DNK iz hromozoma ili vektora kloniranja. 2. Isecanje i priprema tkiva, organa, itd., za kulturu. 3. Odstranjenje adventivnih izdanaka sa kalusnog tkiva.

excision repair DNA repair processes that involve the removal of a damaged or incorrect segment of one strand of **double-stranded DNA** and its replacement by the synthesis of a new segment using the **complementary** strand of **DNA** as template.

Procesi reparacije DNK, koji uključuju odstranjenje oštećenog ili nepravilnog segmenta dvolančane DNK i njegovu zamenu sintezom novog segmenta, koristeći kao kalup komplementarni lanac DNK.

excitation wavelength The specific wavelength of light required to stimulate a fluorescent molecule, such as a labelled **probe**, to emit light at the (lower) **emission wavelength**.

Specifična talasna dužina svetlosti, potrebna da stimuliše fluorescentni molekul, označena kao proba, da emituje svetlost pri (nižoj) emisionoj talasnoj dužini.

excrete To transport material out of a **cell** or **organism**.

Transportovati materijal iz ćelije ili organizma.

exit site (Abbreviation: E site). The **ribosome** binding site that contains the free **tRNA** prior to its release.

(Skracenica: E site) Mesto vezivanja ribozoma koje sadrži slobodnu tRNK pre njenog otpuštanja.

exo III *See: exonuclease III.*

Vidi: exonuclease III.

exocrine gland An animal **gland** that secretes through a duct.

Životinjska žlezda koja luči sadržaj kroz kanal.

exodeoxyribonuclease III *See: exonuclease III.*

Vidi: exonuclease III.

exogamy *See: outbreeding.*

Vidi: outbreeding.

exogenous Produced outside of; originating from, or due to, external causes. *Opposite: endogenous.*

Priozveden izvan; poreklom od, ili usled spoljašnjih uzoraka. *Suprotno: endogenous.*

exogenous DNA DNA that has been derived from one organism, and is to be introduced into a cell a different species. Also referred to as **foreign DNA** or **heterologous DNA**.

DNK koja je poreklom od jednog organizma, i može biti uvedena u ćeliju različitih vrsta. Takođe se spominje kao strana DNK ili heterologous DNK.

exon A segment of a eukaryotic gene that is transcribed as part of the primary **transcript** and is retained, after processing, with other exons to form a functional **mRNA** molecule. Many eukaryotic genes are composed of a **mosaic** of exons and **introns**.

Segment gena eukariota koji je transkribovan kao deo primarnog transkripta, i posle obrade je sa drugim egzonomima obrazuje funkcionalnu mRNK

molekulu. Mnogi eukarotski geni se sastoje od mozaika egzona i introna.

exon amplification A procedure that is used to **amplify** exons.

Postupak koji je korišćen za umnožavanje egzona.

exonuclease An enzyme that digests **DNA** or **RNA**, beginning at the end of a strand. It therefore requires a free end in order to begin the degradation. 5'-exonucleases require a free 5' end and degrade the molecule in the 5'→3' direction. 3'-exonucleases require a free 3' end and degrade in the opposite direction.

Enzim koji razgrađuje DNK ili RNK, počev od kraja lanca. On zbog toga treba da ima slobodan kraj da bi počeo razgradnju. 5' egzokleaze zahtevaju slobodan 5' kraj i razgrađuju molekul u smeru 5'→3'. 3'-egzokleaze zahtevaju slobodan 3' kraj i razgrađuju u suprotnom smeru.

exonuclease III (Abbreviation: **exo III**). An *Escherichia coli* enzyme that removes nucleotides from the 3' hydroxyl ends of double-stranded **DNA**. *Synonym: exodeoxyribonuclease III.*

(Skracenica: **exo III**) Enzim *Escherichia coli*, koji odstranjuje nukleotide od 3' hidroksilnih krajeva od dvolančane DNK. *Sinonim: exodeoxyribonuclease III.*

exopolysaccharide A **polysaccharide** that is secreted by a **micro-organism** into the surrounding environment.

Polisaharid kojeg luče mikroorganizmi u okolnu sredinu.

exotoxin A **toxin** released by a bacterium into the medium in which it grows.

Toksin koju otpušta bakterija u medijum u kojem raste.

expected progeny difference (Abbreviation: EPD). The predicted performance of the future **offspring** of an individual for a particular **trait**, calculated from measurement(s) of the individual's own performance and/or the performance of one or more of its relatives, for the trait in question and/or for one or more correlated traits. Typically, the prediction is expressed as a **deviation** from a well-defined base population, assuming the individual in question is mated to a sample of individuals whose average genetic merit equals that of the base population. The predicted performance of the offspring of the mating between any two individuals is the sum of their EPDs.

(Skracénica: EPD) Predviđena performansa budućeg potomstva neke individue za određenu osobinu, izračunata iz merenja individuine sopstvene performanse i/ili performanse jednog ili više njenih srodnika, za osobinu koja je u pitanju, i/ili za jednu ili više osobina koje su u korelaciji. Karakteristično, predviđanje je izraženo kao devijacija od dobro definisane osnovne populacije, podrazumevajući da je individua koja je u pitanju parena sa uzorkom individua čija je prosečna genetička sposobnost jednaka onoj u baznoj populaciji. Predviđena performansa potomstva parenja između bilo koje dve individue ja zbir njihovih EPD-ova.

explant A portion of a plant aseptically excised and prepared for **culture** in a nutrient medium.

Deo biljke aseptički isečene i pripremljene za kulturu u medijumu hranljivih materija.

explant donor The plant from which an **explant** has been taken.

Biljka od koje je uzet neki eksplant.

explantation The removal of cells, tissues or organs of animals and plants for observation of their growth and development in appropriate **culture media**.

Odstranjenje ćelija, tkiva ili organa životinja i biljaka, za posmatranje njihovog rasta i razvića u odgovarajućem medijumu kulture.

explosion method A technique for the genetic **transformation** of cells, in which the **transgene** is driven into the target (plant) cells by the sudden vaporization (effected by the application of a pulse of high voltage) of a water droplet containing the **DNA** and gold particles.

Tehnika za genetičku transformaciju ćelija, u kojima je transgen upućen u ciljne (biljne) ćelije putem iznenadnog isparavanja (pod uticajem primene impulsa visoke voltaže) vodernih kapljica koje sadrže DNK i partikule zlata.

exponential phase *See: logarithmic phase.*

Vidi: logarithmic phase.

export The removal of a compound from a cell by **active transport**.

Odstranjenje jedinjenja iz ćelije putem aktivnog transporta.

express To transcribe and translate a gene.

Opisati i prevesti gen.

expressed sequence tag (Abbreviation: EST). Partially sequenced **cdNA** clone. Because the read length of a standard **DNA sequencing** reaction is shorter than the majority of **cdNA** clones, full length sequence can only be obtained by further manipulative

ons. For the purposes of (1) assigning putative function to a cDNA and (2) designing **PCR primers** to extract the genomic **DNA** equivalent to the cDNA, full length sequence is usually unnecessary. By restricting sequencing to a single run, large numbers of cDNAs can be characterized at the EST level.

(Skracénica: EST) Delimično sekvencirani cDNK klon. Pošto je dužina očitavanju standardne reakcije sekvenciranja DNK kraća nego većine cDNK klonova, puna dužina sekvence može se jedino dobiti daljim manipulacijama. Za (1) proveravanje pretpostavljene funkcije cDNK i (2) skiciranja PCR primera u cilju ekstrahovanja genomski ekvivalentne DNK u cDNK, sekvencija cele dužine je obično nepotrebna. Ograničavajući sekvenciranje na jedan tok, veliki broj cDNK-ova mogu se karakterisati na EST nivou.

expression library A **cDNA library** that has been inserted into a bacterial host cell engineered to **express transgenes**. *See: library.*

cDNK biblioteka, koja je bila ubačena u bakterijsku ćeliju, kao domaćina proizvedenu da ispolji transgene. *Vidi: library.*

expression system Combination of **host** and **vector** which provides a genetic context for making a cloned gene functional, i.e. produce **peptide**, in the host cell.

Kombinacija domaćina i vektora koja obezbeđuje genetički kontekst da klonirani gen učini funkcionalnim, t.j. proizvodi peptide, u ćeliji domaćina.

expression vector A cloning **vector** that has been constructed in such a way

that, after insertion of a **DNA** molecule, its **coding** sequence is properly transcribed and the **mRNA** is translated. The cloned gene is put under the control of a **promoter** sequence for the initiation of transcription, and often also has a **transcription** termination sequence at its end.

Vektor kloniranja koji je konstruisan na takav način, da je posle ubacivanja u DNK molekul, njegova sekvencija kodiranja ispravno transkribovana, i mRNK prevedena. Klonirani gen je stavljen pod kontrolu sekvence promotera za početak transkripcije, i često ima sekvencu terminacije transkripcije na svom kraju.

expressivity Degree of expression of a **trait** controlled by a particular **gene**. The gene may show different degrees of expression in different individuals. *See: variable expressivity.*

Stepen ispoljavanja osobine kontrolisan naročitim genom. Gen može pokazivati različite stepene ekspresije kod različitih individua. *Vidi: variable expressivity.*

extension The short single-stranded stretch of nucleotides remaining on a **double-stranded DNA** molecule, following treatment with a **restriction endonuclease** which makes a **staggered cut**. The presence of these unpaired regions make the molecule more easily ligatable, and are thus important in gene **cloning**. *Synonyms: protruding end; sticky end; overhang; cohesive end.*

Kratko jednolančano proširenje nukleotida ostalih na molekuli dvolančanog DNK, sledeći tretman sa restrikcijom endonukleazom, što čini raspoređeni odsečak. Prisustvo tih nenaparenih regiona čini molekul lakšim za

vezanje i važnim u kloniranju gena. *Sinonimi*: protruding end; sticky end; overhang; cohesive end.

external guide sequence (Abbreviation: EGS). *See*: **guide sequence**. (Skracénica: EGS) *Vidi*: guide sequence.

extrachromosomal In eukaryotes, non-nuclear **DNA**, present in **cytoplasm** organelles such as mitochondria and **chloroplasts**. In prokaryotes, non-chromosomal **DNA**, i.e. **plasmids**.

U eukariota, van nuklearna DNK, prisutna u organelama citoplazme, kao što su mitohondrije i hloroplasti. U prokariota, ne-hromozomska DNK, t.j. plazmidi.

extrachromosomal inheritance *See*: **cytoplasmic inheritance**.

Vidi: cytoplasmic inheritance.

extranuclear genes Genes residing elsewhere than in the **nucleus** (e.g. in mitochondria, chloroplasts or plastids).

Geni koji se nalaze van nukleusa (na pr. u mitohondrijama, hloroplastima ili plastidima).

exude Slowly discharge liquid material (such as tannins or oxidized polyphenols from plant material) through pores or cuts, or by **diffusion** into the medium.

Lagano izlučivati tečni materijal (kao što su tanini ili oksidovani polifenoli iz biljnog materijala) kroz pore ili oštećenja, ili putem difuzije u medijum.

F

F factor Abbreviation for fertility factor.

A bacterial **plasmid** that confers the ability to function as a genetic donor in **conjugation**. *See: Hfr.*

Skraćenica za faktor plodnosti. Bakterijski plazmid koji prenosi sposobnost za funkcionisanje kao genetički donor u konjugaciji. *Vidi: Hfr.*

F₁ Abbreviation for **filial generation** 1. The initial **hybrid** generation resulting from a **cross** between two parents. *See F_n.*

Skraćenica za filijalnu generaciju 1. Početna hibridna generacija koja nastaje iz ukrštanja između dva roditelja. *Vidi: F_n.*

F₂ The second **hybrid** generation, produced either by intercrossing two **F₁** individuals, or by self-fertilizing an **F₁** individual. *See F_n.*

Druga hibridna generacija, nastala bilo putem međusobnog ukrštanja dve **F₁** individue, ili putem samooplodnjom **F₁** individue. *Vidi: F_n.*

F_{ab} A product of **hydrolysis** of an **IgG antibody**, consisting of the variable region with some of the constant region of a heavy chain, and an entire light chain. Contains a single **antigen-binding** site.

Produkt hidrolize jednog **IgG** antitela, koji se sastoji od varijabilnog regiona, sa nekim od konstantnih regiona u teškom lancu, i u potpuno lakom lancu. Sadrži jedno mesto za vezivanje antigena.

FACS *See: fluorescence-activated cell sorting.*

Vidi: fluorescence-activated cell sorting.

factorial mating A mating scheme in which each male parent is mated with each female parent. Made possible in animals by means of **in vitro embryo production**. Such a mating scheme substantially reduces the rate of **inbreeding** in a **selection** programme.

Šema parenja u kojoj se svaki muški roditelj pari sa svakim ženskim roditeljem. Moguća u životinja putem proizvodnje embriona *in vitro*. Takva šema parenja znatno smanjuje stepen inbridinga u programu selekcije.

facultative anaerobe An organism that will grow under either **aerobic** or **anaerobic** conditions.

Organizam koji će rasti pod bilo aerobnim ili anaerobnim uslovima.

FAD *See: flavin adenine dinucleotide.*

Vidi: flavin adenine dinucleotide.

false fruit *See: pseudocarp.*

Vidi: pseudocarp.

false negative A negative **assay** result that should have been positive.

Negativan rezultat ogleada, koji je trebalo da bude pozitivan.

false positive A positive **assay** result that should have been negative.

Pozitivan rezultat ogleada, koji bi trebalo da bude negativan.

farm animal genetic resources Those animal species that are used, or may

be used, for the production of food and agriculture, and the populations within each of them. Within each species, these populations can be classified as wild and feral populations, landraces and primary populations, standardized breeds, selected lines, and any conserved genetic material.

Životinjske vrste koje se koriste, ili mogu biti korišćene, za proizvodnju hrane i poljoprivredu, i populacije u okviru istih. U okviru svake vrste, te populacije mogu biti klasifikovane kao prirodne (divlje) i nepripitomljene populacije, lokalne populacije i primarne populacije, standardizovane rase, selekcionisane linije, i bilo koji konzervisani genetički materijal.

farmers' privilege Rights to hold germplasm, covered by **plant variety protection**, as a seed source for subsequent seasons. Considered as optional for governments to include in their legislation. *Synonym*: farmer-saved seed.

Prava za čuvanje genomplazme, pokrivena zaštitom biljnog varijeteta kao semenskog izvora za naredne sezone. Smatra se kao neobaveznim da ga vlade uključe u svoje zakonodavstvo. *Sinonim*: farmer-saved seed.

farmers' rights Rights first recognized by Resolution 5 of the 1989 FAO Conference as „rights arising from the past, present and future contributions of farmers in the conservation, improvement and the making available of **plant genetic resources**“; this item became an attachment to the ‘**International Undertaking on Plant Genetic Resources**’. The binding ‘**International Treaty of Plant Genetic Resources for Food and**

Agriculture’ that resulted from the renegotiations of the Undertaking makes provision for the Farmers’ Rights in Article 9.

Prava, najpre priznata Rezolucijom 5 od 1989. FAO Konferencije, kao „prava nastala iz prošlih, sadašnjih i budućih doprinosa farmera u konzervisanju, unapređenju i stavljanju na raspolaganje biljnih genetičkih resursa“; ta stavka je postala dodatak „Međunarodnom preuzimanju biljnih genetičkih resursa“. Obaveza „Međunarodni sporazum biljnih genetičkih resursa za hranu i poljoprivredu“ koja je nastala od ponovnih pregovaranja čini pripremu za Prava farmera u članu 9.

fascicle *See*: **vascular bundle**.

Vidi: vascular bundle.

F_c A product of **hydrolysis** of an IgG **antibody**, consisting of parts of the constant regions of two heavy chains held together by a **disulphide bridge**, but excluding the **antigen-binding** regions, and also excluding the light chains.

Produkt hidrolize IgG antitela, koje se sastoji od delova konstantnih regiona dva teška lanca koja se drže zajedno putem disulfidnog mosta, ali isključujući antigenske-vezujuće regione, a takođe isključujući i lake lance.

fed-batch fermentation Culture of cells or micro-organisms where nutrients are added periodically to the bioreactor.

Kultura ćelija mikroorganizama gde su hranljive materije dodate povremeno bioreктору.

feedback inhibition The process by which the accumulated end product of a biochemical pathway stops synthesis of that product. The effect is that a late **metabolite** of a synthe-

tic pathway regulates the synthesis of an earlier step of the pathway. *See: end-product inhibition.*

Proces kojim nakupljeni krajnji produkt biohemijske reakcije zaustavlja sintezu tog produkta. Efekt je da zadnji metabolit sintetičke putanje reguliše sintezu predhodnog koraka putanje. *Vidi: end-product inhibition.*

fermentation The **anaerobic** breakdown of complex organic substances, especially carbohydrates, by micro-organisms, yielding energy. Often misused to describe large-scale **aerobic cell culture** in specialized vessels (fermenters, bioreactors) for secondary product synthesis.

Anaerobno razlaganje kompleksnih organskih supstanci, naročito ugljenih hidrata, putem mikroorganizama, dajući pri tome energiju. Često pogrešno korišćeno da opiše obimnu aerobnu kulturu ćelija u specijalizovanim posudama (fermentorima, bioreaktorima) za sintezu sekundarnih produkata.

fermentation substrates Materials used as food for growing micro-organisms. The fermentation substrates and the trace materials needed, together with chemicals added to make the fermentation easier, form the **culture medium**.

Supstance koje se koriste kao hrana za rast mikroorganizama. Fermentacioni supstrati i mikrominerali koji su potrebni, zajedno sa hemikalijama, dodatim da fermentaciju čine lakšom, formiraju medijum kulture.

fermenter *See: bioreactor.*

Vidi: bioreactor.

fertile Capable of **breeding** and reproduction.

Sposoban za odgoj i reprodukciju.

fertility factor *See: F factor.*

Vidi: F factor.

fertilization The union of two gametes from opposite sexes to form a zygote. Typically, each **gamete** contains a **haploid** set of chromosomes. Hence the zygotic **nucleus** contains a **diploid** set of **chromosomes**. Several categories can be distinguished: 1. Self-fertilization (selfing): fusion of male and female gametes from the same individual. 2. Cross-fertilization (crossing): fusion of male and female gametes from different individuals. 3. Double fertilization; restricted to flowering plants, in which the fusion of one male **gamete** with the **ovum** occurs at about the same time as the second male gamete nucleus fuses with the female **polar nuclei** (or secondary nucleus) to form the **endosperm**.

Sjedinjavanje dve gamete suprotnog pola radi formiranja zigota. Svaka gameta sadrži haploidni broj hromozoma. Dakle, zigotni nukleus sadrži diploidni broj hromozoma. Razlikuje se nekoliko kategorija: 1. Samooplodnja: fuzija muških i ženskih gameta od iste individue. 2. Stranoooplodnja: fuzija muških i ženskih gameta od različitih individua. 3. Dvostruka oplodnja: ograničena na cvetnice, u kojih fuzija jedne muške gamete sa jajnom ćelijom nastaje otprilike istovremeno kada se drugi nukleus muške gamete spaja sa ženskim polarnim nukleusima (ili sekundarnim jedrom), da bi formirao endosperm.

fertilizer Any substance that is added to soil in order to increase its productivity. Fertilizers can be of biological origin (e.g. composts), or they can be synthetic (artificial fertilizer).

Bilo koja supstanca koja se dodaje zemljištu da bi povećala njegovu produktivnost. Đubriva mogu biti biološkog porekla (na pr.komposti), ili mogu da budu sintetička (veštačko đubrivo).

fetus See: foetus.

Vidi: foetus.

Feulgen staining A histochemical stain by which the distribution of DNA in the **chromosomes** of dividing **cell nuclei** can be observed.

Histiohemijska boja, putem koje se može posmatrati distribucija DNK u hromozomima nukleusa ćelija koje se dele.

FIA Abbreviation for **fluorescence immunoassay**.

Skraćenica za fluorescence immunoassay.

fibril A microscopic to sub-microscopic cellulose thread that is part of the **cellulose** matrix of plant **cell walls**.

Mikroskopsko, do submikroskopsko celulozno vlakno koje je deo celulozne matrice ćelijskih zidova biljke.

fibroblasts Irregularly shaped, branching cells distributed throughout vertebrate connective tissue. A **cell** type which is readily cultured *in vitro*.

Nepravilno oblikovane, granajuće ćelije, raspoređene u celom vezivnom tkivu kičmenjaka. Ćelijski tip koji se lako kultiviše *in vitro*.

fibrous root Root system in which both primary and lateral roots have approximately equal diameters. *Opposite: tap root*.

Korenov sistem kod kojeg primarni i sekundarni korenovi, imaju približno jednake prečnike. *Suprotno: tap root*.

field gene bank See: **gene bank** (2).

Vidi: gene bank (2).

filial generation See: **F₁, F₂, F_n**.

Vidi: F₁, F₂, F_n.

filter bioreactor A cell culture system, in which cells are grown on a fine mesh of an inert material, which allows the culture medium to flow past it but retains the cells. This is similar in idea to membrane and **hollow fibre** reactors, but can be much easier to set up, being similar to conventional tower bioreactors, but with the mesh replacing the central reactor space. *Synonym: mesh bioreactor*.

Sistem ćelijske kulture, u kojem se ćelije gaje na finoj mreži inertnog materijala, koji omogućuje medijumu kulture da protiče, ali zadržava ćelije. To je slično po ideji membrane i reaktora šupljih vlakana, ali može da bude mnogo lakše održavanje, budući sličan je običnim bioreaktorima, u vidu kule ali sa mrežom koja zamenjuje centralni prostor reaktora. *Sinonim: mesh bioreactor*.

filter sterilization Process of removing microbial contaminants from a liquid by passing through a filter with pores too small to allow the passage of **micro-organisms** and spores.

Proces odstranjivanja mikrobioloških kontaminanata iz tečnosti propuštanjem kroz filter sa porama suviše malim za prolaz mikroorganizama i spora.

filtration 1. Separation of solids from liquids by using a porous material that only allows passage of the liquid or of solids smaller than the pore size of the filter. The material passing the filter forms the filtrate. 2. Removal of cell aggregates to obtain a filtrate of single cells that can be utilized as plating inocula.

1. Odvajanje čvrstih materijala od tečnosti korišćenjem poroznog materijala koji jedino omogućava prolaz

tečnosti ili čvrstih materija manjih od veličine pora filtera. Materijal koji prođe kroz filter formira filtrat. 2. Odstranjenje ćelijskih agregata radi formiranja filtrata od pojedinih ćelija koji se može koristiti kao inokulum stavljen u posudu.

fingerprinting *See*: **DNA fingerprinting**.

Vidi: DNK fingerprinting.

FISH *See*: **fluorescence in situ hybridization**.

Vidi: fluorescence *in situ* hybridization.

fission Asexual reproduction involving the division of a single-celled individual into two daughter single-celled individuals of approximately equal size.

Aseksualna reprodukcija, uključujući deobu jednoćelijske individue na dve kćeri ćelije približno jednake veličine.

fitness The survival value and the reproductive capability of an individual, compared to that of competitor individuals of the same or other species within a **population** or an environment.

Vrednost preživljavanja i reproduktivne sposobnosti neke individue, u poređenju sa kompetitivnim individuama iste ili druge vrste u okviru jedne populacije ili spoljne sredine.

fixation The situation in which only one allele for a given gene/locus is present in a population. This can occur as a result of direct selection where the allele delivers a greater level of fitness; because of indirect selection, where the locus is linked to a gene that is subject to direct selection; or because of **genetic drift**.

Situacija u kojoj je prisutan samo jedan alel za dati gen/lokus u populaciji. Može nastati kao rezultat direktne

selekcije gde alel ispoljava veći nivo preživljavanja; zbog indirektno selekcije, gde je lokus vezan za gen koji je subjekt direktne selekcije; ili zbog genetičkog razilaženja.

FLAG *See* affinity tag.

Vidi: affinity tag.

flaming A technique for sterilizing instruments, to remove **live micro-organism** contaminants. The instrument is dipped in alcohol, and the alcohol remaining on the instrument is ignited, thereby heat-sterilizing the surface.

Tehnika sterilizacije instrumenata, da se odstrane kontaminanti živih organizama. Instrument se potapa u alkohol, a alkohol koji je ostao na instrumentu je spaljen, time sterilizujući površinu.

flanking region The **DNA** sequences extending either side of a specific sequence.

Sekvence DNK koje se pružaju na bilo koju stranu specifične sekvence.

flavin adenine dinucleotide (Abbreviation: FAD). A **co-enzyme** important in various biochemical reactions. It comprises a phosphorylated **vitamin B₂** (riboflavin) molecule linked to **AMP**, and functions as a hydrogen acceptor in **dehydrogenation** reactions. The reduced form is oxidized back to FAD by the electron transport chain, generating two molecules of **ATP** per molecule of reduced **FADH**.

(Skraćenica: FAD) Koenzim, važan u različitim biohemijskim reakcijama. Sadrži fosforiliran molekul vitamina B₂ (riboflavina) vezanog za AMP, i funkcioniše kao akceptor vodonika u reakcijama dehidrogenacije. Redukovani oblik se ponovo oksiduje sa FAD

putem elektronskog transportnog lanca, stvarajući dva molekula ATP po molekulu redukovano FADH.

floculant A chemical agent that causes small particles to aggregate (floculate).

Hemijsko sredstvo koje uzrokuje agregaciju malih partikula (čestica).

flocule A micro-organism aggregate or colloidal particle floating in or on a liquid. The cloudy appearance of **micro-organism** contaminated liquid media illustrates the flocculation phenomenon.

Agregat mikroorganizama ili koloidalna čestica koji pliva u, ili na tečnosti. Mutan izgled tečnog medijuma kontaminiranog mikroorganizmima ilustruje fenomen pahuljičavosti.

flow cytometry Automated measurements on large numbers of individual cells or other small biological materials, made as the cells flow one by one in a fluid stream past optical and/or electronic sensors. A similar approach may be used for sorting cells – see **fluorescence-activated cell sorting**.

Automatska merenja na velikom broju individualnih ćelija ili drugih malih bioloških materijal, nastalih kada ćelije prolaze jedna po jedna kroz tečnost preko optičkih i/ili elektronskih senzora. Sličan pristup može se koristiti za grupisanje ćelija - *Vidi* fluorescence activated cell sorting.

fluorescence immunoassay (Abbreviation: FIA). An **immunoassay** based on the use of fluorescence-labelled antibody.

(Skraćenica: FIA) Imunoproba zasnovana na korišćenju antitela obeleženog fluorescencijom.

fluorescence *in situ* hybridization (Abbreviation: FISH). **Hybridization** of

cloned, fluorescently labelled **DNA** or **RNA**, to intact biological materials, notably **chromosome** spreads and thin tissue sections. The technique allows the visualization of the physical location of **nucleic acid** sequences **homologous** to the **probe**, and is used for the placement of genes on chromosomes and for the spatial and temporal pattern of **gene expression** of specific **mRNA** molecules.

(Skraćenica: FISH) Hibridizacija kloniranih fluorescencijom obeleženih DNK ili RNK kako bi učinili nedirnutim biološke materije, naročito širenja hromozoma i sekcije tankog tkiva. Tehnika omogućava vizuelizaciju fizičke lokacije sekvenci nukleinske kiseline homolognih sa probom, i koristi se za lociranje gena na hromozomima i za prostorno i vremensko tip ispoljavanje gena specifičnih mRNK molekula.

fluorescence-activated cell sorting (Abbreviation: FACS). A **flow cytometry** method in which targets (cells, individual chromosomes etc.) are labelled with a fluorescent dye, which is excited by a laser beam. Differences in the fluorescence signal emitted are used as a criterion for sorting the material. A specific application is in **sperm sexing**.

(Skraćenica: FACS) Metod tečne citometrije u kojem se ciljevi (ćelije, individualni hromozomi itd.) obeležavaju fluorescentnom bojom, koja je pobuđena laserskim zrakom. Razlike u emitovanom signalu fluorescencije koriste se kao kriterijum za grupisanje materijala. Specifična primena je seksiranje sperme.

fluorescent probe A **probe** which is labelled with a fluorescent dye, so that

the signal emitted can be captured by photometric methods.

Proba koja je obeležena fluorescentnom bojom, tako da emitovani signal može da bude registrovan fotometričkim metodama.

flush end *See: blunt end.*

Vidi: blunt end.

flush-end cut *See: blunt-end cut.*

Vidi: blunt-end cut.

F₁, F₂, F_n Subsequent **hybrid** generations, counting from the **F₁**. Thus, for example, **F₄** describes the **progeny** of the **F₃**, which is the progeny of the **F₂** generation, where all progeny are derived from intercrossing or self-fertilization.

Sukcesivne hibridne generacije, računajući od **F₁**. Tako, na primer **F₄** opisuje potomstvo od **F₃**, koja je potomstvo od **F₂** generacije, gde svo potomstvo potiče od stranooplodnje ili samooplodnje.

foetus Pre-natal stage of a **viviparous** animal, between the embryonic stage and birth. *AlteRNAive spelling: fetus. See: embryo.*

Prenatalni stadijum životinje koja rađa mladunce, između embrionog stadijuma i rođenja. *Alternativna ortografija: fetus. Vidi: embryo.*

fog Fine particles of liquid suspended in the air, such as of water in a fog chamber used for acclimatizing recent *ex vitro* transplants. *See: mist propagation.*

Fini delići tečnosti koji lebde u vazduhu, kao kad se voda u maglenoj komori koristi za aklimatizaciju *ex vitro* transplanata. *Vidi: mist propagation.*

fold-back The structure of a **double-stranded DNA** molecule formed when a molecule containing an **inverted repeat** sequence is denatured

and then allowed to re-**anneal** at low **DNA** concentrations. Under these conditions, the repeated sequence self-anneals to form a double-stranded region within each of the separated strands of the original molecule.

Struktura dvostrukog lanca DNK molekule formiranog kada se molekul koji sadrži invertiranu ponovljenu sekvencu denaturiše, a zatim dopusti da ojača pri niskim koncentracijama DNK. Pod tim uslovima ponovljena sekvenca se ojača da formira region sa dva lanca u okviru svakog od odvojenih lanaca originalnog molekula.

folded genome The condensed state of the chromosomal **DNA** of a bacterium. The **DNA** is segregated into **domains**, and each domain is independently negatively supercoiled.

Kondezovano stanje hromozomske DNK bakterije. DNK je odvojena u područja, i svako područje je nezavisno negativno superspiralizovano.

follicle An enclosing cluster of cells that protects and nourishes a **cell** or structure within. Thus a follicle in the **ovary** contains a developing **egg** cell, while a hair follicle envelops the root of hair.

Okružujući skup ćelija koji štiti i hrani ćeliju ili strukturu u okviru istih. Tako, folikul u ovarijumu sadrži razvojnu ćeliju jajeta, dok folikul dlake obavlja njen koren.

follicle stimulating hormone (Abbreviation: FSH). A hormone, secreted by the anterior pituitary **gland** in mammals, that stimulates the ripening of the specialized structures in the **ovary** (Graafian follicles) that produce ova in female mammals; and in males, the formation of **sperm** in the

testis. FSH is a major constituent of fertility drugs.

(Skrtaćenica: FSH) Hormon, koji luči prednji režanj hipofize u sisara. On stimuliše sazrevanje specijalizovanih struktura u ovarijumu (Grafovi folikuli) koji proizvode jajne ćelije u ženki sisara; a u mužjaka, formiranje sperme u testisu. FSH je glavni sastojak lekova za plodnost.

food processing enzyme Enzyme used to control food texture, flavour, appearance, or nutritional value. Amylases break down complex polysaccharides to simpler sugars; proteases tenderize meat **proteins**. A prominent target of food **biotechnology** is to develop novel food enzymes which can improve the quality of processed foods.

Enzim korišćen da kontroliše sastav hrane, ukus-miris, izgled ili hranljivu vrednost. Amilaze razlažu kompleksne polisaharide do jednostavnijih šećera; proteaze omekšavaju proteine mesa. Izraženi cilj biotehnologije hrane je da razvije nove enzime hrane koji mogu da poboljšaju kvalitet prerađene hrane.

forced cloning The insertion of **foreign DNA** into a cloning **vector** in a predetermined orientation.

Ubacivanje strane DNK u klonirajući vektor u predhodno određenu orijentaciju.

foreign DNA **Exogenous DNA** that is incorporated into a **host** genome.

Egzogena DNK koja je ugrađena u genom domaćina.

formulation *See: medium formulation.*

Vidi: medium formulation.

forskolin A medicinal, diterpenoid, compound exclusive to plant roots and used in the preparation of drugs

for the treatment of cardiomyopathy, glaucoma and certain cancers.

Lekovita supstanca, diterpenoid, jedinjenje isključivo biljnih korenova i korišćeno u pripremi lekova za lečenje kardiomiopatije, glaukoma i nekih vrsta raka.

fortify To add strengthening components or beneficial ingredients to a nutrient medium.

Dodati komponente za jačanje ili povoljne sastojke hranljivom medijumu.

forward mutation A mutation from the **wild type** to the mutant type. *Opposite: reverse mutation.*

Mutacija od divljeg tipa do mutantnog tipa. Suprotno: reverse mutation.

fouling The coating or plugging (by materials or micro-organisms) of equipment, thus preventing it from functioning properly.

Oblaganje ili začepljenje (materijalima ili mikroorganizmima) opreme, tako je sprečavajući da pravilno funkcioniše.

founder animal An organism that carries a **transgene** in its **germ line** and can be used in matings to establish a pure-breeding **transgenic** line, or one that acts as a breeding stock for transgenic animals.

Organizam koji nosi transgen u klicinoj liniji i može da se koristi u parenju za zasnivanje čistokrvne transgene linije, ili onaj koji deluje kao priplodna stoka za transgene životinje.

founder principle The possibility that a new, isolated **population**, initiated by a small number of individuals taken from a parent population, may be genetically different from the parent population, because the founding individuals might not be typical of the parent population. *See: genetic drift.*

Mogućnost da nova, izolovana populacija, inicirana malim brojem individua uzetih iz roditeljske populacije, može da bude genetički različita od roditeljske populacije, pošto osnivačke individue ne bi mogle da budu tipični primeri roditeljske populacije. *Vidi*: genetic drift.

four-base cutter A type II restriction endonuclease with a four-nucleotide recognition site. Because any particular sequence of four bases occurs more frequently by chance than one of six bases, four-base cutters cleave more frequently than **six-base cutters**, and therefore generate, on average, smaller **restriction fragments**. *Synonyms*: four-base-pair-cutter, four-cutter.

Tip II restrikcione endonukleaze sa četiri nukleotidna prepoznatljiva mesta. Pošto se bilo koja posebna sekvenca četiri baze dešava slučajno češće nego ona od šest baza, četvorobazni sekači seku češće nego šestobazni sekači, i na taj način stvaraju, u proseku, manje restrikcione fragmente. *Sinonimi*: four-base-pair-cutter, four cutter.

fractionation The separation in components of a complex mixture of molecules.

Odvajanje u komponentama od kompleksne smeše molekula.

fragment Partial structure. *See*: **restriction fragment**.

Parcijalna struktura. *Vidi*: restriction fragment.

frameshift mutation A mutation that changes the **reading frame** of a DNA, either by the insertion or the **deletion** of nucleotides. Because of the **triplet** nature of **codons**, this occurs if the number of nucleotides involved is not a multiple of three.

Mutacija koja menja okvir DNK, bilo putem ubacivanja ili delecije (gubitak) nukleotida. Zbog tripleta baza koje čine kodon, to se dešava ako broj uključenih nukleotida nije multipli od tri.

free water The cellular water released into the intercellular spaces when tissue is frozen and thawed. *Opposite*: **bound water**.

Ćelijska voda koja ulazi u međucelijske prostore kada se tkivo zamrzava i otapano. *Suprotno*: bound water.

free-living conditions Natural or greenhouse conditions experienced by **plantlets** upon transfer from *in vitro* conditions to soil. Prior to transfer, nutrients were supplied by the culture medium, but following transfer, plantlets must take up nutrients from soil and synthesize their own food supply.

Prirodni ili uslovi u stakleniku koju koriste mlade biljčice posle transfera iz *in vitro* uslova u zemljištu. Pre prenosa, obezbeđuju se hranljive materije putem medijuma kulture, ali posle transfera, biljčice moraju uzimati hranljive materije iz zemljišta i sintetizovati sopstvenu hranu.

Freeze preservation *See*: **cryobiological preservation**.

Vidi: cryobiological preservation.

freeze-dry The removal of water as vapour from frozen material under vacuum. Used to measure water content and to preserve samples, particularly spores. Unlike oven-drying, **bound water** remains associated with the specimen. *Synonym*: **lyophilize**.

Odstranjenje vode u obliku pare iz zamrznutog materijala pod vakuumom. Koristi se za merenje sadržaja vode i za konzervisanje uzoraka, posebno

spora. Za razliku od sušenja u pećnici, vezana voda ostaje sjedinjena sa uzorkom. *Sinonim:* lyophilize.

fresh weight The weight, including the water content, of a specimen. *Synonym:* wet weight.

Težina uzorka uključujući sadržaj vode. *Sinonim:* wet weight.

friable A term commonly used to describe a crumb-like callus. In this state, the callus is easily dissected and readily dispersed into single cells or clumps of cells in solution.

Izraz, korišćen obično da opiše mrvičastu strukturu kalusa. U tom stanju kalus se lako iseca i raspoređuje u pojedine ćelije, ili grupu ćelija u rastvoru.

FSH *See:* **follicle stimulating hormone**.

Vidi: follicle stimulating hormone.

functional food A foodstuff that provides a health benefit beyond basic nutrition, demonstrating specific health or medical benefits, including the prevention and treatment of disease.

Hraniva koje obezbeđuje zdravstvenu korist pored osnovne ishrane, demonstrirajući specifične medicinske koristi, uključujući sprečavanje i lečenje bolesti.

functional gene cloning *See:* **candidate-gene strategy**.

Vidi: candidate-gene strategy.

functional genomics The field of research, that aims to determine patterns of **gene expression** and interaction in the genome, based on the knowledge of extensive or complete genomic **sequence** of an organism.

Polje istraživanja, koje ima za cilj da odredi tipove ekspresije gena i interakciju u genomu, zasnovano na poznavanju obimne ili kompletne genomske sekvence nekog organizma.

fungicide A chemical agent toxic to fungi.

Hemijsko sredstvo, toksično za gljive.

fungus (pl.: fungi) Multinucleate single-celled or multicellular heterotrophic micro-organisms, including yeasts, moulds, and mushrooms. They live as parasites, symbionts, or saprophytes. Lacking any vascular tissues (unlike plants), their cell walls are made of **chitin** or other non-**cellulose** compounds.

Višenuklearni jednoćelijski ili višecelijski heterotrofni mikroorganizmi, uključiv kvasce, plesni i gljive. Oni žive kao paraziti, simbionti ili saprofiti. Nedostatkom bilo kojih vaskularnih tkiva (za razliku od biljaka), njihovi ćelijski zidovi se sastoje od hitina, ili drugih neceluloznih jedinjenja.

Fusarium spp. A group of fungal pathogens of many economic crop species, particularly cereals, where severe infestation leads to losses in both grain yield and quality. The latter can be a particularly serious problem as many of these fungi produce mycotoxins, some of which are dangerous to both livestock and human health (*See:* **aflatoxin**). Specific strains are also employed on an industrial scale to produce **protein** for human consumption.

Grupa gljivičnih patogena mnogih ekonomskih vrsta useva, posebno žitarica, gde jako zaraženost vodi gubicima u prinosu i kvalitetu zrna. Ovo poslednje može da bude posebno ozbiljan problem, pošto mnoge od tih gljivica proizvode miktotoksine, od kojih su mnogi opasni, kako za stoku, tako i za ljudsko zdravlje. (*Vidi:* **aflatoxin**). Specifični sojevi su tako-

de prisutni u industriji, u cilju proizvodnje proteina za ljudsku ishranu.

fusion biopharmaceuticals Fusion proteins with pharmaceutical properties. Their advantages are: 1. Synergistic activities in one molecule, i.e. when the molecule binds to its **target**, it can perform more than one function simultaneously; 2. An adverse effect or poor stability of one part of the molecule may be offset by the properties of the other; and 3. One part of the molecule can act as a targeting mechanism for the active **protein**. See: **immunotoxin**, **fusion toxin**.

Spojeni proteini sa farmaceutskih osobinama. Njihove prednosti su: 1. Sinerhističke aktivnosti u jednom molekulu, t.j. kada se molekul vezuje za svoj cilj isti može da učini više nego jedan koji funkcioniše simultano; 2. Suprotan efekt, ili loša stabilnost jednog dela molekula, može biti kompenziran svojstvima drugog, i 3. Jedan deo molekula može delovati kao ciljani mehanizam za aktivni protein. *Vidi:* immunotoxin, fusion toxin.

fusion gene See: **chimeric gene**.

Vidi: chimeric gene.

fusion protein A polypeptide translated from a **chimeric gene**. The different genes are joined so that their **coding sequences** are in the same **reading frame**, and the resulting **construct** is transcribed and translated as a single gene, producing a single **protein**. These are used for a number of purposes, including: 1. To add an **affi-**

nity tag to a protein; 2. To produce a protein with the combined characteristics of two natural proteins; 3. To produce a protein where two different activities are physically linked. See: **fusion biopharmaceuticals**.

Polipeptid, nastao od himernog gena. Različiti geni su spojeni, tako da su njihove sekvence kodiranja u istom domenu očitavanja, a nastali sklop je prepisan i preveden kao samostalni gen, proizvedeći jedini protein. Korišćeni su za neke svrhe, uključujući: 1. Da se doda oznaka afiniteta proteinu; 2. Da proizvede protein sa kombinovanim karakteristikama dva prirodna proteina; 3. Da proizvede protein gde su dve različite aktivnosti fizički povezane. *Vidi:* fusion biopharmaceuticals.

fusion toxin A fusion protein that consists of a toxic **protein domain** plus a cell **receptor** binding domain. The latter delivers the toxin directly to the **target** cell, thus sparing other healthy tissues from the effect of the **toxin**.

Fuzionisani protein koji sadrži toksičnu proteinsku oblast, i područje vezivanja ćelijskog receptora. Ovo poslednje isporučuje toksin direktno u ciljnu ćeliju, tako spasavajući druga zdrava tkiva od delovanja toksina.

fusogenic agent Any chemical or virus, etc., that causes cells to fuse together. Bilo koja hemikalija ili virus, itd. koji utiče da se ćelije fuzionišu.

G

G Abbreviation for **guanine**.

Skraćenica za guanin.

G cap The 5'-terminal methylated **guanine** nucleoside that is present on many eukaryotic **mRNAs**. It is joined to the **mRNA**, via a 5'?5' phosphodiester bond, after **transcription**.
See: cap site.

5'terminalni metilirani guanin nukleozid, koji je prisutan u mnogim **mRNK** eukariota. Spojen je sa **mRNK**, preko 5'?5'fosfordiester-skom vezom posle transkripcije. *Vidi: cap site.*

G protein Proteins found on the inner surface of the **plasma** membrane, which bind to the **guanine** nucleotides, **GTP** and **GDP**. They transmit signals from outside the membrane, via trans-membrane (**G-protein-coupled**) receptors, to adenylate cyclase, which catalyses the formation of the second messenger, cyclic AMP, inside the cell

Proteini, nađeni na unutrašnjoj površini plazmine membrane, koji vezuju za nukleotide guanina **GTP** i **GDP**. Oni prenose signale iz spoljašnjosti membrane, preko trans-membranskih (**G-proteinvezanih udvojenih**) receptora, do adenilat ciklaze, koja katalizuje formiranje drugog mesenđera, cikličnog AMP, unutar ćelije.

galactomannan A gum in which the structural chain is made up of **D-man-**

nose units with 1?4 linkages. The ratio of galactose to mannose is 1:2.

Smola u kojoj se strukturni lanac sastoji od jedinica **D-manoze** sa vezama 1:4. Odnos galaktoze i manoze je 1:2.

gall A tumorous growth in plants. *See: crown gall.*

Tumorozni rast u biljaka. *Vidi: crown gall.*

gamete A mature reproductive cell which is capable of fusing with a cell of similar origin but of opposite sex to form a **zygote** from which a new organism can develop. Gametes normally have a **haploid** chromosome content. In animals, a gamete is a **sperm** or **egg**; in plants, it is **pollen**, spermatik nucleus, or **ovum**.

Zrela reproduktivna ćelija, koja je sposobna za spajanje sa ćelijom sličnog porekla, ali suprotnog pola, da bi formirala zigot iz kojeg se može razviti novi organizam. Gamete normalno imaju haploidni broj hromozoma. U životinja, gameta je spermatozoid ili jajna ćelija u biljaka, to je polen, spermatski nukleus, ili jajna ćelija.

gamete and embryo storage Storage of ova, **sperm** or fertilized embryos outside their original source. Almost invariably this means **cryopreservation**.

Skladištenje jajnih ćelija, sperme ili oplodjenih embriona izvan njihovih originalnih izvora. Skoro nepromenljivo, to znači kriokonzervacija.

gametic (phase) disequilibrium In relation to any two loci, the occurrence of **haplotypes** (gametes) at a frequency other than that predicted from the product of the respective allele frequencies. *Opposite*: **gametic (phase) equilibrium**.

U odnosu na bilo koja dva lokusa, nastanak haplotipova (gameta) u drugačijoj učestalosti od one koja je očekivana od produkta učestalosti tih alela. *Suprotno*: gametic (phase) equilibrium.

gametic (phase) equilibrium In relation to any two loci, the occurrence of **haplotypes** (gametes) at a frequency equal to the product of the frequency of the two relevant **alleles**. For example, *A* and *B* are in gametic equilibrium if the frequency of A_1B_1 gametes equals the product of the frequencies of alleles A_1 and B_1 . *Opposite*: **gametic (phase) disequilibrium**.

U odnosu na bilo koja dva lokusa, nastanak haplotipova (gameta) u učestalosti jednakoj produktu učestalosti dva relevantna alela. Na primer *A* i *B* su u gametskom ekvilibrijumu ako je učestalost A_1B_1 gameta jednak produktu učestalosti alela A_1 i B_1 . *Suprotno*: gametic (phase) disequilibrium.

gametoclone A plant regenerated from a **tissue culture** originating from gametic tissue.

Biljka, regenerisana iz kulture tkiva, koja potiče od tkiva gamete.

Gametogenesis The process of the formation of gametes.

Proces obrazovanja gameta.

gametophyte The phase of the plant **life cycle** that carries the **gamete** producing organs. In flowering plants, the **pollen grain** is the male game-

tophyte and the **embryo sac** is the female gametophyte.

Faza životnog ciklusa biljaka koja ima organe u kojima se stvaraju gamete. U cvetnica polenovo zrno je muški gametofit, a embrionova kesa je ženski gametofit.

gametophytic incompatibility A phenomenon in plants, in which a **pollen grain** is genetically incapable of fertilizing a particular **egg**, because both gametes carry the identical allele at an **incompatibility** locus (usually denoted *S*). This is a mechanism for forcing crossfertilization.

Fenomen u biljaka, u kojima je polenovo zrno genetički nesposobno za oplodjenje određene jajne ćelije, pošto obe gamete nose identičan alel na lokusu inkompatibilnosti (obično obeležen *S*). To je mehanizam za prinudu stranooplodnje.

gap A missing section on one of the strands of double-stranded **DNA**. The **DNA** will therefore have a single-stranded region.

Nedostajući deo na jednom od dva lanca dvostruke DNK. DNK će zbog toga imati region sa jednim lancem.

gapped DNA A **double-stranded DNA** molecule with one or more internal single-stranded regions.

Molekul dvostrukog lanca DNK, sa jednim ili više unutarnjih regiona sa jednim lancem.

gas transfer The rate at which gases are transferred from gas into solution, an important parameter in **fermentation** systems because it controls the rate at which the organism can metabolize. Efficient gas transfer can be achieved in several ways, including the use of small bubbles, from which gas dissolves faster than from larger

ones, due to their larger surface area per unit of volume; or spreading the liquid out, for example in a thin sheet, or in a thin **permeable** tube, as in **hollow fibre** bioreactor.

Brzina kojom se gasovi pretvaraju iz gasa u rastvor, važan parametar u fermentacionim sistemima, pošto kontroliše brzinu pri kojoj organizam može da metaboliše. Efikasni transfer gasa može se postići na nekoliko načina, uključujući korišćenje malih mehura, od kojih se gas oslobađa brže nego od većih, usled njihove veće površine po jedinici zapremine; ili širenjem tečnosti prema spoljašnosti, na primer u tank list, ili u tanku propustljivu cev, kao kod bioreaktora šupljeg vlakna.

gastrula An early animal **embryo** consisting of two layers of cells; an embryological stage following the **blastula**.

Rani embrion životinja koji se sastoji od dva sloja ćelija; embriološki stadijum posle blastule.

GC island A segment of **double-stranded DNA** that is rich in GC base pairs. This type of sequence is characteristic of eukaryotic genomic regions with a high gene content.

Segment dvostrukog lanca DNK koji je bogat u GC baznim parovima. Taj tip sekvence je karakterističan za eukariotske genomske regione sa visokim sadržajem gena.

GDP Abbreviation for **guanosine 5'-diphosphate**.

Skraćenica za guanosine 5'diphosphate.

gel A jelly-like solid, used widely as a matrix for the **electrophoresis** of macromolecules, for **encapsulation**, and to solidify media for cell cultures.

Čvrsto telo slično gelu, korišćeno široko kao matriks za elektroforezu makromolekula, za enkapsulaciju, i za

očvršćavanje medijuma za kulture ćelija.

gel electrophoresis *See: electrophoresis.* Vidi: electrophoresis.

gel filtration A method of **protein** or **DNA** purification, where differences in size are used to separate the components of a complex mixture.

Metod prečišćavanja proteina ili DNK, gde se razlike u veličini koriste za izdvajanje komponentata iz kompleksne smeše.

gelatin A glutinous, **proteinaceous** gelling and solidifying agent. Gelatin is produced by the partial **hydrolysis** (via boiling) of collagen, found in the connective tissues of many farm animals. Used to gel or solidify nutrient solutions for tissue culture, and as a food additive.

Lepljivi, proteinski želatinirajući i očvršćavajući agens. Želatin se proizvodi parcijalnom hidrolizom (kuvanjem) kolagena, nađenog u vezivnim tkivima mnogih domaćih životinja. Korišćen da želira i zgušnjava rastvore hranljivih materija u kulturi tkiva, i kao aditiv hrani.

gelatinization The swelling of **starch** when added to hot water. **Hydrolysis** causes the molecule to lose structure, and technically gelatinization is not complete until there is no structure left at all.

Bubrenje skroba dodatog u toplu vodu. Hidroliza prouzrokuje da molekul gubi strukturu, a tehnički želatinizacija nije potpuna, sve dok se struktura ne razori.

Gelrite™ The brand name of a *Pseudomonas*-derived refined **polysaccharide** used as a gelling agent and **agar** substitute.

Trgovački naziv rafinisanog polisaharida, poreklom od *Pseudomonas*-a, ko-

rišćenog kao sredstva za želiranje i zamene agara.

GEM Abbreviation for genetically engineered micro-organism. *See: genetically modified organism.*

Skraćenica za genetički proizvedeni mikroorganizam. *Vidi: genetically modified organism.*

gene The unit of **heredity** transmitted from generation to generation during sexual or asexual reproduction. More generally, the term is used in relation to the transmission and **inheritance** of particular identifiable traits. The simplest gene consists a segment of **nucleic acid** that encodes an individual **protein** or **RNA**.

Jedinica nasleđa koja se prenosi iz generacije u generaciju tokom seksualne ili aseksualne reprodukcije. Uopšteno, izraz se koristi u odnosu na prenošenje i nasleđivanje pojedinih osobina, koje se mogu identifikovati. Najprostiji gen predstavlja segment nukleinske kiseline koji enkodira jedan individualni protein ili RNK.

gene (resources) conservation The conservation of species, populations, individuals or parts of individuals, by *in situ* or *ex situ* methods, to provide a diversity of genetic materials for present and future generations.

Konzervacija vrsta, populacija, individua ili delova individua putem *in situ* ili *ex situ* metoda, da bi se obezbedio diverzitet genetičkog materijala za sadašnje i buduće generacije.

gene addition The addition of a functional copy of a gene to the **genome** of an organism.

Dodavanje funkcionalne kopije gena genomu nekog organizma.

gene amplification The selective production of multiple copies of one ge-

ne without a proportional increase in others.

Selektivna proizvodnja višestrukih kopija nekog gena bez proporcijalnih povećanja drugih.

gene bank 1. The physical location where collections of genetic material in the form of seeds, tissues or reproductive cells of plants or animals are stored. 2. Field gene bank: A facility established for the *ex situ* storage and maintenance, using horticultural techniques, of individual plants. Used for species whose seeds are **recalcitrant**, or for clonally propagated species of agricultural importance, e.g. apple varieties. 3. A collection of cloned **DNA** fragments from a single genome. Ideally the bank should contain cloned representatives of all the **DNA** sequences in the genome. 4. *See: library.*

1. Fizička lokacija gde su skladištene kolekcije genetičkog materijala u vidu semena, tkiva ili reprodukcioničkih ćelija biljaka i životinja. 2. Poljska banka gena: Objekt formiran za *ex situ* skladištenje i održavanje, koristeći tehnike hortikulture individualnih biljkaka. Korišćena za vrste čija semena se opiru ili, za klonalno reprodukovane vrste, od poljoprivrednog značaja, npr. sorte jabuka. 3. Kolekcija kloniranih fragmenata DNK od jednog genoma. Idealno, banka bi trebala da sadrži klonirane predstavnike svih sekvenci DNK u genomu. 4. *Vidi: library.*

gene cloning The synthesis of multiple copies of a chosen **DNA** sequence using a bacterial cell or another organism as a host. The gene of interest is inserted into a **vector**, and the resulting **recombinant DNA** molecule is

amplified in an appropriate host cell.

Synonym: **DNA cloning.**

Sinteza multiplih kopija odabrane sekvence DNK, koristeći bakterijsku ćeliju ili drugi organizam kao domaćina. Gen od interesa se ubacuje u vektor, a nastao molekul rekombinantne DNK molekule se umnožava u određenoj ćeliji domaćina. *Sinonim:* DNK cloning.

gene construct *See:* **construct.**

Vidi: construct.

gene conversion A process, often associated with recombination, during which one allele is replicated at the expense of another, leading to non-Mendelian **segregation** ratios.

Proces, često povezan sa rekombinacijom, tokom koje se jedan alel replicira što dovodi do nemendelovskog odnosa razdvajanja svojstava.

gene expression The process by which a gene produces **mRNA** and **protein**, and hence exerts its effect on the **phenotype** of an organism.

Proces putem kojeg gen proizvodi mRNK i protein, i ispoljava efekat na fenotip nekog organizma.

gene flow The spread of genes from one breeding **population** to another (usually) related population by migration, thereby generating changes in **allele frequency**.

Prenošenje gena od jedne populacije do druge (obično) srodne populacije putem migracije, dovodeći do promene u frekvenciji alela.

gene frequency *See:* **allele frequency.**

Vidi: allele frequency.

gene gun *See:* **biolistics.**

Vidi: biolistics.

gene imprinting The differential expression of a single gene according to its parental origin.

Različito ispoljavanje određenog gena prema njegovom roditeljskom poretku.

gene insertion The incorporation of one or more copies of a gene into a chromosome.

Spajanje jedne ili više kopija gena u hromozomu.

gene interaction The modification of the action of one gene by another, non-allelic gene.

Modifikacija delovanja jednog gena drugim ne-alelnim genom.

gene knockout *See:* **knockout.**

Vidi: knockout.

gene library *See:* **library.**

Vidi: library.

gene linkage *See:* **linkage.**

Vidi: linkage.

gene machine *See:* **transposon tagging.**

Vidi: transposon tagging.

gene mapping *See:* **mapping.**

Vidi: mapping.

gene modification Chemical change to a gene's **DNA** sequence.

Hemijska promena sekvence genske DNK.

gene pool 1. The sum of all genetic information in a breeding **population** at a given time. 2. In **plant genetic resources**, use is made of the terms 'primary', 'secondary' and 'tertiary' gene pools. In general, members of the primary gene pool are inter-fertile; those of the secondary can be crossed with those in the primary gene pool under special circumstances; but to introgress variation from the tertiary gene pool, special techniques are required to achieve crossing.

1. Suma svih genetičkih informacije u populaciji u određenom vremenu.

2. U biljnim genetičkim resursima,

koriste se izrazi „primarni“, „sekundarni“ i „tercijarni“ genetički pul. Članovi primarne genetičke grupe su međusobno fertilni, oni iz sekundarne mogu se ukrštati sa onima iz primarne genetičke grupe pod specijalnim okolnostima; ali za unošenje varijacije od tercijarnog genetičkog pula, potrebne su specijalne tehnike da bi došlo do ukrštanja.

gene probe *See: probe.*

Vidi: probe.

gene recombination *See: recombination.*

Vidi: recombination.

gene regulation The process of controlling the synthesis or suppression of gene products in specific cells or tissues.

Proces kontrolisanja sinteze ili supresije produkata gena u specifičnim ćelijama ili tkivima.

gene replacement The incorporation of a **transgene** into a **chromosome** at its normal location by **homologous recombination**, thus replacing the copy of the gene originally present at the locus.

Uključenje transgena u hromozom na njegovu normalnu lokaciju putem homologne rekombinacije, tako se zamenjuje kopija gena koja je originalno prisutna u lokusu.

gene sequencing *See: DNA sequencing.*

Vidi: DNK sequencing.

gene shears *See: ribozyme.*

Vidi: ribozyme.

gene silencing *See: silencing.*

Vidi: silencing.

gene splicing *See: splicing (1).*

Vidi: splicing (1).

gene stacking *See: stacked genes.*

Vidi: stacked genes.

gene therapy The proposed treatment of an inherited disease by the **transformation** of an affected individual with a wild-type copy of the defective gene causing the disorder. In germ-line (or heritable) gene therapy, reproductive cells are transformed; in somatic-cell (or non-inheritable) gene therapy, cells other than reproductive ones are modified.

Predloženi način lečenja bolesti putem transformacije bolesne individue sa divljim- tipom kopije defektnog gena koji izaziva poremećaj. U terapiji gena germ-linije (ili nasledne), reproduktivne ćelije se transformišu; u terapiji gena somatske ćelije (ili nenasledne) modifikuju se druge ćelije, sem reproduktivnih.

gene tracking Following the **inheritance** of a particular gene from generation to generation.

Praćenje nasleđivanja određenog gena iz generacije u generaciju.

gene transfer *See: transformation.*

Vidi: transformation.

gene translocation The movement of a gene from one chromosomal location to another.

Premeštanje gena od jedne hromozomske lokacije do druge.

genera Plural form of **genus**.

Množina od genus.

generally regarded as safe (Abbreviation: GRAS). Designation given to foods, drugs, and other materials with a long-term history of not causing illness to humans, even though formal **toxicity** testing may not be conducted. Certain host organisms for **recombinant DNA** experimentation have recently been given this status.

(Skraćenica: GRAS) Oznaka data hrani, lekovima i drugim materijama sa dugoročnom istorijom, ne izazivaju bo-

lest kod ljudi, čak iako formalno testiranje toksičnosti možda nije ni sprovedeno. Organizmi domaćini za ispitivanje rekombinantne DNK nedavno su dobili takav status.

generation time *See: cell generation time.*

Vidi: cell generation time.

generative *See: germ line.*

Vidi: germ line.

generative nucleus In many flowering plants, shed **pollen** is two-celled (in others it is three-celled or has a variable number). Before pollen is shed, the male **gametophyte** divides mitotically to give a generative and a vegetative nucleus. The former is the progenitor of the **sperm** cells.

U mnogih cvetnica, polen je dvoćelijski (u drugih je troćelijski ili ima različit broj). Pre nego što je polen izbačen, muški gemetofit se deli mitozom i daje generativno i vegetativno jedro. Prvi je progenitor ćelija sperme.

genet The individual(s) descended vegetatively from a single sexually produced zygote, including all entities derived from it. All these individuals are genetically identical to one another (barring mutation).

Individua vegetativnog porekla nastala od seksualno proizvedenog zigota.

Te sve individue su genetički identične (izuzimajuća mutacija).

genetic assimilation Eventual extinction of a natural **species** as massive **gene flow** occurs from a related species.

Moguće izumiranje prirodne vrste kada nastane veliki tok gena srodnih vrsta.

genetic code The correspondence between the set of 64 possible **nucleotide triplets** and the **amino acids** and **stop codons** that they specify. *See annex 3.*

Sličnost između niza od 64 moguća tripleta nukleotida i aminokiselina i krajnjih kodona koji ih karakterišu. *Vidi: annex 3.*

genetic complementation When two **DNA** molecules that are in the same cell together produce a function that neither **DNA** molecule can supply on its own.

Kada dva molekula DNK koji su u istoj ćeliji zajedno proizvedu funkciju koju nijedan DNK molekul ne može da proizvede sam.

genetic disease A disease caused by an abnormality in the genetic material, which could be at the level of **DNA sequence** at a locus, or at the level of **karyotype**. Usually refers to inherited diseases, although somatic mutations can also cause disease without being inherited.

Bolest izazvana abnormalnošću u genetičkom materijalu, koja bi mogla da bude na nivou sekvence DNK u lokusu, ili na nivou kariotipa. Obično se odnosi na nasledne bolesti, iako somatske mutacije mogu takođe da izazovu bolest, a da ne budu nasledene.

genetic distance A measure of the genetic similarity between any pair of populations. This is measured on the basis of **variation** in a combination of phenotypic traits, allele frequencies or **DNA** sequences. For example, the genetic distance between two populations having the same allele frequencies at a particular locus, and based solely on that locus, is zero.

Mera genetičke sličnosti između bilo koje dve populacije. Meri se na bazi varijacije kombinacije fenotipskih osobina, učestalosti alela ili sekvenci DNK. Na primer, genetička distanca između dve populacije koje imaju

iste frekvencije alela na određenom lokusu, a bazirana samo na tom lokusu je nula.

genetic distancing The collection of the data on phenotypic traits, **marker** allele frequencies or **DNA** sequences for two or more populations, and estimation of the genetic distances between each pair of populations.

Skup podataka o fenotipskim osobinama, frekvencijama alela markera ili sekvanci DNK za dve ili više populacija, i izračunavanje genetičkih distanci između svake dve populacije.

genetic diversity The heritable variation within and among populations which is created, enhanced or maintained by evolutionary or selective forces.

Nasledna varijacija između populacija, koja je stvorena, povećana, ili koja se održava pomoću evolucionih ili selektivnih sila.

genetic drift Change in **allele frequency** from one generation to another within a population, due to the sampling of finite numbers of genes that is inevitable in all finite-sized populations. The smaller the population, the greater is the genetic drift, with the result that some alleles are lost, and **genetic diversity** is reduced. Thus minimization of genetic drift is an important consideration for **conservation** of genetic resources.

Promena u učestalosti alela iz jedne generacije do druge populacije, usled uzorkovanja svih gena, što je neizbežno u svim konačno-oblikovanim populacijama. Što je populacija manja, veće je genetičko razilaženje, neki aleli mogu da budu izgubljeni, a genetički diverzitet je smanjen. Svođenje genetičkog razilaženja na mi-

nimum je važno za konzervaciju genetičkih resursa.

genetic engineering Modifying genotype, and hence phenotype, by **transgenesis**.

Modifikacija genotipa, i stoga fenotipa, putem transgeneze.

genetic equilibrium The maintenance of a **steady state** with respect to allele frequencies in a group of interbreeding organisms.

Održavanje postojanog stanja, sa gledišta učestalosti alela u grupi organizama u uskom srodstvu.

genetic erosion The loss over time of **allelic** diversity, particularly in farmed organisms, caused by either natural or man-made processes. *See: genetic drift.*

Gubitak diverziteta alela tokom vremena posebno u poljoprivrednih organizama, izazvan bilo prirodnim ili ljudski urađenim postupcima. *Vidi: genetic drift.*

genetic fingerprinting *See: DNA fingerprinting.*

Vidi: DNA fingerprinting.

genetic gain The increase in productivity achieved following a change in **gene frequency** effected by selection.

Povećanje produktivnosti, potignuto praćenjem promene u frekvenciji gena usled selekcije.

genetic heterogeneity Occurs where the genetic determination of a given **phenotype** differs between individuals.

Nastaje gde se genetička dominacija fenotipa razlikuje između individua.

genetic immunization Delivery to a host organism of a cloned **gene** that encodes an **antigen**. After the cloned gene is expressed, it elicits an **antibody** response that protects the orga-

nism from infection by the relevant **pathogen**.

Predaja organizmu domaćina kloniranog gena koji prevodi antigen u kod. Pošto je klonirani antigen ispoljen, on izaziva reagovanje antitela, koje štiti organizam od infekcije putem relevantnog patogena.

genetic information Information contained in a **nucleotide** base sequence in chromosomal **DNA** or **RNA**.

Informacija, sadržana u baznoj sekvenci nukleotida, u DNK ili RNK hromozoma.

genetic linkage *See: linkage*.

Vidi: linkage.

genetic map The linear array of genes on a chromosome, based on **recombination** frequencies (linkage map) or physical location (physical or chromosomal map). *See: linkage map*.

Linearni raspored gena na hromozomu, zasnovan na učestalosti rekombinacija (mapa vezanih gena) ili fizičkoj lokaciji (fizička ili hromozomska mapa). *Vidi: linkage map*.

genetic mapping *See: mapping*.

Vidi: mapping.

genetic marker A **DNA** sequence used to identify a particular location (locus) on a particular chromosome. *See: marker gene*.

Sekvenca DNK korišćena da identifikuje određenu lokaciju (locus) na pojedinom hromozomu. *Vidi: marker gene*.

genetic pollution Uncontrolled spread of **genetic information** (frequently referring to **transgenes**) into the genomes of organisms in which such genes are not present in nature.

Nekontrolisano širenje genetičke informacije (često se odnosi na transgene) u genomima organizama u kojima takvi geni nisu prisutni u prirodi.

genetic polymorphism *See: polymorphism*.

Vidi: polymorphism.

genetic relatedness A quantitative estimate of the proportion of genes, ®, shared between the genomes of any two individuals, groups or populations, e.g. $r = 0.5$ for full siblings and parent **offspring** pairs.

Kvantitativno određivanje proporcije gena, ®, podeljenih između genoma bilo koje dve individue, grupe ili populacije na pr. $r=0.5$ za parove individua koje imaju zajednička oba roditelja i potomstva roditelja.

genetic resources genetic material of actual or potential value.

Genetički materijal od stvarne ili potencijalne vrednosti.

genetic selection The process of selecting genes, cells, clones, etc., within populations or between populations or species. Genetic selection usually results in differential survival rates of the various genotypes, reflecting many variables, including the selection pressure and genetic variability present in populations.

Proces selekcije gena, ćelija, klonova, itd., u okviru populacije, ili između populacija ili vrsta. Genetička selekcija obično dovodi do različitog stepena preživljavanja genotipova, odražavajući mnoge varijable, uključujući selekcijski pritisak i genetičku varijabilnost prisutnu u populacijama.

genetic transformation *See: transformation*.

Vidi: transformation.

genetic use restriction technology (Abbreviation: GURT). A proposed technology applying **transgenesis** to genetically compromise the fertility or the performance of saved seed of a **cultivar** or of second ge-

neration animals. The intention is to protect the market for the seed producer or to prevent undesired escape of genes. Two types of GURTs have been patented: variety-level GURT (V-GURT), which produces **sterile** progeny, and **trait-specific** GURT (T-GURT), in which only the added value transgenic trait is genetically protected. *See: terminator gene, disrupter gene.*

(Skraćenica: GURT) Predložena tehnologija koja primenjuje transgenezu da bi napravili genetički kompromis plodnosti ili performansu sačuvanog semena neke sorte, ili životinja druge generacije. Namera je da se zaštiti tržište proizvođača semena, ili da se spreči neželjen gubitak gena. Patentirana su dva tipa GURT-a: nivoa sorte (V-GURT), koji proizvodi sterilno potomstvo, i specifičan za svojstva GURT (T-GURT), u kojem je genetički zaštićena samo dodata vrednost transgene osobine. *Vidi: terminator gene, disrupter gene.*

genetic variation Differences between individuals attributable to differences in genotype.

Razlike između individua koje se mogu pripisati razlikama u genotipu.

genetically engineered organism (Abbreviation: GEO). Occasional alternative term for **genetically modified organism**.

(Skraćenica: GEO) Povremeni alternativni izraz genetički modifikovan organizam.

genetically modified organism (Abbreviation: GMO). An organism that has been transformed by the insertion of one or more **transgenes**.

(Skraćenica: GMO) Organizam koji je transformisan ubacivanjem jednog ili više transgena.

genetics The science of heredity. Nauka o nasleđu.

genome 1. The entire complement of genetic material (genes plus non-coding sequences) present in each cell of an organism, **virus** or organelle. 2. The complete set of chromosomes (hence of genes) inherited as a unit from one parent.

1. Ceo genetički materijal (geni plus nekodirajuće sekvence) prisutan u svakoj ćeliji organizma, virusa ili organele. 2. Kompletan skup hromozoma (stoga gena) nasleđen kao celina od jednog roditelja.

genomic library A clone **library** specifically constructed from restriction fragments of the genomic **DNA** of an organism.

Klonska biblioteka, specifično sastavljena od restrikcionihih fragmenata genomske DNK nekog organizma.

genomics The research strategy that uses molecular characterization and cloning of whole genomes to understand the structure, function and **evolution** of genes and to answer fundamental biological questions. *See: bio-informatics, functional genomics and proteomics.*

Istraživačka strategija, koja koristi molekularnu karakterizaciju i kloniranje genoma, da se shvati struktura, funkcija i evolucija gena, i da se odgovori na fundamentalna biološka pitanja. *Vidi: bio-informatics, functional genomics i proteomics.*

genotype 1. The genetic constitution of an organism. 2. The **allelic** constitution at a particular locus, e.g. *Aa* or *aa*. 3. The sum effect of all loci that contribute to the expression of a trait.

1. Genetička konstitucija organizma. 2. Alelska konstitucija na posebnom lo-

kusu, na pr. *Aa* ili *aa*. 3. Sumarni efekt svih lokusa koji doprinose ispoljavanju osobine.

genus (pl.: genera) A group of closely related **species**, whose perceived relationship is typically based on physical resemblance, now often supplemented with **DNA sequence** data.

Grupa usko srodnih vrsta, čiji odnos je obično zasnovan na fizičkoj sličnosti, a sada često dopunjena sa podacima DNK sekvence.

GEO Abbreviation for **genetically engineered organism**. *See*: **genetically modified organism**.

Skraćenica za genetically engineered organism. *Vidi*: genetically modified organism.

geotropism A growth curvature induced by gravity. *Synonym*: gravitropism.

Kriva rasta izazvana masom. *Sinonim*: gravitropism.

germ 1. The botanical term for a plant embryo. 2. Colloquial: a disease-causing micro-organism.

1. Botanički izraz za embrion biljke. 2. Neknjiževno: organizam koji izaziva bolesti.

germ cell A member of a cell **lineage** (the **germ line**) leading to the production of gametes. In mammals, germ cells are found in the germinal epithelium of the ovaries and testes. *Synonym*: **germ line cell**. *Opposite*: **somatic cell**.

Član ćelijskog porekla (germ line) koji vodi stvaranju gameta. U sisara, klicine ćelije se nalaze u epitelu klice ovarijuma i testisa. *Sinonim*: germ line cell. *Suprotno*: somatic cell.

germ cell gene therapy The repair or replacement of a defective **gene** within the gamete-forming tissues, re-

sulting in a heritable change in an organism's genetic constitution.

Popravka ili zamena defektnog gena u okviru tkiva koja formiraju gamete, dovodeći do nasledne promene u genetičkoj konstituciji organizma.

germ layer The layers of cells in an animal **embryo** at the **gastrula** stage, from which the various organs of the animal's body will be derived.

Slojevi ćelija u embrionu sisara u stadijumu gastrule, iz kojeg će se razviti različiti organi životinjskog tela.

germ line A lineage of cells which, during the **development** of an organism, are set aside as potential gamete-forming tissues. The location, nature and time of formation of potential gamete-forming tissues are species specific, and may vary greatly from one species to another. *See*: **somatic**

Linije ćelija koje su, tokom razvika nekog organizma postavljene, kao potencijalna tkiva za formiranje gameta. Lokacija, priroda i vreme formiranja potencijalnih tkiva za formiranje gameta su specifični za vrste, i mogu veoma da variraju od jedne vrste do druge. *Vidi*: somatic.

germ line cell *See*: **germ cell**.

Vidi: germ cell.

germ line gene therapy The delivery of a gene or genes to a fertilized **egg** or an early embryonic cell. The transferred gene(s) is present in all or some of the nuclei of the cells of the mature individual, including possibly the reproductive cells, and alters the **phenotype** of the individual that develops.

Transfer jednog ili više gena oplodnom jajetu, ili ranoj embrionoj ćeliji. Preneti gen (geni) je prisutan u svim ili u

nekim nukleusima ćelija u odrasle individue, uključujući i reproduktivne ćelije, i menja fenotip individue koji se razvija.

germicide Any chemical agent used to control or kill any pathogenic and non-pathogenic micro-organisms.

Bilo koje hemijsko sredstvo, korišćeno za suzbijanje ili ubijanje bilo kojih patogenih, ili nepatogenih mikroorganizama.

germinal epithelium 1. A layer of epithelial cells on the surface of the **ovary** that are continuous with the mesothelium. 2. The layer of epithelial cells lining the seminiferous tubules of the testis, which gives rise to spermatogonia. *See: spermatogenesis.*

1. Sloj epitelijskih ćelija na površini ovarijuma, koje su povezane sa mezotelijumom. 2. Sloj epitelijskih ćelija koji okružuje cevčice u kojima se formira sperma u testisu, koji daje pojavu spermatogonije. *Vidi: spermatogenesis.*

germination 1. The initial stages in the growth of a **seed** to form a seedling. 2. The growth of spores (fungal or algal) and **pollen** grains.

1. Početni stadijumi rasta semena radi formiranja izdanka. 2. Rast spora (gljivičnih ili od algi) i polenovih zrna.

germplasm 1. An individual, group of individuals or a clone representing a genotype, variety, **species** or culture, held in an *in situ* or *ex situ* collection. 2. Original meaning, now no longer in use: the genetic material that forms the physical basis of **inheritance** and which is transmitted from one generation to the next by means of the germ cells

1. Individua, grupa individua, ili klon, koji predstavlja genotip, sortu, vrstu

ili kulturu, u *in situ* ili *ex situ* kolekciji. 2. Originalno značenje, nije više u upotrebi: genetički materijal koji formira fizičku osnovu nasleđa, i koji je prenet iz jedne generacije do sledeće putem ćelija klice.

gestation The period between conception (fertilization of the **egg**) to **parturition** (birth) spent *in utero* by the **foetus** of **viviparous** animals.

Period između koncepcije (oplođenja jajeta) do porađanja (rođenja), proveđen *in utero* od strane fetusa kod viviparnih životinja.

GFP Abbreviation for **green fluorescent protein**.

Skraćenica za green fluorescent protein.

GH Abbreviation for **growth hormone**.
Skraćenica za growth hormone.

gibberellins A class of **plant growth regulators** which are active in the elongation, enhancement of flower, fruit and leaf size, germination, **vernalization** and other physiological processes.

Grupa regulatora rasta biljaka, koji su aktivni u elongaciji, povećanju cveta, ploda i veličine lista, klijanju, vernalizaciji, i u drugim fiziološkim procesima.

gland A specialized group of cells or a single **cell** in animals or plants that secretes a specific substance. The two types of animal glands are: endocrine, which secrete directly into the blood vessels; and exocrine, which secrete through a duct or network of ducts into a body cavity or onto the body surface.

Specijalizovana grupa ćelija, ili jedne ćelije, u životinja ili biljaka, koja luči specifičnu supstancu. Dva tipa životinjskih žlezda su: endokrine, koje luče direktno u krvne sudove; i egzokrine, koje luče kroz kanal ili mrežu

kanala u telesnu šupljinu ili na površinu tela.

glaucous A surface with a waxy, white coating. In most cases, this waxy covering can be rubbed off.

Površina sa voštanom belim slojem. U većini slučajeva, taj voštani sloj se može otrti.

globulins Common class of **proteins** in blood, eggs and milk, and seeds. Characterized by their slight solubility in water but are freely soluble in dilute salt solutions. Gamma-globulins are defined further by their electrophoretic behaviour, and include the **immunoglobulins**.

Zajedničke klasa proteina u krvi, jajima, mleku i semenima. Karakteriše se slabom rastvorljivošću u vodi, ali su rastvorljivi u razblaženim slanim rastvorima. Gamaglobulini su dalje definisani putem njihovog elektroforetičkog ponašanja, i uključuju imunoglobuline.

GLP Abbreviation for **good laboratory practice**.

Skraćenica za good laboratory practice.

glucocorticoid A steroid hormone that regulates **gene expression** in higher animals.

Steroidni hormon, koji reguliše ispoljavanje gena u viših životinja.

glucose invertase An enzyme that catalyses the **hydrolysis** of sucrose into its component monosaccharides, glucose and fructose.

Enzim koji katalizuje hidrolizu saharoze u njene komponente monosaharide, glukozu i fruktozu.

glucose isomerase An enzyme that catalyses the interconversion of the two sugars, glucose and fructose. As fructose is a lower energy compound compared with glucose, a mixture of glucose and fructose with the

enzyme will end up almost entirely as fructose.

Enzim koji katalizuje međusobnu konverziju dva šećera, glukoze i fruktoze. Kako je fruktoza slabije energetske jedinjenje u poređenju sa glukozom, smeše glukoze i fruktoze sa enzimom će se završiti skoro potpuno kao fruktoza.

glucosinolates A class of molecules produced in the seeds and green **tissue** of a range of plants, in particular brassicas. Their natural role is thought to be involved in plant-insect interactions. Their importance in plant **breeding** is largely because of their negative influence on taste and their positive effect on the prevention of cancers of the alimentary tract.

Grupa molekula proizvedenih u semenima i zelenom tkivu niza biljaka, posebno kupusnjača. Njihova prirodna uloga je da je uključena u interakcije biljka-insekt. Njihova važnost u gajenju biljaka je uglavnom zbog njihovog negativnog uticaja na ukus, i pozitivnog efekta na sprečavanju raka alimentarnog kanala.

glucuronidase *See: beta-glucuronidase*.

Vidi: beta-glucuronidase.

gluten A mixture of two seed storage **protein** classes, gliadin and glutenin, found in the **endosperm** of cereal (particularly wheat) grain. High levels of gluten impart elasticity to dough, and thus the composition of wheat glutes largely determines whether a specific flour is suitable for biscuit or bread making. Sensitivity of the lining of the intestine to gluten in some humans results in celiac disease, a condition that requires a gluten-free diet.

Smeša dve proteinske grupe rezervnih proteina, gliadina i glutenina, nađenih u endospermu zrna žitarica (posebno pšenice). Visoki nivoi glutena daju elastičnost testu, i tako sastav pšeničnih glutena uveliko određuje da li je specifično brašno pogodno za proizvodnju keksa ili hleba. Osetljivost obloge creva na gluten u nekih ljudi dovodi do bolesti debelog creva, stanja koje zahteva hranu bez glutena.

glycoalkaloids A group of modified alkaloids, including solanine and tomatine, having a range of toxic effects in humans and other species. They are of particular significance in food plants from the *Solanaceae*.

Grupa modifikovanih alkaloida, uključujući solanin i tomatin, koji imaju toksične efekte u ljudi i drugih vrsta. Oni su od posebnog značaja u biljkama za ishranu iz familije *Solanaceae*

glycoform One of several structures possible for a given **glycoprotein**, determined by the type and position of attachment of the component **oligosaccharide(s)**. Certain glycoforms may exhibit different biological activities from one another because the oligosaccharide units mediate interactions with other cell components.

Jedna od nekoliko mogućih struktura glikoproteina, određen tipom i položajem vezivanja komponente oligosaharida. Izvesni glikoforme mogu da ispolje različite biološke aktivnosti, pošto jedinice oligosaharida posreduju u interakcijama sa drugim ćelijskim komponentama.

glycolysis The sequence of reactions that converts glucose into pyruvate, with the concomitant production of **ATP**.

Sekvenca reakcija koje pretvaraju glukoze u piruvat, uz istovremenu proizvodnju ATP.

glycoprotein A protein molecule modified by the addition of one or several **oligosaccharide** groups.

Molekul proteina, modifikovan dodavanjem jedne ili nekoliko grupa oligosaharida.

glycoprotein remodelling The use of restriction endoglycosidases to enzymatically remove **oligosaccharide** branches from **glycoprotein** molecules. Removal of one or more oligosaccharide branches can lessen or abolish the antigenicity of the **glycoprotein**, so allowing its injection for pharmaceutical purposes without incurring an unwanted immune response. *See: glycoform*.

Korišćenje restrikcioni endoglikozidaza da se enzimatski odstrane grane oligosaharida od glikoproteinskih molekula. Odstranjenje jedne ili više oligosaharidnih grana može smanjiti ili ukloniti antigeničnost glikoproteina, i tako omogućavaju njegovo injektiranje u farmaceutске svrhe, bez neželjenog imunog reagovanja. *Vidi: glycoform*.

glycosylation The covalent addition of sugar or sugar-related molecules to other classes of molecule, including **proteins** or nucleic acids.

Kovalentno dodavanje šećera, ili molekula sličnih šećeru, drugim molekulima, uključujući proteine ili nukleinske kiseline.

glyphosate An active ingredient in some herbicides, killing plants by inhibiting the activity of plant **enolpyruvyl-shikimate 3-phosphate synthase**.

Aktivni sastojak u nekim herbicidima, koji ubijaju biljke inhibiranjem ak-

tivnosti biljne enolpiruvil-šikimat 3 fosfatne sintaze.

glyphosate oxidase An enzyme which catalyses the break-down of **glyphosate**, discovered in a **strain** of *Pseudomonas* bacteria which were found to produce unusually large amounts of the enzyme. The gene responsible has been incorporated into a variety of crop plants to enable them to tolerate applications of glyphosate-containing herbicides. It has also been used in conjunction with the **CP4 EPSPS** gene.

Enzim koji katalizuje razlaganje glifosata, otkriven u soju bakterije *Pseudomonas*, za koje je utvrđeno da proizvode velike količine enzima. Odgovorni gen bio je unet u različite useve, bio je spojen sa različitim usevima da im omogući da tolerišu primenu herbicida koji sadrže glifosfat. Takođe je korišćen u zajednici sa CP4 EPSP genom.

glyphosate oxidoreductase An enzyme from the **micro-organism** *Ochrobactrum anthropi*, which catalyses the break-down of **glyphosate**. If the encoding **gene** (called *goxv247*) is inserted and properly expressed in a plant, these plants become tolerant of the application of glyphosate- and/or sulfosate-containing herbicides. An **alteRNAtive** to **CP4 EPSPS** or **glyphosate oxidase** encoded glyphosate tolerance.

Enzim iz mikroorganizma *Ochrobactrum anthropi*, koji katalizuje razlaganja glifosata. Ako se enkodiran gen (zvan *goxv 247*) ubaci, i ispolji u biljci, te biljke postaju tolerantne na primenu herbicida koji sadrže glifosfat i/ili sulfosfat. Alternativa za CP4 EPSPS ili glifosfat oksidazu enkodira glifosfat tolerantnost.

GM food Abbreviation for genetically modified food. Food that contains above a certain legal minimum content of raw material obtained from **genetically modified organisms**.

Skraćenica za genetički modifikovanu hranu. Hrana koja sadrži preko legalnog minimalnog sadržaja sirovine dobijene od genetički modifikovanih organizama.

GMO Abbreviation for **genetically modified organism**.

Skraćenica za genetički modifikovanu organizam.

GMP Abbreviation for 1. **guanosine 5'-monophosphate**. *Synonym*: **guanylic acid**. 2. **good manufacturing practice**.

Skraćenica za 1. guanozin 5'-monofosfat. *Sinonim*: guanylic acid. 2. Good manufacturing practice.

gobar *See*: **biogas**.

Vidi: biogas.

golden rice A biotechnology-derived rice, which contains large amounts of beta **carotene** (a precursor of **vitamin A**) in its seeds. Achieved by inserting two genes from daffodil and one from the bacterium *Erwinia uredovora*.

Pirinač bioteholološkog porekla, koji sadrži velike količine beta karotina (prekursora vitamina A) u zrnu. Postignut ubacivanjem dva gena od žutog narcisa, i jednog gena od bakterije *Erwinia uredovora*.

Golgi apparatus An assembly of vesicles and folded membranes within the **cytoplasm** of plant and animal cells that stores and transports secretory products (such as enzymes and hormones) and plays a role in formation of a **cell wall** (when this is present).

Skup vesikula i naboranih membrana u okviru citoplazme biljnih i životinjskih

skih ćelija, koje transportuju proizvode lučenja, (kao što su enzimi i hormoni) i imaju ulogu u formiranju ćelijskog zida (gde je prisutan).

gonad One of the (usually paired) animal organs that produce reproductive cells (gametes). The most important gonads are the male testis, which produces spermatozoa, and the female ovary, which produces ova (egg cells). The gonads also produce hormones that control secondary sexual characteristics.

Jedan od (obično parnih) životinjskih organa koji proizvodi reproduktivne ćelije (gamete). Najvažnije gonade su muški testis, koji proizvodi spermatozoide, i ženski ovarijum, koji proizvodi jajne ćelije. Gonade, također, proizvode hormone koji kontrolišu sekundarne polne odlike.

good laboratory practice (Abbreviation: GLP). Written codes of practice designed to reduce to a minimum the chance of procedural or instrument problems which could adversely affect a research project or other laboratory work.

(Skraćenica: GLP) Propisi prakse, sastavljeni da svedu na minimum šanse proceduralnih ili instrumentalnih problema, koji bi mogli štetno da utiču na istraživački projekt ili drugi laboratorijski rad.

good manufacturing practice (Abbreviation: GMP). Codes of practice designed to reduce to a minimum the chance of procedural or instrument/manufacturing plant problems which could adversely affect a manufactured product.

(Skraćenica: GMP) Propisi prakse, sastavljeni da svedu na minimum šanse proceduralnih ili instrumentalno/pro-

izvodnih problema, koji bi mogli negativno da utiču na proizvedeni produkt.

G-protein coupled receptor *See: G protein.*

Vidi: G protein.

graft 1. Verb. To place a detached branch or **bud (scion)** in close cambial contact with a rooted **stem (rootstock)** in such a manner that scion and rootstock unite to form a single plant. 2. Noun. Colloquial synonym for **scion**. *See: grafting, graft chimera, graft hybrid.*

1. Glagol-Postaviti skinutu granu ili pupoljak (kalem) u bliski kambijalni kontakt sa podlogom, na takav način, da se kalem grančica i podloga sjedine i formiraju jednu biljku. 2. Imenica. Sinonim za kalem. *Vidi: grafting, graft chimera, graft hybrid.*

graft chimera A plant which is a **mosaic** of two sorts of tissue differing in genetic constitution and assumed to have arisen as the result of a nuclear fusion following **grafting**. *See: graft hybrid.*

Biljka koja je mozaik dve vrste tkiva, koje se razlikuju u genetičkoj konstituciji, i smatra se da je nastala kao rezultat fuzije nukleusa posle kalemljenja. *Vidi: graft hybrid.*

graft hybrid An individual formed from **graft** (2) and **stock** showing the characteristics of both progenitors. *See: graft chimera.*

Individua postala od kalema (2) i podloge, pokazujući karakteristike oba progenitora. *Vidi: graft chimera.*

graft inoculation test A test based on the use of a suspected viral carrier which is grafted to an indicator plant. If symptoms appear in the indicator plant, the viral **assay** is positive.

Test, zasnovan na korišćenju sumnjivog virusnog nosioca koji je kalemljen na biljku indikatora. Ako se na indikator biljci pojave simptomi, virusni test je pozitivan.

graft union The point at which a **scion** from one plant is joined to a **root-stock** from another plant.

Tačka u kojoj se kalem od jedne biljke spaja sa podlogom druge biljke.

grafting The process of making a **graft** (1).

Proces pravljenja kalema (1).

graft-versus-host disease The rejection of transplanted organs by the recipient's immune system, due to attack of the recipient's T **lymphocytes** on the transplanted organ caused by differences in **major histocompatibility complex** proteins.

Odbacivanje transplantiranog organa putem imunog sistema recipijenta, usled napada recipijentovih T limfocita na preneti organ, izazvano razlikama u proteinima glavnog kompleksa histokompatibilnosti.

Gram staining A technique to distinguish between two major bacterial groups, based on whether or not their cell wall retains the Gram stain. Gram-positive bacteria are stained dark purple, while Gram-negative bacteria are only faintly coloured. Stain retention is determined by the structure of the **cell wall**.

Tehnika za određivanje razlika između dve glavne bakterijske grupe, zasnovana na tome da li njihov ćelijski zid sadrži ili ne Gram-ovu obojenost. Gram-pozitivne bakterije su obojeno tamnopurpurno, dok su Gram-negativne bakterije slabo obojene. Zadržavanje boje se određuje putem strukture ćelijskog zida.

granum (pl.: grana) Structure within the **chloroplasts**, appear as green granules with the light microscope and as a series of parallel lamellae with the electron microscope. They contain the **chlorophyll** and **carotenoid** pigments directly involved in photosynthesis.

Struktura u okviru hloroplasta, izgleda kao zelene granule pod svetlosnim mikroskopom, i kao serije paralelnih lamela pod elektronskim mikroskopom. One sadrže hlorofil i karotinoide koji su direktno uključeni u fotosintezu.

GRAS Abbreviation for **generally regarded as safe**.

Skraćenica za generally regarded as safe.

gratuitous inducer A substance that can induce **transcription** of a **gene** or genes, but is not a **substrate** for the induced enzyme(s).

Supstanca koja može da dovede do transkripcije jednog ili više gena, ali nije supstrat za enzim (e).

gravitropism *See: geotropism*.

Vidi: geotropizam.

green fluorescent protein (Abbreviation: GFP). A **protein** derived from a species of jelly fish, that fluoresces when exposed to ultra violet light. Its encoding gene has been isolated and is replacing **GUS** as a **reporter gene** in plant transgenesis, since it can be assayed non-destructively in real time.

(Skraćenica: GFP) Protein, nastao od vrste meduze, koji svetluca kada je izložen ultra violetnoj svetlosti. Njegov enkodirani gen je izolovan, i zamenjuje GUS kao reporter gen u biljnoj transgenezi, pošto može biti neuništivo ispitan u realnom vremenu.

green revolution Name given to the dramatic increase in crop **producti-**

vity during the third quarter of the 20th century, as a result of integrated advances in **genetics** and plant breeding, agronomy, and pest and disease control.

Ime dato velikom povećanju produktivnosti useva tokom treće četvrtine XX veka, kao rezultat integrisanih napredaka u genetici i oplemenjivanju biljaka, agronomiji i suzbijanju štetočina i bolesti.

Gro-luxä A wide-spectrum fluorescent lamp suitable for artificial light for plant growth.

Fluorescentna lampa širokog spektra, pogodna za veštačko osvetljenje za rast biljaka.

growth cabinet An enclosed space in which environmental conditions can be controlled. The degree of control over temperature, light and humidity is a function of the quality of the cabinet.

Zatvoreni prostor u kojem se mogu kontrolisati uslovi spoljne sredine. Step en kontrole temperature, svetlosti i vlažnosti je funkcija kvaliteta kabineta.

growth curve See: **growth phase**.

Vidi: growth phase.

growth factor Any of various chemicals, particularly **polypeptides**, that have a variety of important roles in the stimulation of new **cell** growth and cell maintenance. They bind to the cell surface on receptors. Specific growth factors can cause new cell proliferation.

Bilo koja od različitih jedinjenja, posebno polipeptidi koji imaju razne važne uloge u stimulaciji rasta i održavanja ćelije. Oni se vezuju za površinu ćelije receptora. Specifični faktori rasta mogu izazvati novo umnožavanje ćelija.

growth hormone (Abbreviation: GH).

A group of hormones, secreted by the mammalian pituitary gland, that stimulates **protein synthesis** and growth of the long bones in the legs and arms. They also promote the breakdown and use of fats as an energy source, rather than glucose. *Synonym*: **somatotropin**.

(Skraćenica: GH) Grupa hormona, koje luči hipofiza sisara, koja stimuliše sintezu proteina i rast dugih kostiju u nogu i ruku, odnosno ekstremitetima životinja. Oni takođe izazivaju razlaganje i korišćenje masti kao energetski izvor, pre nego glukoze. *Sinonim*: somatotropin.

growth inhibitor Any substance inhibiting the growth of an organism. The inhibitory effect can range from mild inhibition (growth retardation) to severe inhibition or death (toxic reaction). The concentration of the inhibitor, the length of exposure to it, and the relative susceptibility of the organisms exposed to the inhibitor, are all important factors which determine the extent of the inhibitory effect.

Bilo koja supstanca koja inhibira rast nekog organizma. Inhibicija može da se kreće od blagog usporavanja (retardacije rasta) do jake inhibicije ili smrti (toksična reakcija). Koncentracija inhibitora, trajanje izlaganja istom, i relativne podložnosti organizama izloženih inhibitoru, su važni faktori koji određuju obim efekta inhibicije.

growth phase Each of the characteristic periods in the **growth curve** of a bacterial culture, as indicated by the shape of a graph of viable **cell number** versus time, namely: **lag phase**; **logarithmic phase**; **stationary phase**; **death phase**.

Svaki od karakterističnih perioda u krivi rasta bakterijske kulture, kako je pokazano oblikom grafikona broja živih ćelija u vremenu, naime: spora faza, logaritamska faza, stacionarna faza, faza uginuća(smrti).

growth rate Change in an organism's mass per unit of time.

Promena u masi organizma po jedinici vremena.

growth regulator A synthetic or natural compound that at low concentrations elicits and controls growth responses in a manner similar to hormones.

Sintetičko ili prirodno jedinjenje, koje pri niskim koncentracijama izvodi i kontroliše rast, na način sličan hormonima.

growth retardant A chemical that selectively interferes with normal hormonal promotion of growth and other physiological processes, but without appreciable toxic effects.

Jedinjenje, koje selektivno posreduje sa normalnim hormonalnim podsticajem rasta i drugim fiziološkim procesima, ali bez znatnih toksičnih efekata.

growth ring Rings visible in a cross-section of a woody stem, such as a tree trunk. Each ring represents the xylem formed in one year as a result of fluctuating activity of the vascular cambium.

Krugovi, vidljivi na preseku drvenog stabla, kao što je stablo drveta. Svaki god predstavlja ksilem, formiran u jednoj godini, kao rezultat kolebljive aktivnosti vaskularnog kambijuma.

growth substance Any organic substance, other than a nutrient, that is synthesized by plants and regulates growth and development. They are usually made in a particular region, such as the shoot tip, and transported

to other regions, where they take effect.

Bilo koja organska supstanca, sem hranljive materije, koju sintetišu biljake i ona reguliše rast i razviće. One se obično proizvode u određenom regionu, kao što je vrh izdanka, i transportuju u ostale regione, gde ispoljavaju svoj efekat.

GTP Abbreviation for **guanosine 5'-triphosphate**, a **nucleotide** which is important as a **ligand** for **G proteins** and as a direct precursor molecule for **RNA** synthesis. *See: guanylic acid.*

Skraćenica za guanozin 5'trifosfat, nukleotid koji je važan kao ligand za G proteine i kao direktan prekursor za sintezu RNK. *Vidi: guanylic acid.*

guanine (Abbreviation: G). One of the **bases** found in **DNA** and **RNA**. *See: guanosine.*

(Skraćenica: G) Jedna od baza, koja ulazi u sastav DNK i RNK. *Vidi: guanosine.*

guanosine The (ribo)**nucleoside** resulting from the combination of the **base** guanine (G) and a **D-ribose** sugar. The corresponding **deoxyribonucleoside** is called deoxyguanosine. *See: GTP, dGTP, guanylic acid.*

(Ribo)nukleozid, nastao kombinovanjem baze guanina (G) i šećera D-riboze. Odgovarajući deoksiribonukleozid se zove deoksiguanozin. *Vidi: GTP, dGTP, guanylic acid.*

guanosine triphosphate (guanosine 5-triphosphate) Abbreviation: **GTP**. *See: guanylic acid.*

Skraćenica: GTP. *Vidi: guanylic acid.*

guanylic acid Synonym for **guanosine monophosphate** (abbreviation: GMP), a (ribo)**nucleotide** containing the **nucleoside** **guanosine**. The cor-

responding **deoxyribonucleotide** is called deoxyguanylic acid.

Sinonim za guanozin monofosfat (Skraćenica: GMP), (ribo) nukleotid koji sadrži nucleozid guanozin. Odgovarajući deoksyribonukleotid zove se deoksiganilična kiselina.

guard cell Specialized epidermal cells found in pairs around a **stoma**. Their function is to control the opening and closing of the stoma through changes in turgor.

Specijalizovane epidermalne ćelije (ćelije zatvaračice), nađene u parovima oko stoma. Njihova funkcija je da kontrolišu otvaranje i zatvaranje stoma tokom promena turgora.

guide RNA An RNA molecule that contain sequences that function as a **template** during RNA editing. *See: guide sequence.*

Molekul RNK koji sadrži sekvence koje funkcionišu kao kalup tokom stvaranja RNK. *Vidi: guide sequence.*

guide sequence An RNA molecule (or a part of it) which hybridizes with eukaryotic mRNA and aids in the **splicing** of **intron** sequences. Guide sequences may be either external (EGS) or internal (IGS) to the RNA being processed and may hybridize with either intron or **exon** sequences close to the splice junction. *See: split gene.*

Molekul RNK (ili njegov deo) koji se hibridizuje sa eukariotskom mRNK i pomaže u sekvenci introna. Lider sekvence mogu biti spoljašnje (EGS) ili unutrašnje (IGS) prema RNK, i mogu da se hibridizuju, bilo sa intronovim ili ekzonovim sekvencama blizu spajanja krajeva. *Vidi: split gene.*

GURT Abbreviation for **genetic use restriction technology**.

Skraćenica za genetic use restriction technology.

GUS Abbreviation for **beta-glucuronidase**.

Skraćenica za beta-glucuronidase.

gus gene An *E. coli* gene that encodes for production of **beta-glucuronidase** (GUS). Because this activity is absent in plants, the gene is commonly utilized as a **reporter gene** to detect the occurrence of **transformation** events.

Gen *E. coli*, koji je odgovoran za proizvodnju beta-glukuronidaze (GUS). Pošto je ta aktivnost odsutna u biljaka, gen se obično koristi kao reporter gen da otkrije postojanje transformacije.

gymnosperm A class of plant (e.g. conifers) whose ovules and the seeds into which they develop are borne unprotected, rather than enclosed in ovaries, as are those of the flowering plants, the (**angiosperms**).

Klasa biljaka (na pr. konifera), čije su ovule i semenke nezaštićene (gole), a nisu zaštićene u ovarijumima, kao one u cvetnica (angiospermama).

gynandromorph An individual in which one part of the body is female and another part is male; a sex mosaic.

Individua kod koje je jedan deo tela ženski, a drugi muški; polni mozaik.

gynogenesis Female **parthenogenesis**: after fertilization of the ovum, the male **nucleus** is eliminated and the **haploid** (gynogenetic) individual possesses the maternal genome only.

Ženska partenogeneza: posle oplodjenja jajeta, muški nukleus je eliminisan, a haploidna (ginogenetička) individua poseduje samo genom majke.

gyrase *See: DNA helicase.*

Vidi: DNK helicase.

H

h Prefix used to designate the human form of an enzyme. For example, **hGH** is human growth hormone.

Predmetak korišćen da obeleži oblik enzima u humanoju populaciji. Na primer, hGH je hormon rasta ljudi.

habituation The phenomenon whereby, after a number of sub-cultures, cells can grow without the addition to the **tissue culture** medium of previously obligatory factors. Such cells are then **autonomous**.

Fenomen kojim, posle jednog broja subkultura, ćelije mogu da rastu bez davanja medijumu kulture tkiva prethodno obaveznih činilaca. Takve ćelije su autonomne.

HAC Abbreviation for **human artificial chromosome**.

Skraćenica za human artificial chromosome.

haemoglobin Protein containing iron, located in erythrocytes of vertebrates; important for the transportation of oxygen to the cells of the body.

Protein koji sadrži gvožđe, lociran u eritrocitima kičmenjaka; važan za transport kiseonika u telesnim ćelijama.

haemolymph The mixture of blood and other fluids in the body cavity of an invertebrate.

Smeša krvi i drugih tečnosti u telesnoj šupljini beskičmenjaka.

haemophilia A sex-linked hereditary bleeding disorder in which it takes a

long time for the blood to clot and abnormal **bleeding** occurs. This disease affects mostly males.

Poremećaj naslednog krvarenja vezanog za pol, pri čemu je potrebno dugo vreme za zgrušavanje krvi, i nastaje abnormalno krvarenje. Ta bolest većinom se javlja kod muških osoba.

hairpin loop A region in one strand of a **polynucleotide** which, due to an **inverted repeat** in the sequence, may under appropriate conditions fold back on itself and form a limited segment of **double-stranded DNA** with a loop at one end.

Region na jednom lancu polinukleotida koji, usled obrnutog ponavljanja sekvence, može, pod odgovarajućim uslovima, da se preokreće i formira ograničeni segment dvostruke DNK, sa lupom (petljom), na jednom kraju.

hairy root culture A culture consisting of highly branched roots of a plant. A plant tissue is treated with the bacterium *Agrobacterium rhizogenes* containing the **Ri plasmid**, which causes the explant to grow highly branched roots from the sites of infection. **Transgenes** engineered into the plasmid can be expressed in these cultures.

Kultura koja se sastoji od visoko razgranatih korenova biljke. Tkivo biljke tretirano bakterijom *Agrobacterium rhizogenes*, koja sadrži Ri plazmid

koji izaziva da isečeni deo ima veoma razgranate korenove na mestima infekcije. Transgeni, ugrađeni u plazmid mogu biti ispoljeni u tim kulturama.

hairy root disease A disease of broad-leaved plants, where a **proliferation** of root-like tissue is formed from the stem. Hairy root disease is a tumorous state similar to **crown gall**, and is induced by the bacterium *Agrobacterium rhizogenes*, when containing an **Ri plasmid**.

Bolest široko-lisnih biljaka, gde se umnožavanje tkiva sličnog korenu formira od stabla. Ova bolest je tumorozno stanje slično raku na voćkama, a izaziva je bakterija *Agrobacterium rhizogenes*, kada sadrži Ri plazmid.

halophyte A plant **species** adapted to soils containing a concentration of salt that is toxic to most plant species. *See*: salt tolerance.

Biljna vrsta, adaptirana na zemljišta koja sadrže koncentraciju soli toksičnu za većinu biljnih vrsta. *Vidi*: salt tolerance.

hanging droplet technique *See*: microdroplet array.

Vidi: microdroplet array.

haploid A cell or organism containing one of each of the pairs of **homologous** chromosomes found in the normal **diploid** cell.

Ćelija ili organizam, koji sadrži jedan od parova homolognih hromozoma, nađenih u normalnoj diploidnoj ćeliji.

haplotype A specific **allelic** constitution at a number of loci within a defined **linkage** block.

Specifična alelna konstitucija na jednom broju lokusa u okviru definisanog linivage bloka.

haplozygous *See*: **hemizygous**.

Vidi: hemizygous.

haptén A small molecule, which by itself is not an **antigen**, but which as a part of a larger structure when linked to a carrier **protein**, can serve as an **antigenic determinant**.

Mali molekul, koji po sebi nije antigen, ali koji, kao deo veće strukture kada je vezan za protein nosilac, može da služi kao antigena determinanta.

haptoglobin A serum **protein** that interacts with **haemoglobin** during recycling of the iron molecule of haemoglobin. *Synonym*: alpha globulin. Serumski protein koji reaguje sa hemoglobinom tokom recikliranja gvozdеног molekula gvožđa hemoglobina. *Sinonim*: alpha globulin.

hardening off Adapting glasshouse or **controlled environment** grown plants to outdoor conditions by reducing availability of water, lowering the temperature, increasing light intensity, or reducing the nutrient supply. The hardening-off process conditions plants for survival when transplanted outdoors.

Adaptiranje biljaka koje rastu u stakleniku ili u kontrolisanoj spoljnoj sredini, uslovima spoljne sredine gde je smanjenja raspoloživost vode, snižavanjem temperature, povećanjem intenziteta svetlosti, ili smanjenjem snabdevanja hranljivim materijama. Proces očvršćivanja biljke za preživljavanje kada se presade na otvoreno polje.

Hardy-Weinberg equilibrium The frequencies of **genotypes** at a locus resulting from random mating at that locus; for two **alleles**, A_1 and A_2 , with respective frequencies in a **population** of p and q , the Hardy-We-

inberg equilibrium frequencies are $p^2 A_1A_1$; $2pq A_1A_2$; $q^2 A_2A_2$. Departure from these frequencies is an indication that random mating is not occurring.

Učestalosti genotipova u lokusu koje nastaje od slučajnog parenja na tom lokusu; za dva alela, A_1 i A_2 , sa odgovarajućim frekvencijama u populaciji od p i q , frekvencije Hardy-Weinberg-ovog ekvilibrijuma su $p^2 A_1A_1$; $2pq A_1A_2$; $q^2 A_2A_2$. Odstupanje od tih frekvencija je pokazatelj da se ne dešava parenje po slučajnom izboru.

harvesting 1. The process involved in gathering ripened crops. 2. The collection of cells from cell cultures or of organs from donors for the purpose of transplantation.

1. Proces, uključen u skupljanje zrelih useva. 2. Kolekcija ćelija iz kulture ćelija ili organa od donora, za svrhu transplantacije.

heat shock protein (Abbreviation: HSP). A class of **protein chaperones** which are typically over-expressed as a response to heat **stress**. Two such **proteins** - HSP 90 and HSP 70 - have a role in ensuring that crucial **proteins** are folded into the correct conformation. *Synonym*: stress **protein**.

(Skraćenica: HSP) Klasa proteina pratilaca, koji su obično suviše izraženi pri reagovanju na toplotni stres. Dva takva proteina - HSP 90 i HSP 70 - imaju ulogu ključnih proteina savijanih u ispravnu konformaciju. *Sinonim*: stress protein.

heat therapy *See*: **thermotherapy**.

Vidi: **thermotherapy**.

helix A structure with a spiral shape. The normal state of **double-stran-**

ded DNA is in the form of a **double helix**.

Struktura spiralnog oblika. Normalno stanje dvolančane DNK je u obliku dvostrukog heliksa.

helminth A class of parasitic worms, especially those which are internal parasites of man and animals.

Klasa parazitskih glista, posebno onih koje su unutrašnji paraziti čoveka i životinja.

helper cell T cells that assist in stimulating B and T **lymphocytes** to develop into antibody-producing **plasma cells** and **killer T cells**, respectively.

T ćelije koje pomažu u stimulaciji B i T limfocita da se razviju u proizvođače antitela plazmine ćelije, odnosno ubice T ćelije.

helper plasmid A **plasmid** that provides a function or functions to another plasmid in the same cell.

Plazmid koji obezbeđuje funkciju ili funkcije drugom plazmidu u istoj ćeliji.

helper T cell *See*: **helper cell**.

Vidi: **helper cell**.

helper T lymphocyte *See*: **helper cell**.

Vidi: **helper cell**.

helper virus A virus that provides a function or functions to another virus in the same cell.

Virus koji obezbeđuje funkciju ili funkcije drugom virusu u istoj ćeliji.

hemicellulase An enzyme that catalyses the degradation of **hemicellulose**.

Enzim koji katalizuje razlaganje hemiceluloze.

hemicellulose Any cellulose-like carbohydrate, but excluding **cellulose** itself. Together with **pectin** and **lignin**, hemicelluloses form the **cell wall** matrix.

Bilo koji ugljeni hidrat, sličan celulozi, ali isključujući samu celulozu. Sa

pektinom i ligninom, hemiceluloze formiraju matriks ćelijskog zida.

hemizygous The condition in which genes are present only once in the genotype and not in pairs. Occurs for all genes in **haploids**, for all genes located in the differential segments of the sex chromosomes in diploids, and in various **aneuploids** and **deletion** mutant **heterozygotes**. *Synonym*: **haplozygous**.

Stanje, pri kojem su geni prisutni samo u genotipu, a ne u parovima. Dešava se u svim genima kod haploida, za sve gene, locirane u različitim segmentima polnih hromozoma u diploidima, i u različitim aneuploidima i u delecionim mutantima koji su heterozigotni. *Sinonim*: haplozygous.

hemoglobin *See*: **haemoglobin**.

Vidi: haemoglobin.

hemolymph *See*: **haemolymph**.

Vidi: haemolymph.

hemophilia *See*: **haemophilia**.

Vidi: haemophilia.

HEPA filter Abbreviation for **high efficiency particulate air filter**. A filter capable of excluding particles larger than 0.3µm. HEPA filters are used in laminar air flow cabinets to ensure that the air is pathogen-free. *See*: **pre-filter**.

Skraćenica za high frequency particulate air filter. Filter, sposoban za isključivanje delića većih od 0.3 µm. HEPA filteri se koriste u pločastim vazdušno protočnim laminarima, da bi se osigurao vazduh bez prisustva patogena. *Vidi*: pre-filter.

herbicide A substance that is toxic to plants; the active ingredient in agrochemicals intended to kill specific unwanted plants, especially weeds.

Supstanca koja je toksična za biljke; aktivni sastojak u poljoprivrednim he-

mikalijama u svrhu uništavanja specifičnih, nepoželjnih biljaka, naročito korova.

herbicide resistance The ability of a plant to remain unaffected by the application of a herbicide.

Sposobnost biljke da ostane neoštećena primenom herbicida.

heredity Resemblance among individuals related by descent; transmission of traits from parents to offspring.

Sličnost među individuama koje su povezane nasleđem; prenos osobina od roditelja na potomstvo.

heritability The degree to which a given **trait** is controlled by inheritance, as opposed to being controlled by non-genetic factors. *See*: **broad-sense heritability**; **narrow-sense heritability**.

Stepen, do kojeg je data osobina kontrolisana nasleđivanjem, nasuprot kontrole negenetičkim faktorima. *Vidi*: broad sense heritability; narrow-sense heritability.

hermaphrodite 1. An animal that has both male and female reproductive organs, or a mixture of male and female attributes. 2. A plant whose flowers contain both **stamen** and carpels. *Synonym*: intersex.

1. Životinja koja ima obe, muške i ženske reproduktivne organe, ili mešana muška i ženska svojstva. 2. Biljka, čiji cvetovi sadrže i prašnik i tučak. *Sinonim*: intersex.

heteroallele A gene having mutations at two or more different sites.

Gen koji ima mutacije na dva ili više različitih mesta.

heterochromatin Regions of chromosomes that remain contracted during **interphase** and therefore stain more intensely in cytological preparations.

These regions have a high content of **repetitive DNA**, and a low content of genes; thus they are for the most part genetically inactive. *Opposite: euchromatin.*

Regioni hromozoma, koji ostanu kontrahirani (spiralizovani) tokom interfaze, i zbog toga se intezivnije boje u citološkim preparatima. Ti regioni imaju visoki sadržaj ponovljive DNK, i nizak sadržaj gena; tako da su oni u najvećem delu genetički neaktivni. *Suprotno: euchromatin.*

heteroduplex A double-stranded DNA molecule or DNA-RNA hybrid, where each strand is of a different origin. Where the two DNAs differ significantly in sequence, single-stranded regions will be revealed when the heteroduplex is observed under the electron microscope. A **map of homologous** and non-homologous regions of the two molecules may thereby be constructed (heteroduplex mapping). *Synonym: hybrid DNA (DNA/RNA).* *See: heteroduplex analysis.*

Dvolančani molekul DNK, ili DNK-RNK hibrid, gde je svaki lanac različitog porekla. Gde se dve DNK signifikantno razlikuju u sekvenci, jedolančani regioni biće otkriveni kada se heterodupleks može videti pod elektronskim mikroskopom. Mapa homolognih i nehomolognih regiona od dva molekula, može tako da bude konstruisana (heteroduplex mapping). *Sinonim: hibrid DNK (DNK/RNK).* *Vidi: heteroduplex analysis.*

heteroduplex analysis The use of the electrophoretic mobility of **heteroduplex DNA** to estimate the degree of non-homology between the sequences of the two strands. Gel mobi-

lity tends to be reduced as the amount of **sequence** divergence increases, because the effective size of a fully complementary pair of strands is smaller than that of a partially complementary structure.

Korišćenje elektroforetske mobilnosti heterodupleksa DNK za izračunavanje stepena nehomolognosti između sekvenci dva lanca. Mobilnost gela ima tendenciju sa povećanjem divergencije sekvenci, pošto je, zbog efektivne veličine potpuno komplementarnog para lanaca manja od one u parcijalno komplementarnoj strukturi.

heterogametic Producing unlike gametes with regard to the sex chromosomes. In mammals, the XY male is heterogametic, and the XX female is **homogametic.**

Proizvedeći različite gamete u vezi sa polnim hromozomima. U sisara, XY mužjak je heterogametian, a XX ženka homogametian.

heterogeneity *See: genetic heterogeneity.*

Vidi: genetic heterogeneity.

heterogeneous nuclear RNA (Abbreviation: hnRNA). Large RNA molecules, which are found in the **nucleus** of a eukaryotic **cell** and the precursors of mRNA and other RNA molecules.

(Skraćenica: hnRNK.) Veliki RNK molekuli, koji su nađeni u nukleusu eukariotske ćelije i prekursorima mRNK i drugih RNK molekula.

heterokaryon A cell with two or more different nuclei as a result of **cell** fusion. *See: synkaryon.*

Ćelija sa dva ili više različitih nukleusa kao rezultat ćelijske fuzije. *Vidi: synkaryon.*

heterologous From a different source.

Iz različitog izvora.

heterologous probe A **DNA probe** that is derived from one species and used to screen for a similar **DNA** sequence from another species.

Proba DNK koja je poreklom od jedne vrste, i korišćena da se karakteriše slična sekvenca DNK od druge vrste.

heterologous protein *See: recombinant protein.*

Vidi: recombinant protein.

heteroplasmy A condition in which two genetically different organelles are present in the same cell. The equivalent to **heterozygous** in the context of nuclear genes. *Opposite: homoplasmy.*

Stanje u kojem su dve, genetički različite organele, prisutne u istoj ćeliji. Ekvivalent za heterozygous u kontekstu nuklearnih gena. *Suprotno: homoplasmy.*

heteroploid Cells with nuclei containing **chromosome** numbers other than **diploid**.

Ćelije sa nukleusima koji sadrže hromozomski broj različit od diploidnog.

heteropyknosis The property of certain chromosomes, or of their parts, to remain more dense during the **cell cycle** and to stain more intensely than other chromosomes or parts.

Osobina nekih hromozoma, ili njihovih delova, da ostanu gušći tokom ćeljskog ciklusa, i da se boje intenzivnije od drugih hromozoma ili delova.

heterosis *See: hybrid vigour.*

Vidi: hybrid vigour.

heterotroph Organism non capable of self-nourishment utilizing carbon dioxide or carbonates as the sole source of carbon and obtaining energy from radiant energy or from the oxida-

tion of inorganic elements, or compounds such as iron, sulphur, hydrogen, ammonium and nitrites.

Opposite: autotroph.

Organizam koji nije sposoban za samostalnu ishranu koristeći ugljendioksid ili karbonate kao jedini izvor ugljenika, i dobijajući energiju od sunčeve energije, ili od oksidacije neorganskih elemenata, ili jedinjenja kao što su gvožđa, sumpora, vodonika, amonijaka i nitrita. *Suprotno: autotroph.*

heterotrophic (adj.) *See: heterotroph.*

Vidi: heterotroph.

heterozygous (adj.) *See: heterozygote.*

Vidi: heterozygote.

heterozygote An individual with non-identical alleles for a particular **gene** or genes. The condition is termed „heterozygous“. *Opposite: homozygote.*

Individua sa neidentičnim alelima za određen gen ili gene. Stanje je označeno „heterozygous“. *Suprotno: homozygote.*

Hfr High-frequency **recombination** strain of *Escherichia coli*; in these strains, the **F factor** (plasmid) is integrated into the bacterial chromosome.

Visoko frekventni rekombinacijski soj *Escherichia coli*; u tim sojevima, F faktor (plazmid) je integrisan u bakterijski hromozom.

hGH Abbreviation for human **growth hormone**.

Skraćenica za hormon rasta kod ljudi.

high efficiency particulate air filter *See: HEPA filter.*

Vidi: HEPA filter.

high throughput screening Automated systems designed to process large numbers of assays, especially in the context of genotyping.

Automatizovani sistemi, konstruisani da obrade veliki broj ogleda, naročito u kontekstu genotipovanja.

histocompatibility The degree to which **tissue** from one organism is tolerated by the immune system of another organism.

Stepen do kojeg se tkivo jednog organizma toleriše putem imunog sistema drugog organizma.

histocompatibility complex *See: major histocompatibility complex.*

Vidi: major histocompatibility complex.

histoglobulin The peptides present on the surface of nucleate cells, responsible for the differences between genetically non-identical individuals that cause rejection of **tissue grafts** between such individuals. Products of the **major histocompatibility complex** genes.

Peptidi, prisutni na površini nukleatskih ćelija, odgovorni za razlike između genetički neidentičnih individua koje izazivaju odbacivanje tkivnih kalema između takvih individua. Produkti gena glavnog kompleksa histokompatibilnosti.

histology Science that deals with the microscopic structure of animal and plant tissues.

Nauka u vezi sa mikroskopskom strukturom životinjskih i biljnih tkiva.

histone Group of water-soluble **proteins** rich in basic amino acids, closely associated with **DNA** in plant and animal **chromatin**. Histones are involved in the coiling of **DNA** in chromosomes and in the regulation of gene activity.

Grupa proteina rastvorljivih u vodi, bogatih u baznim aminokiselinama, usko povezanih sa DNK u biljnom i životinjskom hromatinu. Histoni su

takođe uključeni u spiralizaciji DNK u hromozomima i u regulisanju aktivnosti gena.

HLA Abbreviation for **human-leukocyte-antigen system**. *See: major histocompatibility antigens.*

Skraćenica za human-leukocyte-antigen system. *Vidi: major histocompatibility antigens.*

hnRNA Abbreviation for **heterogeneous nuclear RNA**.

Skraćenica za heterogenu nuklearnu RNK.

Hogness box Synonym for **TATA box**. Sinonim za TATA box.

hollow fibre A tube of porous material, with an internal diameter of a fraction of a millimetre, making its ratio of surface area to internal volume very large. Employed as filters or in bioreactors as a method of retaining cells while allowing the easy removal of **spent medium** and/or products.

Cevčica od poroznog materijala, sa unutrašnjim prečnikom frakcije od milimetra, čineći odnos površine prema unutrašnjoj zapremini vrlo velikim. Koriste se kao filteri, ili u bioreaktorima kao metod zadržavanja ćelija, dok dopuštajući lako odstranjivanje utrošenog medijuma i/ili produkata.

holoenzyme *See: apoenzyme.*

Vidi: apoenzyme.

holometabolous An insect that undergoes complete metamorphosis to the adult from a morphologically distinct larval stage.

Insekt koji prelazi potpunu metamorfozu od morfološki striktnog stadijuma larve do odraslog.

homeobox A highly conserved 180 bp **DNA** sequence that controls body part-, organ- or tissue-specific **gene**

expression, most particularly involved in segmentation in animals (e.g. development of antennae or legs of *Drosophila melanogaster*), but also in a variety of other **eukaryotes**. It encodes a DNA-binding region, the **homeodomain**, which acts as a **transcription factor**.

Visoko konzervisana 180bp sekvenca DNK koja kontroliše ispoljavanje specifičnog gena dela tela, organa ili tkiva, uključenog u segmentaciju u životinja (na pr.razviće antena ili nogu u *Drosophila melanogaster*), a takođe i u druge vrste eukariota. Enkodira region vezivanja DNK, koji deluje kao transkripcioni faktor.

homeodomain *See: homeobox.*

Vidi: homeobox.

homeotic genes Genes that act in concert to determine fundamental patterns of development.

Geni koji deluju zajednički, da odrede osnovne oblike razvića.

homeotic mutation A mutation that causes a body part to develop in an inappropriate position in an organism, such as the mutation in *Drosophila melanogaster* that causes legs to develop on the head in place of antennae.

Mutacija, koja deluje da se deo tela razvije u neodgovarajućem položaju u organizmu, kao što je mutacija u *Drosophila melanogaster*, koja izaziva da se umesto antena noge razvijaju na glavi.

homoallele One of a number of otherwise identical **alleles** which differ at the same site in their sequence. **Homoalleles** are inherited as strict alternatives; but **heteroalleles**, in principle, could through **recombination** create a **genotype** which contains a 'double' variant.

Jedan od identičnih alela, koji se razlikuju na istom mestu po svojoj sekvenci. Homoaleli su nasleđeni kao striktni alternativni; ali heteroaleli bi u principu mogli putem rekombinacije da stvore genotip koji sadrži „dvostruku“ varijantu.

homodimer A **protein** comprising two identical **polypeptide** chains, or a **dimer** of identical residues.

Protein koji sadrži dva identična polipeptidna lanca, ili DIMER identičnih rezidua.

homoduplex DNA A double-stranded fully complementary **DNA** molecule.

Potpuno komplementarni dvostruki lanac DNK molekula.

homoeologous Referring to **chromosomes** which are descended from a common progenitor, but which have evolved to be no longer fully **homologous**. Homoeologous chromosomes have similar **gene** content to one another, but are structurally altered in subtle ways to inhibit, and sometimes completely prevent their **pairing** with one another at meiosis.

Koji se odnosi na hromozome koji potiču od zajedničkog pretka, ali koji su se razvili da više ne budu potpuno homologni. Homoeologni hromozomi imaju sličan sadržaj gena ali su strukturno promenjeni tako da inhibiraju, i nekad potpuno sprečavaju njihovo parenje u mejozi.

homogametic Producing similar **gametes** with regard to the **sex chromosomes**. In mammals, the female is homogametic (XX), and the male is **heterogametic** (XY).

Proizvod slične gamete s obzirom na polne hromozome. U sisara, ženke su homogametne (XX), a mužjaci heterogametni (XY).

homogenotization An allele **replacement** technique, in which a bacterial cell is transformed with a plasmid containing an altered copy of the target sequence, and a double recombination event effects the substitution of the **wild type** allele by the altered one. An **antibiotic resistance** gene is usually fused to the altered copy in the **plasmid**, so that double recombinants can be selected.

Tehnika zamene alela, u kojoj se bakterijska ćelija transformiše plazmidom koji sadrži izmjenjenu kopiju ciljne sekvence, dvostruka rekombinacija postiže zamenu alela divljeg tipa izmjenjenim. Gen rezistentnosti na antibiotike je obično spojen sa izmjenjenom kopijom u plazmidu, tako da mogu da se odaberu dvostruke rekombinacije.

homokaryon A cell with two or more identical nuclei as a result of fusion.

Opposite: **heterokaryon**.

Ćelija sa dva, ili više identičnih nukleusa, kao rezultat fuzije. *Suprotno:* heterokaryon.

homologous 1. General definition: from the same source, or having the same evolutionary function or structure. 2. Of **chromosomes**: identical with respect to gene content and linear ordering. Homologous chromosomes pair and recombine with one another at **meiosis**. 3. Of **DNA/proteins**: identical, or nearly identical **nucleotide/amino acid** sequence.

1. Opšta definicija: od istog izvora, ili koji ima istu evolucionu funkciju ili strukturu. 2. Od hromozoma: identičan u vezi sa sadržajem gena i linearnim redosledom. Homologni hromozomi se sparuju i rekombinuju jedan sa u mejozi. 3. Od DNK/proteini:

identična, ili skoro identična sekvenca nukleotid/aminokiselina.

homologous recombination The exchange of **DNA** fragments between the two non-sister **chromatids** of the same **chromosome** in the course of meiosis.

Razmena fragmenata DNK između dve nesestrinske hromatide istog hromozoma u toku mejoze.

homology 1. The degree of identity between individuals, or characters. 2. The degree of identity of sequence (nucleotide or amino acid) between a number of **DNA** or **polypeptide** molecules.

1. Stepen identičnosti između individua, ili svojstva. 2. Stepenn identiteta sekvence (nukleotida ili aminokiselina) između DNK ili molekula polipeptida.

homomultimer A **protein** consisting of a number of identical subunits.

Protein koji se sastoji od jednog broja identičnih podjedinica.

homoplasmy The condition in which all copies of an **organelle** in a cell are genetically identical. *Opposite:* **heteroplasmy**.

Stanje u kojem su sve kopije neke organele u ćeliji genetički identične. *Suprotno:* heteroplasmy.

homopolymer A polymer (nucleic acid, polypeptide, etc.) which contains only one kind of **residue** (e.g. the **polynucleotide** GGGGGGGG...).

Polimer (nukleinska kiselina, polipeptid, itd.), koji sadži samo jednu vrstu rezidua (na pr. polinukleotid GGGGGGGG...).

homopolymeric tailing *See:* **tailing**.

Vidi: tailing.

homozygous (adj.) *See:* **homozygote**.

Vidi: homozygote.

homozygote An individual that has two copies of the same **allele** for a given **gene** on its two **homologous chromosomes**. The condition is termed „homozygous“. *Opposite: heterozygote.*

Individua koja ima dve kopije istog alela za dati gen na svoja dva homologna hromozoma. Stanje je nazvano „homozigotno“. *Suprotno: heterozygote.*

hormone A specific chemical, produced in one part of a plant or animal body, and transported to another part where, at low concentrations, it promotes, inhibits or quantitatively modifies a biological process.

Specifično jedinjenje proizvedeno u jednom delu biljnog ili životinjskog tela, i transportovana do drugog dela, gde, pri niskim koncentracijama, podstiče, inhibira ili kvantitativno modifikuje biološki proces.

host An organism that contains another organism or a **cloning vector**.

Organizam koji sadrži drugi organizam ili vektor kloniranja.

host-specific toxin A metabolite, produced by a **pathogen**, and which is responsible for the adverse effects of the pathogen. The toxin has a **host specificity** equivalent to that of the pathogen. Utilized for *in vitro* selection experiments to screen for **tolerance** or **resistance** to the pathogen.

Metabolit, koji proizvede patogen i koji je odgovoran za nepovoljne efekte patogena. Toksin ima ekvivalent specifičnosti domaćina prema onom patogenu. Koristi se za eksperimente *in vitro* selekcije, da se sačuva tolerantnost ili rezistentnost prema patogenu.

hot spot *See: recombinational hot spot.*
Vidi: recombinational hot spot.

HSA *See: serum albumin.*

Vidi: serum albumin.

HSP *See: heat shock protein.*

Vidi: heat shock protein.

human artificial chromosome (Abbreviation: HAC). Analogous to **yeast artificial chromosome**, a construct comprising a human **centromere** and **telomeres**, which would allow for the cloning of very large fragments of **DNA**, and their transfer into human cells for the purpose of **gene therapy**. Not yet established as a working technology, although some partial success has been reported.

(Skraćenica: HAC) Analogan veštačkom hromozomu kvasca, sklop koji uključuje centromere i telomere čoveka, koje bi omogućile kloniranje vrlo velikih fragmenata DNK, i njihov prenos u ćelije čoveka u svrhu terapije gena. Još nije ustanovljena kao radna tehnologija, iako je saopšten neki delimičan uspeh.

human growth hormone (Abbreviation: hGH). *See: growth hormone.*

(Skraćenica: hGH). *Vidi: growth hormone.*

human-leukocyte-antigen system (Abbreviation: HLA). *See: major histocompatibility antigens.*

(Skraćenica: HLA). *Vidi: major histocompatibility antigens.*

humoral immune response *See: antibody-mediated immune response.*

Vidi: antibody-mediated immune response.

Hup⁺ Abbreviation for **hydrogen-uptake positive**.

Skraćenica za hydrogen-uptake positive.

hybrid 1. The offspring of two genetically unlike parents. 2. Of **DNA** molecules, *see: heteroduplex.*

1. Potomstvo dva genetički različita roditelja. 2. Od DNK molekula. *Vidi:* heteroduplex.

hybrid arrested translation A method used to identify what **protein(s)** are encoded by a particular cloned **DNA** sequence. A total **mRNA** preparation, which contains many different **mRNAs**, is hybridized with cloned **DNA**, so that those **mRNA** molecules **homologous** to the cloned **DNA** will **anneal** to give **DNA/RNA heteroduplexes**. The non-annealed **mRNA** molecules can be translated *in vitro* and this is then compared to translation products from the untreated **mRNAs**. *See:* **hybrid released translation**.

Metod korišćen da identifikuje koji protein(i) su enkodirani putem određene klonirane sekvence DNK. Ukupna mRNK, koja sadrži mnogo različitih mRNK koja je hibridizovana sa kloniranim DNK, tako da će mRNK molekuli, homologni sa kloniranim DNK dati DNK/RNK heteroduplekse. Nesvrstane molekule mRNK mogu biti sintetisane *in vitro*, i to je zatim upoređeno sa produktima translacije iz netretiranih mRNK. *Vidi:* hybrid released translation.

hybrid cell *See:* **syngaryon**.

Vidi: syngaryon.

hybrid dysgenesis Infertility and an increased incidence of **chromosome** mutations thought to be caused by the activation of **transposons**.

Neploidnost i povećana pojava mutacija hromozoma izazvanih aktiviranjem prenosnika.

hybrid released translation A method used to identify the gene product of a cloned gene. The cloned **DNA** is immobilized and hybridized with a mi-

xed **mRNA** sample, so that only **mRNA** sequences **homologous** to the cloned **DNA** will be retained. These **mRNA** molecules are subsequently removed and translated *in vitro*. *See:* **hybrid arrested translation**.

Metod korišćen za identifikaciju produkta kloniranog gena. Klonirana DNK se imobilise i hibridizuje sa mešanim uzorkom mRNK, tako da će samo sekvence mRNK homologne sa kloniranim DNK biti zadržane. Ti molekuli mRNK se potom odstranjuju i sintetizuju *in vitro*. *Vidi:* hybrid arrested translation.

hybrid seed 1. Seed produced by crossing genetically dissimilar parents. 2. In plant breeding, used colloquially for seed produced by specific crosses of selected pure lines, such that the **F₁** crop is genetically uniform and displays **hybrid vigour**. As the **F₁** plants are **heterozygous** with respect to many genes, the crop does not breed true and so new seed must be purchased each season.

1. Seme proizvedeno ukrštanjem genetički različitih roditelja. 2. U gajenju bilja, obično korišćeno za seme proizvedeno putem ukrštanja selekcionisanih čistih linija, tako da je **F₁** potomstvo genetički ujednačeno i ispoljava hibridnu snagu. Pošto su **F₁** biljke heterozigotne u na mnoge gene, tako da se svake sezone mora kupiti novo seme.

hybrid selection The process of choosing individuals possessing desired characteristics from among a hybrid population.

Proces izbora individua koje poseduju željene osobine od hibridne populacije.

hybrid vigour The extent to which a hybrid individual outperforms both

its parents with respect to one or many traits. The genetic basis of hybrid vigour is not well understood, but the phenomenon is widespread, particularly in **inbreeding** plant species. *Synonym: heterosis.*

Obim do kojeg hibridna individua prevazilazi oba roditelja u odnosu na jednu ili više osobina. Genetička osnova hibridne snage nije dovoljno objašnjena, ali je fenomen široko rasprostranjen, posebno u biljnih vrsta koje se uzgajaju u srodstvu (inbridingu). *Sinonim: heterosis.*

hybridization 1. The process of forming a **hybrid** by **cross pollination** of plants or by mating animals of different types. 2. The production of **offspring** of genetically different parents, normally from sexual reproduction, but also asexually by the fusion of **protoplasts** or by **transformation**. 3. The **pairing** of two **DNA** strands, often from different sources, by hydrogen bonding between **complementary** nucleotides.

1. Proces formiranja hibrida putem stranooplođne biljaka, ili parenja životinja različitih tipova. 2. Proizvodnja potomstva od genetički različitih roditelja, normalno seksualnom reprodukcijom, ali takođe aseksualno, fuzijom protoplasta, ili putem transformacije. 3. Sparivanje dva lanca DNK, često iz različitog porekla, vezivanjem vodonikovim mostom između komplementarnih nukleotida.

hybridoma A synthetic **hybrid** cell, derived by fusing a **B lymphocyte** with a tumour cell. The former secretes a single antibody, while the latter confers the property of growing indefinitely in tissue culture. The underlying technology behind the **monoclonal antibody**.

Sintetička hibridna ćelija, nastala fuzijom B limfocita sa ćelijom tumora. Prvi luči jedno antitelo, dok naredni prenosi svojstvo neodređenog rasta u kulturi tkiva. Temeljna tehnologija iza monoklonalnog antitela.

hydrogen-uptake positive (Abbreviation: Hup⁺). A term describing a **micro-organism** that is capable of assimilating (or taking up) hydrogen gas.

(Skrtačenica: Hup⁺) Izraz, koji opisuje mikroorganizam koji je sposoban da asimiluje (ili primi) vodonikov gas.

hydrolysis A chemical reaction in which water is added across a covalent bond, often cleaving the molecule into two. Occurs for example when polynucleotides, polypeptides, and polysaccharides are broken into their component **monomers**. Thus sucrose can be hydrolysed to glucose and fructose; and **proteins** to individual amino acids.

Hemijska reakcija, u kojoj se voda dodaje preko kovalentne veze, često cepajući molekul na dvoje. Nastaje na primer kada se polinukleotidi, polipeptidi i polisaharidi razlažu na svoje komponente monomere. Tako, saharoza može biti hidrolizovana na glukozu i fruktozu; a proteini na pojedine aminokiseline.

hydrophobic interaction An interaction between a hydrophobic ('water-hating') part of a molecule and an aqueous environment. Particularly significant in establishing the **conformation** of molecules in solution, and thus their biological activity. Many enzymes have a structure where the **polypeptide** chain is folded to form a hydrophobic core and a hydrophilic ('water-loving') surface.

Interakcija između hidrofobnog dela molekula i vodene sredine. Posebno sig-nifikantna u zasnivanju konformacije molekula u rastvoru, a time i njihove biološke aktivnosti. Mnogi enzimi imaju strukturu gde je polipeptidni la-nac savijen da formira hidrofobno je-zgro i hidrofilnu površinu.

hydroponics The growing of plants with-out soil. Plants are fed with an aera-ted solution of nutrients, and the ro-ots are either supported within an inert matrix, or are freely floating in the nutrient solution.

Rast biljaka bez zemljišta. Biljke se hrane sa provetrenim rastvorom hranljivih materija, a koreni su, bilo drže unutar inertne matrice, ili slobodno plivaju u rastvoru hranljivih materija.

hygromycin An **antibiotic** used as se-lective agent in bacterial and **tran-sgenic** plant cell cultures.

Antibiotik korišćen kao selektivno sred-stvo u bakterijskim i transgenim kul-turama biljne ćelije.

hyperploid The situation in which a particular chromosome or **chromo-some** segment is present in more than the normal number. *Opposite: hypoploid.*

Situacija, u kojoj je poseban hromozom, ili hromozomski segment prisutan više puta u odnosu na normalan broj. *Suprotno: hypoploid.*

hypersensitive response 1. A specific reaction of a plant to attack by a **pat-hogen**. The plant cells surrounding the point of **infection** rapidly die and dry out, so that pathogen spread with-in the plant is prevented. Often as-sociated with the interaction of race-specific **R genes** with a matching pathogen avirulence. 2. The abnor-mal response of an animal to the pre-sence of a particular **antigen**.

1. Specifična reakcija biljke na napad pa-togena. Biljne ćelije koje okružuju tačku infekcije brzo izumiru i suše se, tako da se sprečava širenje patogena u biljci. Često povezana sa interakcijom rasno specifičnim R genima sa uskla-đenom avirulencijom patogena. 2. Abnormalno reagovanje životinje na prisustvo pojedinog antigena.

hypersensitive site Regions in the **DNA** that are highly **susceptible** to diges-tion with **restriction endonuclea-ses**.

Regioni u DNK koji su visoko podložni razlaganju restrikcionim endonukle-azama.

Hypertonic A solution with an **osmotic potential** greater than that of living cells. Treatment with such solutions leads to the **plasmolysis** of cells. *Op-posite: hypotonic.*

Rastvor sa osmotskim potencijalom koji je veći od onog u živim ćelijama. Tretman sa takvim rastvorima vodi plazmolizi ćelija. *Suprotno: hypoto-nic.*

hypervariable region The parts of both the heavy and light chains of an **anti-body** molecule that enable it to bind to a specific site on an **antigen**.

Delovi teških i lakih lanaca molekula antitela koji im omogućuju da se ve-zuju na specifično mesto antigena.

hypervariable segment A region of a **protein** that varies considerably be-tween strains or individuals.

Region proteina koji znatno varira izme-đu sojeva ili individua.

hypocotyl The portion of an **embryo** or seedling below the **cotyledons**. A transitional area between **stem** and root.

Deo embriona ili izdanka ispod kotile-dona. Prelazna oblast između stabla i korena.

hypomorph A mutation that reduces, but does not completely abolish gene expression.

Mutacija koja smanjuje, ali ne uništava potpuno ekspresiju gena.

hypoplastic Defective and reduced growth or development (e.g. dwarfing and stunting in plants) resulting from an abnormal condition, for example disease or nutritional stress.

Nesavršen i smanjen rast ili razviće (na pr. patuljast rast i kržljivost u biljaka), koji nastaje usled nenormalnog stanja, na primer bolesti ili stresa usled ishrane.

hypoploid The situation in which a particular chromosome or **chromosome** segment is present in less than the normal number. *Opposite: hypertloid.*

Situacija, u kojoj je pojedini hromozom ili hromozomski segment prisutan u manjem od normalnog broja. *Suprotno: hyperploid.*

hypothalamic peptides Peptides generated in the vertebrate forebrain and concerned with regulating the body's physiological state.

Peptidi, poreklom iz prednjeg dela mozga, vertebrata i povezani sa regulisanjem fiziološkog stanja organizma.

hypotonic Osmotic potential less than that of living cells. Cells placed in a hypotonic solution will absorb water and display swelling and turgidity. *Opposite: hypertonic.*

Osmotski potencijal, manji od onog u živih ćelija. Ćelije stavljene u hipotonični rastvor će apsorbovati vodu i pokazati otok i naduvenost. *Suprotno: hypertonic.*

I

I/E region Abbreviation for **integration-excision region**.

Skraćenica za integration-excision region.

ICSI *See: intracytoplasmic sperm injection.*

Vidi: intracytoplasmic sperm injection.

identical twin *See: monozygotic twin.*

Vidi: monozygotic twin.

idiogram *See: karyogram.*

Vidi: karyogram.

idiotype An identifying property or characteristic of an item or system. 1. A plant form expected on physiological grounds to represent an optimal type for the environment in which the plant is to be grown. 2. A classification of **antibody** molecules according to the antigenicity of the variable regions. Each idiotyp is unique to a particular **immunoglobulin** raised to a particular **antigen**.

Identifikujuća osobina ili karakteristika nekog predmeta ili sistema. 1. Oblik biljke, koji na fiziološkim osnovama predstavlja optimalni tip za sredinu u kojoj će ona da raste. 2. Klasifikacija molekula antitela prema antigeničnosti različitih regiona. Svaki idiotip je jedinstven za pojedini imunoglobulin, izazvan za poseban antigen.

IgA/IgD/IgG/IgE/IgM *See: antibody class.*

Vidi: antibody class.

IGS Abbreviation for 1. **internal guide sequence**. 2. **intergenic spacer**.

Skraćenica za 1. internal guide sequence. 2. intergenic spacer.

imaginal disc A mass of cells in the larvae of *Drosophila melanogaster* and other **holometabolous** insects that gives rise to particular adult organs, such as antennae, eyes or wings.

Masa ćelija u larvama *Drosophila melanogaster*, i drugim insektima sa potpunom metamorfozom, koje utiču na pojavu posebnih organa odraslih individua, kao što su antene (pipci), oči ili krila.

imbibition 1. The absorption of liquids or vapours into the ultramicroscopic spaces or pores found in materials. 2. The initial water uptake by seeds prior to germination.

1. Adsorpcija tečnosti ili para u ultramikroskopske prostore ili pore, nađene u materijalima. 2. Početno preuzimanje vode od strane semena pre klijanja.

immediate early gene A viral gene that is expressed promptly after infection.

Virusni gen, koji se ispoljava odmah posle infekcije.

immobilized cells Cells entrapped in matrices such as alginate, polyacrylamide and agarose, for use in membrane and filter bioreactors.

Ćelije, uklopljene u matrice kao što su alginat, poliakrilamid i agaroz, za korišćenje u membranskim i filterskim bioreaktorima.

immortalization The genetic **transformation** of a cell type into a **cell line** which can proliferate indefinitely.

Genetička transformacija ćelijskog tipa u ćelijsku liniju, koja može beskonačno da se umnožava.

immortalizing oncogene A gene that, upon **transfection**, enables a **primary cell** to grow indefinitely in culture.

Gen koji, posle transfekcije, omogućava primarnoj ćeliji da neograničeno raste u kulturi.

immune response The processes, including the synthesis of **antibodies**, that are used by vertebrates to respond to the presence of a foreign **antigen**. *See: primary immune response; secondary immune response.*

Procesi, uključujući sintezu antitela, koji se koriste kod kičmenjaka da odgovore na prisustvo stranog antigena. *Vidi: primary immune response, secondary immune response.*

immunity The lack of susceptibility of an animal or plant to **infection** by a particular **pathogen**, or to the harmful effects of their toxins.

Nedostatak podložnosti životinje ili biljke na infekciju putem pojedinog patogena, ili na štetne efekte njihovih toksina.

immunization The production of **immunity** in an individual by artificial means. Active immunization involves the introduction, either orally or by infection, of specially treated bacteria, viruses or their toxins so as to stimulate the production of **antibodies**. *See: passive immunity.*

Proizvodnja imuniteta u neke individue veštačkim putem. Aktivna imunizacija uključuje uvođenje, bilo oralno ili putem infekcije, specijalno tretira-

nih bakterija, virusa ili njihovih toksina, tako da se stimuliše proizvodnja antitela. *Vidi: passive immunity.*

immunoaffinity chromatography A purification technique in which an **antibody** is bound to a matrix and is used to isolate a **protein** from a complex mixture. *See: affinity chromatography.*

Tehnika prečišćavanja, u kojoj je antitelo vezano za matricu i korišćeno da izoluje protein iz kompleksne smeše. *Vidi: affinity chromatography.*

immunoassay An detection system for a particular molecule, which exploits the specific binding of an **antibody** raised against it. For measurement, the **antibody** can incorporate a radioactive or fluorescent **label**, or be linked to an **enzyme** which catalyses an easily monitored reaction such as a change in colour (*see: ELISA*). *Synonym: immunodiagnosics.*

Sistem otkrivanja za pojedini molekul, koji koristi specifično vezivanje antitela uvedenog protiv istog. Za merenje, antitelo može da prisajedini radioaktivno ili fluorescentno obeležje, ili da bude vezano za enzim koji katalizuje lako praćenu reakciju, kao što je promena boje (*Vidi: ELISA*). *Sinonim: immunodiagnosics.*

immunochemical control *See: immunotherapy.*

Vidi: immunotherapy.

immunodiagnosics *See: immunoassay.*

Vidi: immunoassay.

immunogen *See: antigen.*

Vidi: antigen.

immunogenicity The ability to elicit an **immune response**.

Sposobnost da izazove imuno reagovanje.

immunoglobulin *See: antibody.*

Vidi: antibody.

immunoprophylaxis The process of active or passive **immunization**. Active immunization with **vaccines** leads to long-term protection through mobilizing the organism's own immune system. Passive immunization is achieved by injection of **antibody** against a specific pathogen obtained either by **fractionation** of blood from an individual previously infected with the **pathogen**, or by **monoclonal antibody** technology. *See: adoptive immunization, passive immunity.*

Proces aktivne ili pasivne imunizacije. Aktivna imunizacija putem vakcina vodi dugoročnoj zaštiti kroz mobilizaciju sopstvenog imunog sistema organizma. Pasivna imunizacija se postiže injektiranjem antitela protiv specifičnog patogena, dobijenog bilo frakcionisanjem krvi od neke individue prethodno inficirane sa patogenom, ili putem tehnologije monoklonalnog antitela. *Vidi: adoptive immunization, passive immunity.*

immunosensor A **biosensor** having an **antibody** as the biological element.

Biosenzor, koji ima antitelo kao biološki element.

immunosuppression The suppression of the **immune response**. Necessary following organ transplants from a genetically different donor in order to prevent the host rejecting the grafted **organ**.

Suzbijanje imunoreakcije. Potrebno posle transplanata organa od genetički različitog donora, da bi se sprečilo odbacivanje nakalempljenog organa od strane domaćina.

immunosuppressor A substance, an agent or a condition that prevents or diminishes the **immune response**.

Supstanca, sredstvo ili uslov, koji sprečava ili smanjuje imunoreagovanje.

immunotherapy The use of an **antibody** or a **fusion protein** containing the **antigen binding** site of an antibody to cure a disease or enhance the well-being of a patient. *Synonym: immunochemical control.*

Korišćenje antitela, ili fuzionog proteina, koji sadrži antigeno mesto vezanja antitela, da bi lečio bolest ili povećao dobrobit pacijenta. *Sinonim: immunochemical control.*

immunotoxin Protein drugs consisting of an **antibody** joined to a **toxin** molecule. Made by either chemically linking the molecules, or by fusing the genes for the toxin and the antibody, and expressing a **fusion protein**. The antibody portion of the molecule targets the toxin.

Proteinski lekovi, koji se sastoje od antitela, spojenog sa molekulom toksina. Načinjeni bilo hemijski, vezivanjem molekula, ili fuzijom gena za toksin i za antitelo, i predstavljanjem fuzionog proteina. Deo antitela molekula usmerava toksin.

impeller An agitator that is used for mixing the contents of a bioreactor.

Mešalica, koja se koristi za mešanje sadržaja bioreaktora.

in silico In a computer file. In the present context, the use of data bases of **DNA** and **protein** sequence to help answer biological questions. This is growing area of biology as the amount of **genomics** and **proteomics** data continues to grow. *See: bio-informatics.*

U fileu kompjutera. U sadašnjem kontekstu, korišćenje baze podataka DNK i sekvence proteina, da pomognu da se odgovori na biološka pita-

nja. To je oblast biologije koja se ubrzano razvija, kao i genomika i proteomike nastavljaju da rastu. *Vidi:* bioinformatics.

in situ In the natural place or in the original place. 1. Experimental treatments performed on cells or **tissue** rather than on extracts from them. 2. Assays or manipulations performed with intact tissues.

U prirodnom mestu ili u originalnom mestu. 1. Eksperimentalni tretmani sprovedeni na ćelijama ili tkivima, pre nego na njihovim ekstraktima. 2. Ogledi ili manipulacije, sprovedene sa netaknutim tkivima.

in situ colony hybridization A procedure for screening bacterial colonies or **plaques** growing on plates or membranes for the presence of specific **DNA** sequences by the hybridization of **nucleic acid** probes to the **DNA** molecules present in these colonies or plaques. *Synonym:* **in situ plaque hybridization**.

Postupak za karakterizaciju bakterijskih kolonija ili čistih tačaka na pločama ili membranama na prisustvo specifičnih DNK sekvenci, putem hibridizacije proba nukleinske kiseline na molekule DNK u tim kolonijama, ili pločama. *Sinonim:* *in situ* plaque hybridization.

in-situ conservation The conservation of ecosystems and natural habitats and the maintenance and recovery of viable populations of species in their natural surroundings and, in the case of domesticated or cultivated species, in the surroundings where they have developed their distinctive properties.

Konzervisanje ekosistema i prirodnih staništa i održavanje i otkrivanje po-

pulacija raznih vrsta u njihovim prirodnim okruženjima i u slučaju domestikovanih ili kultivisanih vrsta, u okruženju gde su razvile svoje karakteristične osobine.

in situ hybridization The visualization of *in vivo* location of **macromolecules** (particularly polynucleotides and polypeptides) by the histological staining of tissue sections or cytological preparations via labelled probes/antibodies.

Vizuelni prikaz *in vivo* lokacije makromolekula (naročito polinukleotida i polipeptida) putem histološkog bojenja delova tkiva ili citoloških preparata, putem obeleženih proba/antitela.

in situ plaque hybridization *See:* **in situ colony hybridization**.

Vidi: *in situ* colony hybridization.

in vitro Outside the organism, or in an artificial environment. Applied for example to cells, tissues or organs cultured in glass or plastic containers.

Izvan organizma, ili u veštačkoj sredini. Primenjeno na primer na ćelije, tkiva ili organe, kultivisane u staklenim ili plastičnim kontejnerima.

in vitro embryo production (Abbreviation: IVEP). The combination of **ovum pickup**, **in vitro maturation** of ova, and **in vitro fertilization**. A potential means of overcoming the variability between donors in number of ova collected in embryo-transfer programmes.

(Skraćenica: IVEP) Kombinacija od sakupljenih jaja, *in vitro* sazrevanja jaja, i *in vitro* oplođavanja. Potencijalan način za prevazilaženje varijabilnosti između donora u broju sakupljenih jaja u programima embriotransfera.

in vitro fertilization (Abbreviation: IVF). A widely used technique in human and animal science, whereby the **egg** is fertilized with **sperm** outside the body before re-implanting into the uterus.

(Skracenica: IVF) Široko korišćena tehnika u humanoj i životinjskoj nauci, kojim je jaje oplodeno spermom izvan tela pre ponovne implantacije u uterus.

in vitro maturation (Abbreviation: IVM). Culture of immature ova in the laboratory, usually until they are ready for *in vitro* fertilization.

(Skracenica: IVM) Kultura nezrelih jaja u laboratoriji, obično dok ne budu gotova za *in vitro* oplodjenje.

in vitro mutagenesis See: **directed mutagenesis**.

Vidi: directed mutagenesis.

in vitro transcription The cell-free synthesis from **DNA** of **RNA** in the test tube. *Synonym*: **cell-free transcription**.

Sinteza bez ćelija od DNK i RNK u epruveti. *Sinonim*: cell-free transcription.

in vitro translation The synthesis of **proteins** from isolated **mRNA** molecules in the test-tube. *Synonym*: **cell-free translation**.

Sinteza proteina od izolovanih mRNK molekula u epruveti. *Sinonim*: cell-free translation.

in vivo The natural conditions in which organisms reside. Refers to biological processes that take place within a living **organism** or **cell** under normal conditions.

Prirodni uslovi u kojima se nalaze organizmi. Odnosi se na biološke procese koji nastaju u okviru živog organizma ili ćelije pod normalnim uslovima.

in vivo gene therapy The delivery of a gene or genes to a **tissue** or **organ** of a complete living individual to alleviate a genetic disorder.

Dodavanje gena ili više gena tkivu ili organu kompletne žive individue da bi se smanjio genetički poremećaj.

inactivated agent A virus, bacterium or other organism that has been treated to prevent it from causing a disease. See: **attenuated vaccine**.

Virus, bakterija ili neki drugi organizam koji je tretiran da ga spreče u izazivanju bolesti. *Vidi*: attenuated vaccine.

inbred line The product of **inbreeding**, i.e. the intercrossing of individuals that have ancestors in common. In plants and laboratory animals, it refers to populations resulting from at least 6 generations of selfing or 20 generations of brother-sister mating, so that they have become, for all practical purposes, completely **homozygous**. In farm animals, the term is sometimes used to describe populations that have resulted from several generations of the mating of close relatives, without having reached complete homozygosity.

Produkt inbridinga, t.j., ukrštanja individua koje imaju zajedničke pretke. U biljaka i laboratorijskih životinja, to se odnosi na populacije koje su nastale tokom šest generacija samooplodnje, ili 20 generacija parenja braće i sestara, tako da su postali potpuno homozigotni za sve praktične svrhe. U domaćih životinja, izraz se ponekad koristi da opiše populacije koje su nastale od nekoliko generacija parenja uskih srodnika, bez postizanja potpune homozigotnosti.

inbreeding Matings between individuals that have one or more ancestors in

common, the extreme condition being self-fertilization, which occurs naturally in many plants and some primitive animals. *Synonym: endogamy.*

Parenje između individua koje imaju jednog ili više zajedničkih predaka, ekstremno stanje je samooplodnja, koja se prirodno dešava u mnogih biljaka i nekih primitivnih životinja. *Sinonim: endogamy.*

inbreeding depression The reduction in vigour over generations of **inbreeding**. This affects species which are normally **outbreeding** and highly heterozygous. *See: hybrid vigour.*

Smanjenje vigora tokom generacija inbridinga. To utiče na vrste koje su normalno nesrodstvene i visoko heterozigotne. *Vidi: hybrid vigour.*

inclusion body A **protein** that is overproduced in a **recombinant** bacterium and forms a crystalline structure inside the bacterial cell.

Protein koji je previše proizveden u rekombinantnoj bakteriji, i formira kristalnu strukturu unutar bakterijske ćelije.

incompatibility 1. Genetically or physiologically determined prevention of intermating. 2. A physiological interaction resulting in **graft** rejection or failure. 3. A function of a related group of **plasmids**. Incompatible plasmids share similar **replication** functions, and this leads to the exclusion of one or the other plasmid if they are present in the same cell. Plasmids belonging to one **incompatibility group** are very closely related.

1. Genetički ili fiziološki utvrđeno sprečavanje međusobnog parenja. 2. Fiziološka interakcija, koja dovodi do odbacivanja kalema ili neuspeha. 3.

Funkcija srodnih grupa plazmida. Nekompatibilni plazmidi dele slične funkcije ponavljanja, a to vodi isključenju jednog ili drugog plazmida ako su prisutni u istoj ćeliji. Plazmidi koji pripadaju jednoj grupi nekompatibilnosti su vrlo uskom srodstvu.

incompatibility group Plasmids must belong to different incompatibility groups to co-exist within the same cell. A **plasmid cloning vector** should always belong to an incompatibility group different from that of the host bacterium's **endogenous** plasmids.

Plazmidi moraju da pripadaju različitim nekompatibilnim grupama, da koegzistiraju u istoj ćeliji. Klonirajući vektor plazmida trebalo bi uvek da pripada nekompatibilnoj grupi, koja je različita od endogenih plazmida bakterije domaćina.

incomplete digest *See: partial digest.*

Vidi: partial digest.

incomplete dominance A gene action in which **heterozygotes** have a **phenotype** that is different from either **homozygote**, and is usually intermediate between them.

Delovanje gena u kojem heterozigoti imaju fenotip koji je različit od bilo kojeg homozigota, i obično je intermedijaran.

incomplete penetrance Where the **phenotype** does not allow perfect prediction of the **genotype** as a result of interference in **gene expression** by the environment.

Gde fenotip ne dopušta perfektno predviđanje genotipa, kao rezultat uplitanja u ekspresiju gena od strane spoljne sredine.

incubation 1. The hatching of eggs by means of heat, either natural or artifi-

cial. 2. Period between **infection** and appearance of symptoms induced by a **pathogen**. 3. The **culture** of cells and organisms.

1. Leženje pilića pomoću toplote, bilo prirodne ili veštačke. 2. Period između infekcije i pojave simptoma izazvanih od patogena. 3. Kultura ćelija i organizama.

incubator An apparatus in which environmental conditions (light, photoperiod, temperature, humidity, etc.) are fully controlled; used for hatching eggs, multiplying micro-organisms, culturing plants, etc.

Aparat u kojem su uslovi sredine (svetlo, fotoperiod, temperatura, vlažnost, itd.) potpuno kontrolisani; korišćen za izvođenje pilića, umnožavanje mikroorganizama, kultivisanje biljaka, itd.

indehiscent Describing a fruit or fruiting body that does not open to release its seeds or spores when ripe.

Opis ploda, ili tela ploda, koji se ne otvara da raspe svoje seme ili spore kada je zreo.

independent assortment The random distribution during **meiosis** of **alleles** (at different genes) to the gametes that is the case when the genes in question are located on different chromosomes or are unlinked on the same chromosome. *See: linkage*.

Slučajna distribucija, tokom mejoze, alela (u različitim genima) na gamete, što je slučaj, kada su geni koji su u pitanju locirani na različitim hromozomima, ili nisu vezani na istom hromozomu. *Vidi: linkage*.

indeterminate growth The condition in which the **terminal bud** persists and produces successive lateral branches

over an indefinite period. *Opposite: determinate growth*.

Stanje u kojem vršni pupoljak dugo traje i proizvodi bočne grane tokom nedefinisanog perioda. *Suprotno: determinate growth*.

indirect embryogenesis Plant **embryo** formation on **callus** tissues derived from **explants**, including zygotic or somatic embryos and seedlings. *Opposite: direct embryogenesis*.

Formiranje biljnog embriona na tkivima kalusa poreklom od kalema, uključujući zigotne i somatske embrione i sejance. *Suprotno: direct embryogenesis*.

indirect organogenesis Plant organ formation on **callus** tissues derived from **explants**. *Opposite: direct organogenesis*.

Formiranje biljnog organa na tkivima kalusa poreklom od eksplanta. *Suprotno: direct organogenesis*.

inducer A low-molecular-weight compound or a physical agent that associates with a **repressor protein** to produce a complex that can no longer bind to the **operator**. Thus, the presence of the inducer turns on the expression of the gene(s) controlled by the operator.

Jedinjenje nisko-molekularne-težine, ili fizičko sredstvo koje se udružuje sa proteinom represorom, da bi proizveo kompleks koji ne može više da ga vezuje za operatora. Njegovo prisustvo utiče na ispoljavanje gena ili više gena, kontrolisanih od strane operatora.

inducible A gene or **gene** product whose **transcription** or synthesis is increased by exposure of the cells to an **inducer** or to a condition, e.g. heat. *Opposite: constitutive*.

Gen, ili genski produkt, čija je transkripcija ili sinteza povećana izlaganjem ćelija izazivaču ili nekom stanju, na pr. toploti. *Suprotno*: constitutive.

inducible enzyme An enzyme that is synthesized only in the presence of the **substrate** that acts as an inducer.

Enzim koji se sintetizuje samo u prisustvu supstrata koji djeluje kao izazivač.

inducible gene A gene that is expressed only in the presence of a specific metabolite, the inducer.

Gen koji se ispoljava samo u prisustvu specifičnog metabolita, izazivača.

inducible promoter The activation of a **promoter** in response to either the presence of a particular compound, i.e. the **inducer**, or to a defined external condition, e.g. elevated temperature.

Aktiviranje promotera u reagovanju na, bilo prisustvo određenog jedinjenja, t.j. izazivača, ili definisanom spoljnom uslovu, na pr. povećanom temperaturom.

induction The act or process of causing some specific effect to occur; for example the **transcription** of a specific gene or operon, or the production of a **protein** by an organism after it is exposed to a specific stimulus.

Čin ili proces, koji izaziva pojavu nekog specifičnog efekta; na primer transkripcija specifičnog gena ili operona, ili proizvodnja proteina od nekog organizma, pošto je izložen specifičnom stimulansu.

induction media 1. Media used to induce the formation of organs or other structures. 2. Media causing variation or **mutation** in the tissues exposed to it.

1. Medijumi, koji se koriste da izazovu formiranje organa ili drugih struktura. 2. Medijumi koji izazivaju varijaciju ili mutaciju u tkivima koja su joj izložena.

inembryonation *See*: **artificial inembryonation**.

Vidi: artificial inembryonation.

infection The successful colonization of any living organism by a **pathogen**.

Uspješna kolonizacija bilo kojih živih organizama od strane patogena.

infectious agent Synonym of **pathogen**.

Sinonim: patogen.

infiltrate The entry of liquid into pores or other spaces.

Ulaz tečnosti u pore ili druge prostore.

inflorescence The flowers of a plant, and the way those flowers are arranged.

Cvetovi biljaka, i način na koji su ti cvetovi postavljeni.

inheritance The transmission of genes and **phenotypes** from generation to generation.

Prenos gena i fenotipova iz jedne do druge generacije.

inhibitor 1. Any substance or object that retards a chemical reaction. 2. A **metabolite** or modifier gene that interferes with a reaction or with the expression of another gene.

1. Bilo koja supstanca ili objekt, koji zaдржава hemijsku reakciju. 2. Metabolit, ili gen modifikator koji se meša sa reakcijom, ili ekspresijom drugog gena.

initial Cells in a **meristem** that remain permanently capable of differentiation, and which develop into tissues of particular structure and function.

Ćelije u kambijumu koje su stalno sposobne za diferencijaciju, i koje se razvijaju u tkiva posebne strukture i funkcije.

initiation Causing something to start. 1. Early steps or stages of a **tissue culture** process. 2. Early stages of biosynthesis.

Izazivanje nečeg da počne. 1. Rani stadijumi procesa kulture tkiva. 2. Rani stadijumi biosinteze.

initiation codon *See: start codon.*

Vidi: start codon.

initiation factor Soluble **protein** required for the initiation of **translation**.

Rastvorljivi protein, potreban za početak sinteze proteina.

inoculate Deliberately introduce, in contrast to contamination. 1. In bacteriology, **tissue culture**, etc., placing an **inoculum** into (or onto) medium to initiate a culture. 2. In immunology, to carry out **immunization**. 3. In plant pathology, application of **pathogen** spores etc. on to plants under conditions where infection should result in the absence of resistance.

Hotimično uvesti, nasuprot kontaminaciji. 1. U bakteriologiji, kulturi tkiva itd., postaviti infekcioni materijal u (ili na) medijum, da bi se započela kultivacija. 2. U imunologiji, sprovesti imunizaciju. 3. U biljnoj patologiji, primena patogenih spora itd. na biljke, pod uslovom gde bi infekcija dovela do odsustva otpornosti.

inoculation cabinet Small room or cabinet for inoculation (of tissue or **micro-organism** cultures) operations, often with a current of sterile air to carry contaminants away from the work area.

Mali prostor, ili kabinet za inokulaciju (kultura tkiva ili mikroorganizama kultura) operacija, često sa strujom sterilnog vazduha, da odstrani kontaminante dalje od radnog prostora.

inoculum (pl.: inocula) 1. A small piece of tissue cut from **callus**, or an **explant** from a tissue or organ, or a small amount of cell material from a suspension culture, transferred into fresh medium for continued growth of the culture. *See: minimum inoculum size.* 2. Microbial spores or parts (such as mycelium). 3. **Vaccine**.

1. Mali deo tkiva isečenog iz kalusa, ili eksplanta tkiva ili organa, ili mala količina ćelijskog materijala iz kulture suspenzije, preneti u svež medijum za kontinuirani rast kulture. *Vidi: minimum inoculum size.* 2. Mikrobne spore ili delovi (kao što je micelium). 3. Vakcina.

inorganic compound Historically, chemicals that could not be derived from living processes. In modern usage, chemicals that do not contain carbon, although carbonates and a few other simple carbon compounds are generally regarded as inorganic.

Istorijski, hemikalije koje ne bi mogle poticati od životnih procesa. U savremenom korišćenju, hemikalije koje ne sadrže ugljenik, iako se karbonati i nekoliko drugih prostih ugljenikovih jedinjenja posmatraju kao neorganski.

inositol A cyclic acid (hexahydroxycyclohexane) that is a constituent of certain cell phosphoglycerides. It is a nutrient frequently referred to as a „vitamin“ in plant tissue culture. Also acts as a **growth factor** in some animals and micro-organisms.

Ciklična kiselina (heksahidroksicikloheksan), koja je sastojak nekih ćelijskih fosfoglicerida. To je hranljiva materija, često navedena kao „vitamin“ u kulturi tkiva biljaka. Takođe, deluje kao faktor rasta u nekih životinja i mikroorganizama.

inositol lipid A membrane-anchored **phospholipid** that transduces hormonal signals by stimulating the release of any of several chemical messengers.

Membranski učvršćen fosfolipid, koji prenosi hormonalne signale, stimulirajući otpuštanje bilo kojeg od nekoliko hemijskih informatora (mesenđera).

insecticide A substance that kills insects.

Supstanca koja ubija insekte.

insert 1. To incorporate a **DNA** molecule into a **cloning vector**; also used as a noun to describe such a DNA molecule. 2. To introduce a gene or gene **construct** into a new genomic site or into a new genome.

1. Uključiti molekul DNK u klonirajući vektor, takođe korišćeno kao imenica da opiše takav molekul DNK. 2. Uvesti gen ili genski sklop u novo mesto u genomu ili u nov genom.

insertion element Generic term for **DNA** sequences found in bacteria capable of genome insertion. Postulated to be responsible for **site-specific phage** and **plasmid** integration. *Synonym*: **insertion sequence**.

Opšti izraz za sekvence DNK nađene u bakterijama sposobnim za umetanje genoma. Pretpostavljen da bude odgovoran za integraciju faga plazmida. *Sinonim*: insertion sequence.

insertion mutation Changes in the base sequence of a **DNA** molecule resulting from the random integration of DNA from another source. *See*: **mutation**.

Promene u redosledu baza u molekuli DNK, nastale od slučajne integracije drugog izvora DNK. *Vidi*: mutation.

insertion sequence *See*: **insertion element**.

Vidi: insertion element.

insertion site 1. A unique **restriction site** in a **vector DNA** molecule into which **foreign DNA** can readily be inserted. This is achieved by treating both the vector and the insert with the relevant **restriction endonuclease** and then ligating the two different molecules, both having the same **sticky ends**. *Synonym*: **cloning site**. 2. The position of integration of a **transposon**.

1. Jedinstveno mesto restrikcije u vektora molekula DNK, u kojem strana DNK može lako da bude uključena. To se postiže tretiranjem vektora i inserta, sa relevantnom restrikcionom endonukleazom, i zatim vezujući dva različite molekula, oba sa lepljivim krajevima. *Sinonim*: cloning site. 2. Položaj integracije transpozona.

instability A lack of consistent phenotype, usually as a result of uncontrolled genetic changes. These may be due to **transposon** activity, or in cell lines, to changes in **karyotype**.

Nedostatak konzistentnog fenotipa, obično kao rezultat nekontrolisanih genetičkih promena. Mogu da nastanu usled aktivnosti transpozona, ili u ćelijskim linijama, do promena u kariotipu.

insulin A peptide **hormone** secreted by the Langerhans islets of the pancreas, and that regulates the level of sugar in the blood.

Peptidni hormon, koji luče Langerhansovih ostrvaca pankreasa, i koji reguliše nivo šećera u krvi.

integrating vector A vector that is designed to integrate cloned **DNA** into the host's chromosomal **DNA**.

Vektor, koji integriše klonirnu DNK u DNK hromozoma domaćina.

integration The recombination process which inserts a small **DNA** molecule (usually by **homologous** recombination) into a larger one. If the molecules are circular, integration involves only a single **crossing-over**; if linear, then two crossings-over are required.

Proces rekombinacije koji ubacuje mali molekul DNK (obično putem homologne rekombinacije) u veći. Ako su molekuli kružni, integracija uključuje samo jednostruki krosing-over; ako su linearni, tada su potrebna dva krosing-overa.

integration-excision region (Abbreviation: I/E). The portion of **bacteriophage lambda** (ϕ) **DNA** that enables ϕ-DNA to be inserted into a specific site in the *E. coli* bacteriophage lambda **chromosome** or excised from this site.

(Skraćenica: I/E) Deo lambda (ϕ) DNK bakteriofaga, koji omogućava ϕDNK da bude ubačena na specifično mesto u lambda hromozomu bakteriofaga *E. coli*, ili odsečena od tog mesta.

integument One of the layers that enclosed the ovule, and is the precursor of the **seed coat**.

Jedan od slojeva koji okružuje jajnu ćeliju, a prekursor je omotača semena.

intellectual property rights (Abbreviation: IPR). The legal framework, which includes patenting and **plant variety protection**, by which inventors control the commercial application of their work.

(Skraćenica: IPR) Legalni okvir koji uključuje patentiranje i zaštitu biljnih sorti, kojim pronalazači kontrolišu komercijalnu primenu njihovog rada.

intensifying screen A plastic sheet impregnated with a rare-earth compo-

und, such as calcium tungstate, which reacts to radiation by emitting light. When placed on one side of a piece of X-ray film with a radioactive sample on the other side, the intensifying screen will capture some of the radioactive energy which has passed through the film, exposing the X-ray film and so enhancing the sensitivity of the detection. Often used in **Southern** and **northern blotting** procedures.

Plastični list, impregniran jedinjenjem retke zemlje kao što je kalcijum tungstat, koji reaguje na zračenje putem emitovanja svetlosti. Kada je postavljen na jednu stranu dela rentgen-skog filma sa radioaktivnim uzorkom na drugoj strani, intenzivirajući list će usvojiti nešto radioaktivne energije koja je prošla kroz film, izlažući rentgenski film i tako povećavajući osetljivost otkrivanja. Često korišćen u southern i northern prenosnim postupcima.

intercalary 1. Meristematic tissue or growth not restricted to the **apex** of an organ, i.e. growth at nodes. 2. Referring to internal segments of a chromosomes (i.e. not at the ends).

1. Meristemsko tkivo ili rast, koji nije ograničen do vrha nekog organa, t.j. rasta nodusa. 2. Odnose se na unutrašnje segmente hromozoma (t.j. ne na krajeve).

intercalary growth A pattern of **stem** elongation typical of grasses. Elongation proceeds from the lower internodes to the upper internodes through the differentiation of meristematic **tissue** at the base of each internode.

Tip izduženja stabla, tipičan za trave. Elongacija teče od donjih ka gornjim internodijama, kroz diferencijaciju

meristemskog tkiva na osnovi svake internodije.

intercalating agent A chemical capable of inserting between adjacent base pairs in a double-stranded nucleic acid. A prominent example is **ethidium bromide**.

Hemikalija, sposobna za ubacivanje između susednih baznih parova u dvo-lančanu nukleinsku kiselinu. Tipičan primer ja etidijum bromid.

intercellular space The pore space between cells, especially typical of leaf tissues.

Prostor pora između ćelija, naročito tipičan za tkiva lista.

interfascicular cambium Cambium that arises **between vascular bundles**.

Kambijum koji nastaje između vaskularnih strukova.

interference The effect of one **crossing over** event in altering the probability of another **crossing over** event occurring at a nearby location. This **probability** can be either increased (positive interference) or decreased (negative interference), but the latter is the more usual.

Efekt pojave jednog krosing-overa u izmeni verovatnoće događanja drugog krosing-ovara, koji se dešava na drugoj lokaciji. Verovatnoća može da bude bilo povećana (pozitivno posredovanje), ili smanjena (negativno posredovanje), ali ova poslednja je uobičajenija.

interferon One of a group of small **proteins** synthesized by certain **T cells** of vertebrates, which inhibit **virus** replication. There are three types of interferon in humans. *See: cytokine*.

Jedan iz grupe malih proteina, sintetizovan od izvesnih T-ćelija kičmenjaka,

koji inhibira replikaciju virusa. Ima tri tipa interferona u ljudi. *Vidi: cytokine*.

intergeneric cross A **hybrid** made between parents belonging to two different **genera**.

Hibrid, postao između roditelja koji pripadaju u različitim rodovima.

intergenic regions Non-coding **DNA** located between genes; this comprises a variable but considerable proportion of all eukaryotic genomic **DNA**, and its function is largely unknown.

Nekodirajuća DNK, locirana između gena; obuhvata varijabilan, ali znatan deo svih eukariotskih genomskih DNK, a njena funkcija je dosta nepoznata.

intergenic spacer (Abbreviation: IGS). Non-coding **DNA** separating tandemly arranged copies of a repeated gene **sequence** (typically **ribosomal DNA**). Of particular interest because, unlike the **coding** sequence itself, the spacers show high levels of interspecific sequence polymorphism, and are thus useful as assays for species identification.

(Skraćenica: IGS) Nekodirajuća DNK, koja razdvaja tandemsko postavljanje kopija ponovljene sekvence gena (tipično ribozomna DNK). Od posebnog interesa, pošto, za razliku od same sekvence kodiranja, spaseri pokazuju visoke nivoe međuspecifičnog polimorfizma sekvenci, i korisni su kao testovi za identifikaciju vrsta.

interleukin A group of **proteins** that transmit signals between immune cells and are necessary for mounting normal immune responses. *See: cytokine*.

Grupa proteina, koja prenosi signale između imunih ćelija, a potrebna je za

povećavanje normalnih imunoreagovanja. *Vidi:* citokine.

internal guide sequence (Abbreviation: IGS). *See:* **guide sequence**.

(Skraćenica: IGS.) *Vidi:* guide sequence.

internal transcribed spacer (Abbreviation: ITS). Non-coding regions separating the individual components of the **ribosomal DNA** units. These regions show much more sequence **polymorphism** than the genic regions themselves, and therefore, like the **intergenic spacers**, are useful a source of genetic markers for the ribosomal DNA locus.

(Skraćenica: ITS) Nekodirajući regioni koji razdvajaju individualne komponente jedinica ribozomne DNK. Ti regioni pokazuju mnogo više polimorfizma sekvence nego sami genski regioni, i zbog toga su kao intergenski spajseri, koristan izvor genetičkih markera za ribozomni lokus DNK.

International Undertaking on Plant Genetic Resources The first comprehensive voluntary, international agreement (adopted in 1983) dealing with plant genetic resources for food and agriculture. Designed as an instrument to promote international harmony in matters regarding access to plant genetic resources for food and agriculture. Following extensive negotiations to revise the Undertaking in harmony with the Convention on Biological Diversity, the binding **International Treaty on Plant Genetic Resources for Food and Agriculture** was adopted by the 2001 FAO Conference.

Međunarodni dogovor o biljnim genetičkim resursima. Prvi, opsežan dobrovoljni međunarodni dogovor (pri-

hvaćen u 1983.) u vezi sa biljnim genetičkim resursima za ishranu i poljoprivredu. Urađen kao instrument da podstakne međunarodnu harmoniju u stvarima koje se odnose na biljne genetičke resurse za ishranu i poljoprivredu. Posle obilnih pregovora da se revidira pothvat u skladu sa Konvencijom o biološkom biodiverzitetu, obaveza Međunarodnog sporazuma o biljnim genetičkim resursima za ishranu i poljoprivredu bila je usvojena od strane 2001 FAO Konferencije.

International Treaty on Plant Genetic Resources for Food and Agriculture The international treaty resulting from the revision of the **International Undertaking on Plant Genetic Resources** was adopted by the 2001 FAO Conference as a binding international instrument to enter into force after ratification by 40 states. Its objectives are the conservation and sustainable use of plant genetic resources for food and agriculture and equitable sharing of the benefits of this use.

Međunarodni sporazum o biljnim genetičkim resursima za ishranu i poljoprivredu-Međunarodni sporazum, nastao revizijom Međunarodnog pothvata o biljnim genetičkim resursima, bio je usvojen 2001. na FAO Konferenciji kao obavezujući međunarodni instrument koji stupa na snagu posle ratifikacije 40 zemalja. Njegovi ciljevi su konzervacija i održivo korišćenje biljnih genetičkih resursa za ishranu i poljoprivredu i ujednačeno učešće u dobiti od tog korišćenja.

internode The region of a **stem** between two successive nodes.

Region stabla između dva sukcesivna nodusa.

interphase The stage in the **cell cycle** when the cell is not dividing and during part of which **DNA replication** occurs; it follows **telophase** of one mitotic division and extends to the beginning of **prophase** in the next division.

Stadijum u ćelijskom ciklusu, kada se ćelija ne deli i kada se dešava ponavljanje DNK; to sledi telofazu mitotiske deobe i traje do početka profaze u sledećoj deobi.

intersex Synonym of **hermaphrodite**. Sinonim od hermaphrodite.

inter-simple sequence repeat (Abbreviation: ISSR). A **PCR**-based molecular marker **assay** of genomic sequence lying between adjacent **microsatellites**. Primers carrying, at their 3'-end, sequence complementary to the repeat unit of the microsatellite will **amplify** this genomic **DNA**.

(Skraćenica: ISSR) Molekularni markerski test, zasnovan na PCR-u, genomske sekvence koja se nalazi između susednih mikrosatelita. Prajeri koji na 3'-kraju nose, sekvencu komplementarnu sa ponovljenom jedinicom mikrosatelita, koji će umnožiti tu genomsku DNK.

interspecific cross A **hybrid** made between parents belonging to two different species. *See*: **intrageneric cross**, **intraspecific cross**.

Hibrid, nastao ukrštanjem roditelja koji pripadaju dvema različitim vrstama. *Vidi*: intrageneric cross, intraspecific cross.

intervening sequence *See*: **intron**. *Vidi*: intron.

intracellular Occurring within a cell. Što se dešava unutar ćelije.

intracytoplasmic sperm injection (Abbreviation: ICSI). The **micro-injec-**

tion of a single sperm into the **cytoplasm** of a mature **oocyte**.

(Skraćenica: ICSI) Mikro-injekcija pojedine sperme u citoplazmu zrele oocite.

intrageneric Within a genus, such as an intrageneric **cross**, or intrageneric variation.

U okviru roda, kao intragenerično ukrštanje, ili intragenerična varijacija.

intrageneric cross A **hybrid** made between parents belonging to two species in the same **genus**. *See*: **intraspecific cross**, **interspecific cross**.

Hibrid, nastao ukrštanjem roditelja koji pripadaju različitim vrstama istog roda. *Vidi*: intraspecific cross, interspecific cross.

intragenic complementation Occurs when wild type phenotype is restored in an **F₁** individual made by crossing two independent mutants, carrying different **heteroalleles**.

Nastaje kada se divlji tip fenotipa pojavi u uspostavljen u **F₁** individui nastaloj ukrštanjem dva nezavisna mutanta, noseći različite heteroalele.

intraspecific Within a species, such as an intraspecific **cross**, or intraspecific variation.

U okviru vrste, kao jedno intraspecificno ukrštanje, ili intraspecificna varijacija.

intraspecific cross A **hybrid** made between parents belonging to the same **species**. *See*: **intrageneric cross**, **interspecific cross**.

Hibrid, nastao ukrštanjem roditelja koji pripadaju istoj vrsti. *Vidi*: intrageneric cross, intraspecific cross.

introgression The introduction of new alleles or gene(s) into a **population** from an exotic source, usually another species. This is achieved by repeated

backcrossing of the initial **hybrid** in order to eliminate all genetic changes except for the desired new gene(s).

Uvođenje novih alela ili gena u populaciju iz egzotičnog izvora, obično druge vrste. To se postiže povratnim ukrštanjem početnog hibrida, da bi eliminisali sve genetičke promene, izuzev za željene nove gene.

intron A segment of the primary **transcript** of a eukaryotic gene, removed (before the mature **mRNA** is translated) in a process known as **intron splicing**. Some eukaryotic genes contain a large number of introns, which make up the bulk of the **DNA** sequence of the gene. Introns are also found in genes whose **RNA** transcripts are not translated, namely eukaryotic **rRNA** and **tRNA** genes. In these cases the intron sequence does not appear in the functional **RNA** molecule. *Synonym:* **intervening sequence**.

Segment primarnog transkripta gena, eukariota odstranjen (pre nego što je sintetizovana zrela mRNK) u procesu poznatom kao intron splicing. Neki eukariotski geni sadrže veliki broj introna, koji čine veliki deo sekvence DNK gena. Introni su takođe nađeni u genima čiji transkripti RNK nisu sintetizovani, naime eukariotski rRNK i tRNK geni. U tim slučajevima, sekvencija introna se ne pojavljuje u funkcionalnom RNK molekulu. *Synonym:* intervening sequence.

invasiveness The ability of a plant, particularly a **weed**, to spread beyond its presently established site, and become established in new locations.

Sposobnost biljke, posebno korova, da se širi izvan ustanovljenog mesta, i da se smešta na novim lokacijama.

inversion A chromosome re-arrangement, which involves the re-orientation of a segment so that the order of a linear array of genes within it is reversed.

Hromozomski raspored, koji uključuje ponovnu orijentaciju segmenta, tako da je redosled linearnog niza gena obrnut.

inverted repeat Two sequences of nucleotides occurring in one strand, where, relative to the first sequence, the second has **complementary** bases but in the inverted order. Under appropriate conditions this allows formation of a **hairpin loop** in the single strand. *See:* **palindrome**.

Dve sekvence nukleotida koje se nalaze u jednom lancu, gde, u odnosu na prvu sekvencu, druga ima komplementarne baze, ali u obrnutom redu. Pod odgovarajućim uslovima, to omogućava formiranje lupe na jednom lancu. *Vidi:* palindrome.

ion channel A **protein** integral to a **cell** membrane, through which selective ion transport occurs.

Protein, integralan sa ćelijskom membranom kroz koju nastaje selektivan transport jona.

IPR Abbreviation for **intellectual property rights**.

Skraćenica za intellectual property rights.

IPTG Abbreviation for isopropyl-3-D-thiogalactopyranoside. A synthetic **inducer** of beta-**galactosidase** activity in many bacteria. Used in combination with the synthetic chromogenic **substrate** Xgal to differentiate recombinant from non-recombinant bacterial colonies in cloning strategies using **plasmid vectors** containing the *lacZ* gene: blue coloured colonies

are produced when β -galactosidase activity is not disrupted by an **insert**; but when it is disrupted, the colonies are white. Hence white colonies are indicative of **recombinant** plasmids, and blue colonies of non-recombinant ones.

Skraćenica za isopropyl-3-D-thiogalactopyranoside. Sintetičko jedinjenje aktivnosti beta-galaktozidaze u mnogih bakterija. Koristi se u sintezi hromogeničnog supstrata Xgal da diferencira rekombinantne od nerekombinantnih bakterijskih kolonija u kloniranju, koristeći plazmidne vektore koji sadrže *lacZ* gen: plavo obojene kolonije se proizvode kada β -galaktozidazna aktivnost nije poremećena nekim insertom; ali kada je aktivnost poremećena, kolonoje su bele. Dakle, bele kolonije su indikatori od rekombinantnih a plave kolonije nerekombinantnih plazmida.

irradiation Illumination with electromagnetic radiation, typically of sufficiently high energy (low-wavelength UV or gamma, *etc.*) to disrupt biological macromolecules and hence induce **mutations**.

Osvetljivanje elektromagnetskim zračenjem, dovoljno visoke energije (niske talasne dužine UV ili gama, *itd.*) da uništi biološke makromolekule i izazove mutacije.

IS element Abbreviation for insertion sequence element. A short (800-1400 **nucleotide** pairs) **DNA sequence** found in bacteria that is capable of transposing to a new genomic location; **DNA** sequences contained within an IS element can be transposed along with the IS itself.

Skraćenica za umetanje elementa sekvence. Kratka (800-1400 nukleotid-

nih parova) sekvenca DNK, nađena u bakterijama koja je sposobna za transportovanje do nove genomične lokacije; DNK sekvence, sadržane u okviru jednog IS elementa, mogu biti razmeštene uz samog IS.

isoallele Multiple similar copies of a gene, usually located at independent positions in the genome, which **encode** similar gene products and produce the same, or a very similar phenotype. *See: allele*.

Višestruke slične kopije gena, obično locirane na nezavisnim položajima u genomu, koji enkodiraju slične produkte gena i proizvode sličan, ili vrlo sličan, fenotip. *Vidi: allele*.

isochromosome A chromosome produced following an error in **meiosis**, in which the two arms are mirror images of each other. The presence of an isochromosome results in the **duplication** of all genes present on the originating chromosome arm.

Hromozom, nastao greškom u mejozi, u kojoj su dva kraka obrnute slike jedne drugoj. Prisustvo jednog izohromozoma dovodi do udvostručavanja svih prisutnih gena na kraku hromozoma.

isodiametric Commonly used to describe cells with equal diameters.

Obično korišćen da opiše ćelije sa jednakim prečnicima.

iso-electric focusing gel (Abbreviation: IEF gel). A variant of **gel electrophoresis**, in which **macromolecules** (usually **proteins**) are separated on the basis of differing iso-electric point, rather than on the basis of size.

(Skraćenica: IEF gel) Varijanta gel elektroforeze, u kojoj se makromolekuli (obično proteini) izdvajaju na bazi različite izoelektrične tačke, pre nego na bazi veličine.

isoenzyme *See: isozyme.*

Vidi: isozyme.

isoform 1. A tissue-specific form of a **protein**. 2. Synonym of **isoenzyme**.

1. Tkivno-specifičan oblik proteina. 2. *Sinonim* od isoenzyme.

isogamy Fusion of gametes of similar size and structure.

Fuzija gameta slične veličine i strukture.

isogenic A group of individuals that possesses the same genotype, irrespective of their being homozygous or heterozygous.

Grupa individua koje poseduje isti genotip, bez obzira na to da li su homozigotne ili heterozigotne.

isogenic stock Strains of organisms that are genetically nearly identical, except with respect to identified genes. Generally produced by repeated backcrossing, or by **transformation**.

Sojevi organizma, koji su genetički skoro identični, izuzev u odnosu na identifikovane gene. Proizvedeni putem niza povratnih ukrštanja, ili putem transformacije.

isolating mechanism The properties of an organism that prevent interbreeding (and therefore exchange of genetic material) between members of different species that inhabit the same geographical area.

Osobine nekog organizma koje sprečavaju gajenje u bliskom srodstvu (i zbog toga razmenu genetičkog materijala) između različitih vrsta koje naseljavaju isti geografski rejon.

isolation medium An optimum plant **tissue culture** medium suitable for **explant** survival, growth and development.

Optimalni medijum kulture tkiva biljke, pogodan za preživljavanje, rast i razviće eksplanta.

isomer 1. Structural isomers have the same chemical formula but different structures; e.g. leucine and isoleucine. 2. Stereoisomers are different topological forms of an otherwise single chemical structure, due to changes in bond configurations about some axis or plane of symmetry; eg, D- and L-glucose or cis- and trans-cinnamic acid.

1. Strukturni izomeri imaju istu hemijsku formulu, ali različite strukture; na pr. leucin i izoleucin. 2. Stereoizomeri su različite topolojske forme jedne hemijske strukture, usled promena u konfiguracijama veza oko iste ose ili plana simetrije; na pr. D- i L- glukoza ili cis- i trans-cinamična kiselina.

isomerase Any of a class of enzymes that catalyse the re-arrangement of the atoms within a molecule, thereby converting one **isomer** into another.

Bilo koja od klasa enzima koja katalizuje ponovno postavljanje atoma u okviru molekula, time pretvarajući jedan izomer u drugi.

iso-osmotic *See: isotonic.*

Vidi: isotonic.

isotonic Solutions with the same osmotic potential, as a result of being of the same molar concentration. For **protoplasts** to avoid losing or gaining water, the medium they are suspended in must be isotonic with them. *See: hypertonic, hypotonic, osmosis.*

Rastvori sa istim osmotskim potencijalom, kao rezultat iste molarne koncentracije. Za protoplaste, da izbegnu gubljenje ili dobijanje vode, medijum u kojem rastvoreni mora biti izotonični sa istim. *Vidi: hypertonic, hypotonic, osmosis.*

isotope One of two or more forms of an element that differ in the number of neutrons carried by the nucleus. Radioactive isotopes (radio-isotopes) are used as probes in many biochemical analyses.

Jedan od dva ili više oblika elementa koji se razlikuje u broju neutrona koje nosi nukleus. Radioaktivni izotopi (radioizotopi) se koriste kao probe u mnogim biohemijskim analizama.

isozyme A genetic **variant** of an **enzyme**. Isozymes for a given enzyme share the same function, but may differ in level of activity, as a result of minor differences in their **amino acid** sequence. Electrophoretic separation of isozymes has been used to distinguish between individuals and varieties.

Genetička varijanta enzima. Izozimi za dati enzim imaju istu funkciju, ali se mogu razlikovati u nivou aktivnosti,

kao rezultat manjih razlika u njihovoj sekvenci aminokiselina. Elektroforetsko izdvajanje izozima korišćeno je za ocenu razlike između individuala i varijeteta.

ISSR Abbreviation for **inter-simple sequence repeat**.

Skraćenica za inter-simple sequence repeat.

ITS Abbreviation for **internal transcribed spacer**.

Skraćenica za internal transcribed spacer.

IVEP Abbreviation for ***in vitro* embryo production**.

Skraćenica za *in vitro* embryo production.

IVF Abbreviation for ***in vitro* fertilization**.

Skraćenica za *in vitro* fertilization.

IVM Abbreviation for ***in vitro* maturation**.

Skraćenica za *in vitro* maturation.

J

J *See: joining segment.*

Vidi: joining segment.

Jiffy potä Pots made from wood pulp and peat, commonly used for transplanting **tissue culture**-derived plants into soil medium.

Posude napravljene od drvene pulpe i treseta, obično se koriste za presađivanje biljaka proizvedenih kulturom tkiva, u zemljani medijum.

JIVET Abbreviation for **juvenile *in vitro* embryo technology.**

Skraćenica za juvenile *in vitro* embryo technology.

JIVT Abbreviation for **juvenile *in vitro* embryo technology.**

Skraćenica za juvenile *in vitro* embryo technology.

joining segment (Abbreviation: J). A small **DNA** segment that links genes in order to yield a functional **gene** encoding an **immunoglobulin.**

(Skraćenica: J) Mali segment DNK koji vezuje gene da bi dali funkcionalni gen koji enkodira imunoglobulin.

jumping gene *See: transposable element.*

Vidi: transposable element.

jumping library *See: chromosome jumping.*

Vidi: chromosome jumping.

junk DNA *See: repetitive DNA.*

Vidi: repetitive DNK.

juvenile hormone A hormone secreted by insects from a pair of endocrine glands close to the brain. Its function is to inhibit metamorphosis so maintaining the larval features.

Hormon, koji luče insekati iz para endokrinih žlezda blizu mozga. Njegova funkcija je da inhibira metarmofozu, tako održavajući odlike larve.

juvenile *in vitro* embryo technology (Abbreviation: JIVT or JIVET). A technology involving collection of immature eggs from young animals, their *in vitro* **maturation** and fertilization, and the transfer of the resultant embryos into recipient females. The method is designed to achieve rapid generation turnover.

(Skraćenice: JIVT ili JIVET) Tehnologija koja uključuje sakupljanje nezrelih jaja od mladih životinja, njihovo *in vitro* sazrevanje i oplodjenje, i transfer nastalih embriona u ženke recipijente. Metod je projektovan da postigne brz obrt generacija.

juvenility Early phase of **development** in which an organism is incapable of sexual reproduction.

Rana faza razvića u kojoj organizam nije sposoban za polnu reprodukciju.

K

kanamycin An **antibiotic** of the aminoglycoside family that inhibits **translation** by binding to the **ribosomes**. Important as a substrate for selection of plant **transformants**.

Antibiotik iz grupe aminoglikozida koji inhibira sintezu vezivanjem za ribozome. Važan kao supstrat za selekciju biljnih transformanata.

kan^r Kanamycin-resistance gene. *See: neo^r, selectable marker.*

Kanamycin-rezistentni gen. *Vidi: neo^r, selectable marker.*

kappa chain One of two classes of **antibody** light chains. The other is a lambda chain.

Jedna od dve klase lakih lanaca antitela. Druga je lambda lanac.

karyogamy The fusion of nuclei or nuclear material that occurs at fertilization during sexual reproduction.

Fuzija nukleusa ili nuklearnog materijala koja se dešava pri oplodavanju tokom seksualne reprodukcije.

karyogram A diagrammatic representation of the full **chromosome** set of a species, highlighting characteristic physical features of individual chromosomes.

Šematski prikaz hromozoma neke vrste, ističući karakteristične fizičke odlike pojedinih hromozoma.

karyokinesis The division of a cell nucleus. *See: meiosis; mitosis.*

Deoba ćelijskog nukleusa. *Vidi: meiosis; mitosis.*

karyotype The chromosome constitution of a cell, an individual, or of a related group of individuals, as defined both by the number and the morphology of the **chromosomes**, usually in mitotic metaphase; chromosomes arranged in order of length and according to position of **centromere**; also, the abbreviated formula for the chromosome constitution, such as 47, + 21 for human trisomy-21 (Down's syndrome).

Hromozomska konstitucija individue, ili srodne grupe individua, koja definirana, brojem tako i morfologijom hromozoma, obično u metafazi mitoze poredani po dužini i prema položaju centromere; takođe, skraćena formula za hromozomsku konstituciju, kao 47, +21 za humanu trisomiju-21 (Down-ov sindrom).

kb Abbreviation for **kilobase** (of single-stranded nucleic acid).

Skraćenica za kilobazu (jednolančane nukleinske kiseline).

kbp Abbreviation for **kilobase pairs** (of double-stranded DNA).

Skraćenica za kilobazne parove (dvo-lančane DNK).

k_{cat} The catalytic rate constant that characterizes an enzyme-catalysed reaction. The larger the k_{cat} value, the faster the conversion of **substrate** into product.

Konstanta katalitičkog stepena, koja karakteriše enzimski katalizovanu re-

- akciju. Što je veća vrednost k_{cat} , brža je konverzija supstrata u produkt.
- k_{cat}/K_m** The catalytic efficiency of an enzyme-catalysed reaction. The greater the value of k_{cat}/K_m , the more rapidly and efficiently the **substrate** is converted into product.
- Katalitička efikasnost jedne enzimske katalizovane reakcije. Što je veća vrednost k_{cat}/K_m , supstrat se brže i efikasnije pretvara u produkt.
- K_d** Abbreviation for dissociation constant. Describes the strength of binding (or affinity) between molecules and their **ligands**. *See: avidity*.
- Skraćenica za konstantu disocijacije. Opisuje jačinu vezivanja (ili afiniteta) molekula i njihovih liganda. *Vidi: avidity*.
- kDa** Abbreviation for kiloDalton. A unit of molecular mass equal to 1000 **Dalton**.
- Skraćenica za kiloDalton. Jedinica molekularne mase jednake 1000 Daltona.
- killer T cell** T cells that kill cells displaying recognized **antigens**.
- T ćelije koje ubijaju ćelije koje pokazuju prepoznate antigene.
- kilobase** (Abbreviation: kb). A length of single-stranded **nucleic acid** composed of 1000 bases. One kilobase of **single-stranded DNA** has a mass of about 330 kiloDalton (exact mass depends on base composition).
- (Skraćenica: kb) Dužina jednolančane nukleinske kiseline sastavljene od 1000 baza. Jedna kilobaza jednolančane DNK ima masu od oko 330 kiloDaltona (tačna masa zavisi od baznog sastava).
- kilobase pairs** (Abbreviation: kbp). A length of double-stranded **DNA** composed of 1000 **base pairs**.

(Skraćenica: kbp) Dužina dvostrukog lanca DNK sastavljenog od 1000 baznih parova.

kinase An enzyme that catalyses the transfer of a phosphate group from a high energy state (as in ATP) to another molecule.

Enzim koji katalizuje transfer fosfatne grupe, od visoko energetske stanja, (kao u ATP) do drugog molekula.

kinetics Dynamic processes involving motion. Often used as a suffix to indicate studies involving movement or rates of reactions. *See: pharmacokinetics, enzyme kinetics*

Dinamični proces koji uključuje kretanje. Često korišćeni kao sufiks da pokaže istraživanja koja uključuju stepene reakcije. *Vidi: pharmacokinetics, enzyme kinetics*.

kinetin A **cytokinin**.

Citokinin.

kinetochore Structure at the **centromere** of eukaryotic chromosomes. The kinetochore consists of inner and outer electron dense plates and a central zone containing **repetitive DNA** elements. Kinetochores are involved in the control of chromosome movement in cell division.

Struktura na centromeri eukariotskih hromozoma. Kinetohora se sastoji od unutrašnjih i spoljašnjih elektronskih gustih ploča, i centralne zone koja sadrži elemente repetitivne DNK. Kinetohore su uključene u kontrolu kretanja hromozoma u deobi ćelije.

kinetosome Granular cytoplasmic structure which forms the base of a **cilium** or flagellum. *Synonym: basal body*.

Granularna citoplazmička struktura, koja formira bazu cilijuma ili flageluma. *Sinonim: basal body*.

kinin A substance promoting cell division. In plant systems, the prefix cyto- has been added (**cytokinin**) to distinguish it from kinin in animal systems.

Supstanca koja potpomaže ćelijsku deobu. U biljnim sistemima, prefiks cyto- dodat (cytokinin) da bi se razlikovao od kinina u životinjskom sistemu.

Klenow fragment A truncated form of **DNA polymerase I** from *E. coli*, used extensively for the production of synthetic **DNA** molecules as it retains **polymerase** and 3'-exonuclease activities, but not 5'-exonuclease activity.

Nepotpuni oblik DNK polimeraze I *E. coli*, ekstenzivno korišćen za proizvodnju sintetičkih molekula DNK, pošto ona zadržava polimerazu i aktivnosti 3'-egzonukleaze, ali ne 5'-egzonukleaznu aktivnost.

K_m A dissociation constant that characterizes the binding of an enzyme to a substrate. The smaller the value of K_m , the tighter the binding of the **enzyme** to the **substrate**. Also called the Michaelis constant.

Konstanta disocijacije, koja karakteriše vezivanje enzima za supstrat. Što je manja vrednost K_m , čvrće je vezivanje enzima za supstrat. Takođe zvana Michaelis-ova konstanta.

knockout A mutant individual, in which a single functional **gene** has been replaced by a non-functional form of the gene. Used to understand gene function via the comparison of the **phenotypes** of **wild type** and knockouts.

Mutantna individua, u kojoj je jedan funkcionalni gen zamenjen nefunkcionalnim oblikom gena. Korišćena za shvatanje funkcije gena upoređenjem fenotipova divljeg tipa i mutantnih individua.

L

label A compound or atom that is attached to, or incorporated into, another molecule in order to allow detection of the latter's presence. Commonly, labels exploit radioactivity, fluorescence or antigenicity. *Synonym:* tag.

Jedinjenje ili atom koji je dodat, ili uključen u drugi molekul, da bi omogućio otkrivanje prisutnosti potonjeg. Obično, naznake koriste radioaktivnost, fluorescenciju ili antigeničnost. *Sinonim:* tag.

labelling The process of attaching or inserting a **label** into a molecule. Most often in the context of nucleic acids or **proteins**.

Proces priključenja ili ubacivanja naznake u molekul. Najčešće u kontekstu nukleinskih kiselina ili proteina.

lac repressor-lac promoter system *See:* IPTG.

lac promoter system. *Vidi:* IPTG.

lactose A disaccharide sugar produced in milk, composed of one unit each of glucose and galactose.

Disaharidni šećer, proizveden u mleku, sastavljen od jedne jedinice glukoze i galaktoze.

lag phase 1. The state of apparent inactivity preceding a response to a treatment; also called a latent phase. 2. The initial **growth phase**, during which **cell number** remains relatively constant, prior to the onset of rapid cell division.

1. Stanje očevidne inaktivacije, koja prethodi reagovanju na tretman; takođe nazvana latentna faza. 2. Početna faza rasta, tokom koje broj ćelija ostaje relativno konstantan, pre početka brze deobe ćelija.

lagging strand The strand of **DNA** that is synthesized discontinuously during **replication** (because **DNA** synthesis can proceed only in the 5'→3' direction). *See:* **Okazaki fragment**.

Lanac DNK, koji se diskontinuirano sintetizuje tokom replikacije (pošto sinteza DNK može da se odvija samo u smeru 5'→3'). *Vidi:* Okazaki fragment.

lambda chain One of two classes of **antibody** light chains. The other is a kappa chain.

Jedna od dve klase lakih lanaca antitela. Druga je kappa lanac.

lambda phage A **bacteriophage** that infects *E. coli*, commonly used as a **cloning vector**. *See:* **integration-excision region**.

Bakteriofag, koji inficira *E. coli*, obično korišćena kao vektor pri kloniranju. *Vidi:* integration-excision region.

lamella A structure, plate or vesicle that is formed by two membranes lying parallel to each other.

Struktura, ploča ili mehurić, formirani sa dve membrane, koje su paralelne.

lamina Blade or expanded part of a leaf. Liska, ili rašireni deo lista.

laminar air-flow cabinet Cabinet designed for cell or **tissue culture** manipulations requiring a **sterile** environment. Achieved by a continuous, non-turbulent flow of filter-sterilized air over the working area. *Synonym: laminar air-flow hood.*

Orman, konstruisan za manipulacije ili u kulturi ćelija ili tkiva koje zahtevaju sterilnu sredinu. Postignuta kontinuiranim, neturbulentnim tokom vazduha, sterilisanog filterom iznad radne površine. *Sinonim: laminar air-flow hood.*

laminarin A storage **polysaccharide** of the brown algae.

Skladište polisaharida mrke alge.

lampbrush chromosome Large **diplo-****tene** chromosomes present in **oocyte** nuclei, and particularly conspicuous in amphibians. These chromosomes have extended regions called loops, which are active sites of transcription. *See: diplomema.*

Veliki hromozomi u diplotonu, prisutni u nukleusima oocita, i posebno upadljivi u amfibija. Ti hromozomi imaju proširene regione zvane lupe (petlje), koje su aktivna mesta transkripcije. *Vidi: diplomema.*

landrace In plant genetic resources, an early, cultivated form of a crop species, evolved from a wild population, and generally composed of a heterogeneous mixture of genotypes.

U biljnim genetičkim resursima, rana, kultivisana forma vrste, poreklom od prirodne populacije, i uopšte sastavljena od heterogene smeše genotipova.

latent agent A **pathogen**, usually a virus, present in a host organism without producing any symptoms.

Patogen, obično virus, prisutan u organizmu domaćina bez proizvodnje bilo kakvih simptoma.

latent bud An inactive bud not held back by rest or dormant period, but which may start growth if stimulated. Neaktivan pupoljak, periodom mirovanja, ali koji može početi da raste ako je stimulisan.

latent phase *See: lag phase.*

Vidi: lag phase.

lateral bud *See: axillary bud.*

Vidi: axillary bud.

lateral meristem A **meristem** giving rise to secondary plant tissues, such as the vascular and cork cambia.

Meristem koji obezbeđuje rast sekundarnih biljnih tkiva, kao što su vaskularna i kambijumi kore.

lawn A uniform and uninterrupted layer of bacterial growth, typically on **agar** medium, in which individual colonies cannot be observed.

Ujednačen i kontinuiran sloj bakterijskog rasta, tipično na medijumu agara, u kojem se ne mogu videti individualne kolonije.

layering A technique for vegetative propagation, in which new plants produce **adventitious** roots before being severed from the parent plant.

Tehnika za vegetativno razmnožavanje, u kojoj nove biljke proizvode adventivne korene, dok još nisu rastavljene od roditeljske biljke.

LCR Abbreviation for **ligase chain reaction**.

Skraćenica za ligase chain reaction.

LD₅₀ Abbreviation for lethal dose_{50%}. The amount of a substance required to kill 50% of the test population. The higher the LD₅₀, the lower the **toxicity** of the chemical in that specific test.

Skraćenica za letalnu dozu_{50%}. Količina supstance koja je potrebna da ubije 50% od populacije koja se testira. Što je veća LD₅₀, manja je toksičnost hemikalije u specifičnom testu.

lead compound A chemical that has demonstrated promising biological activity in preliminary assays.

Hemikalija, koja je pokazala obećavajuću biološku aktivnost u preliminarnim ogledima.

leader peptide *See: signal sequence.*

Vidi: signal sequence.

leader sequence A variable length sequence of **nucleotides** at the 5' end of an **mRNA** molecule that precedes the **AUG initiation codon** where **translation** begins and is not itself translated into **protein**.

Varijabilna dužina sekvence nukleotida na 5' kraju mRNK molekula, koji prethodi AUG terminalnom kodonu gde sinteza počinje, a sama nije sintetizovana u protein.

leading strand The strand of **DNA** that is synthesized continuously during replication.

Lanac DNK koji se stalno sintetizira tokom replikuje.

leaf blade The usually flattened portion of the leaf.

Obično ravan deo lista.

leaf bud cutting A **cutting** that includes a short section of **stem** with attached leaf.

Odsečak koji uključuje kratak deo stabla, sa dodatim listom.

leaf margin The edge of a leaf.

Ivica lista.

leaf primordium A lateral outgrowth from the **apical meristem**, which will become a leaf when fully developed and expanded.

Bočni izdanak iz vršnog meristema, koji će postati list kada se potpuno razvije i raširi.

leaf roll A symptom of some **virus** diseases, characterized by curling of the leaves. Can also occur as a response to water stress.

Simptom nekih virusnih bolesti, koje karakterišu uvijanjem lišća. Može, takođe, da se desi kao reakcija na vodeni stres.

leaf scar Mark left on a **stem** after leaf abscission.

Ožiljak na stablu posle opadanja lista.

leaflet Expanded leaf-like part of a compound leaf.

Rašireni, sličan listu deo složenog lista.

leaky mutant A mutant in which the gene product still retains some biological activity.

Mutant, u kojem genski produkt još zadržava neku biološku aktivnost.

lectin A group of plant **proteins** that can bind to specific **oligosaccharides** on the surface of cells, causing the cells to clump together.

Grupa biljnih proteina koji mogu da se vežu za specifične oligosaharide na površini ćelija, izazivajući gomilanje ćelija.

leptonema Stage in **meiosis** immediately preceding **synapsis** and post **DNA** replication, in which the chromosomes appear as single, fine, threadlike structures.

Stadijum u mejozi, koji neposredno prethodi sinapsisu i post DNK replikaciji u kojoj se hromozomi pojavljuju kao fine, končaste strukture.

leptotene (adj.) *See: leptonema.*

Vidi: leptonema.

lethal allele A mutant form of a gene that, in the **homozygous** state, is fatal.

Mutantni oblik gena, koji je u homozigotnom stanju letalan.

lethal gene *See: lethal allele.*

Vidi: lethal allele.

lethal mutation *See: lethal allele.*

Vidi: lethal allele.

leukocyte White blood cell, up to 0.02 mm in diameter, of which there are normally 4–11 million per millilitre of human blood. There are several kinds, all involved in the body's defence mechanisms. Granulocytes have granules in their cytoplasm; monocytes ingest and feed on bacteria and other **micro-organisms** that cause infection; **lymphocytes** include the **B cells** that are involved with the production of **antibodies**.

Bela krvna zrnca, prečnika do 0.02 mm, od kojih ima normalno 4–11 miliona po mililitru u krvi ljudi. Ima nekoliko vrsta, a svi su uključeni u odbrambene mehanizme tela. Granulociti imaju granule u svojoj citoplazmi; monociti unose hranu i hrane se bakterijama i drugim mikroorganizmima koji izazivaju infekciju; limfociti uključuju B ćelije koje su uključene u proizvodnju antitela.

library A collection of cells, usually bacteria or yeast, that have been transformed with **recombinant** vectors carrying **DNA** derived from an unrelated **organism**. *See: cDNA library, expression library, genomic library.*

Skup ćelija, obično bakterija ili kvasaca, koje su transformisane rekombinantnim vektorima koji nose DNK poreklom od nesrodnog organizma. *Vidi: cDNK library, expression library, genomic library.*

life cycle The sequence of events from a given developmental stage in one ge-

neration to the same stage in the following generation. In sexually reproduced organisms, the starting point is the fusion of gametes to form the zygote.

Redosled događaja, od određenog stadijuma razvića u jednoj generaciji, do istog stadijuma u narednoj generaciji. U organizmima koji se polno razmnožavaju, polazna tačka je fuzija gameta u cilju stvaranja zigota.

ligand A small molecule (e.g. activators, substrates and inhibitors of **enzyme** activity) bound to a **protein** by non-covalent forces; an ion or a molecule that binds to another chemical entity to form a larger complex.

Mali molekul (na pr. aktivatori, supstrati i inhibitori enzimske aktivnosti) vezan za protein putem nekovalentnih veza; jon ili molekul koji se vezuje za drugi hemijski entitet da bi formirao veći kompleks.

ligase *See: DNA ligase.*

Vidi: DNK ligase.

ligase chain reaction (Abbreviation: LCR). A technique for the detection and **amplification** of target **DNA** sequences. Two **oligonucleotides** are synthesized which between them are **complementary** to the entire **target** sequence, one to the 5'-side and one to the 3'-side. If the target sequence is present in the **DNA** sample under examination, the oligonucleotides will bind to it with their ends abutting in the centre, and a heat-stable ligase will join them into a complete polynucleotide. No ligation occurs if the target sequence is absent or if the match between synthetic oligonucleotides and target sequence is imperfect in the region where they abut. At a high temperature, the new **polynuc-**

leotide dissociates from the original **DNA** template, and upon cooling, it and the original **DNA** serve as templates for a second cycle of hybridization, ligation and thermal dissociation. At each cycle there is a doubling of the number of new complete polynucleotides.

(Skrtaćenica: LCR) Tehnika za otkrivanje i umnožavanje ciljnih sekvenci DNK. Dva oligonukleotida se sintetizuju koja su komplementarna za celu ciljnu sekvencu, jedan na 5'-strani, a jedan na 3'-strani. Ako je ciljna sekvencija prisutna u ispitivanom uzorku DNK ispitivanjem, oligonukleotidi će se vezati na nju svojim krajevima, dodirujući se u centru, a toplotno stabilna ligaza će ih spojiti u kompletan polinukleotid. Ne dešava se ligacija ako je ciljna sekvencija odsutna, ili ako je slaganje između sintetičkih oligonukleotida i ciljne sekvence nesavršeno u regionu gde se dodiruju. Na visokoj temperaturi, novi polinukleotid disocira od originalnog DNK kalupa i posle hlađenja, on i originalna DNK služe kao kalup za sledeći ciklus hibridizacije, ligacije i termalne disocijacije. U svakom ciklusu postoji udvostručavanje broja novih polinukleotida.

ligate, ligation The joining of two linear **double-stranded DNA** fragments by the formation of phosphodiester bonds.

Spajanje dva linearna dvostruka lanca DNK fragmenta, formiranjem fosfodieterskih veza.

lignification The thickening and strengthening of a plant **cell wall** with **lignin**.

Zadebljanje i pojačanje ćelijskog zida biljke ligninom.

lignin A group of high-molecular-weight amorphous polymers of phenylpropanoid compounds, giving strength to certain tissues. A major component of wood.

Grupa amorfnih polimera visokomolekularne mase od fenilpropanoidnih jedinjenja, dajući jačinu određenim tkivima. Glavna komponenta drveta.

lignocellulose The combination of **lignin**, **hemicellulose** and **cellulose** that forms the structural framework of plant cell walls.

Kombinacija lignina, hemiceluloze i celuloze, koja formira strukturni okvir ćelijskih zidova biljke.

LINE Abbreviation for **long interspersed nuclear element**.

Skrtaćenica za long interspersed nuclear element.

lineage A group of individuals, related by common descent, e.g. an *in vitro* **cell line** derived from a single cell.

Grupa individua, srodnih po zajedničkim precima, na pr. *in vitro* ćelijska linija, poreklom od jedne ćelije.

linear phase The **growth phase** during cell culture when cell number increases arithmetically. The linear phase follows a period of exponential growth.

Faza rasta tokom kulture ćelija, kada se broj ćelija povećava aritmetičkom progresijom. Linearna faza sledi period eksponencijalnog rasta.

linearized vector A covalently closed circular **DNA vector** (typically a **plasmid**) which has been opened by restriction digestion to convert it to a linear molecule. In molecular cloning, **DNA** to be cloned is mixed with the linearized vector, and treated with **ligase** to join and recircularize the resulting hybrid molecule.

Kovalentno zatvoren kružni vektor DNK (obično plazmid), koji je bio sečen putem restrikcionog razlaganja da ga pretvori u linearni molekul. U molekularnom kloniranju, DNK koja će se klonirati se meša sa linearizovanim vektorom i tretira ligazom, da spoji i recirkuliše nastali hibridni molekul.

linkage The tendency of a set of genes to be inherited together more often than would be expected if they were assorting independently. exists between two genes when they are located sufficiently close to one another on the same **chromosome** that a proportion of gametes is produced without crossing-over occurring between them.

Tendencija niza gena da se nasleđuje vezano, češće nego što bi se očekivalo ako bi bili raspoređeni nezavisno. Nastaje između dva gena kada su locirana dovoljno blizu jedan do drugog na istom hromozomu tako da se pojavljuje proporcija gameta bez pojave krosing-overa.

linkage disequilibrium See: **gametic phase disequilibrium**.

Vidi: gametic phase disequilibrium.

linkage equilibrium See: **gametic phase equilibrium**.

Vidi: gametic phase equilibrium.

linkage map A linear or circular diagram that shows the relative positions of genes on a **chromosome** as determined by recombination fraction. See: **genetic map**.

Linearni ili kružni dijagram, koji pokazuje relativni raspored gena na hromozomu, tako kako su utvrđeni putem frakcije rekombinacije. *Vidi:* genetic map.

linked gene, linked marker A gene or marker that is linked to another gene or marker.

Gen ili marker koji je vezan za drugi gen ili marker.

linker A synthetic double-stranded **oligonucleotide** that carries the recognition sequence for one or more **restriction endonucleases**. The **ligation** of a linker to each end of a **DNA** fragment facilitates the preparation of the fragment for cloning into a **vector**. See: **polylinker**.

Sintetički, dvoančani oligonukleotid, koji nosi sekvencu prepoznavanja za jednu ili više restrikcionih endonukleaza. Ligacija vezivača za svaki kraj fragmenta DNK olakšava pripremu fragmenta za kloniranje u vektor. *Vidi:* polylinker.

lipase A class of enzymes which break down lipids into their component fatty acids and glycerol. Lipases used in **biotechnology** are generally digestive, with a role in the break-down of fats in food into their components, so that these can be used to make other materials.

Grupa enzima koji razlažu lipide na njihove komponente, masne kiseline i glicerol. Lipaze korišćene u biotehnologiji su opšte uzev digestivne, sa ulogom u razlaganju masti u hrani na njihove komponente, tako da mogu da se koriste za pravljenje drugih jedinjenja.

lipid Any of a group of fats or fat-like compounds insoluble in water and soluble in fat solvents.

Bilo koja od grupe masti ili mastima sličnih jedinjenja nerastvorljivih u vodi a rastvorljivih u rastvaračima masti.

lipofection Delivery into eukaryotic cells of **DNA**, **RNA** or other compounds that have been encapsulated in **liposomes**.

Transport u eukariotske ćelije DNK, RNK ili druga jedinjenja koja se nalaze u kapsulama lipozoma.

lipopolysaccharide (Abbreviation: LPS). A compound containing **lipid** bound to a **polysaccharide**; often a component of microbial cells walls.

(Skracenicica: LPS) Jedinjenje koje sadrži lipid vezan sa polisaharidom; često komponenta ćelijskih zidova mikroba.

liposome A synthetic microscopic spherical structure consisting of a **phospholipid** bilayer membrane containing a user-defined aqueous solution. Liposomes can be used to transport relatively toxic drugs into diseased cells, where they can exert their maximum effect. **DNA** molecules may be entrapped in, or bound to the surface of, the vesicles, and subsequent fusion of the liposome with the **cell membrane** will deliver the **DNA** into the cell. Liposomes have been used to develop an efficient **transfection** procedure for *Streptomyces* bacteria.

Sintateička mikroskopska sferna struktura koja se sastoji od fosfolipidne dvoslojne membrane koja sadrži određen vodeni rastvor. Lipozomi se mogu koristiti za transport relativno toksičnih lekova u bolesne ćelije, gde oni mogu da ispolje svoj maksimalni efekat. Molekuli DNK mogu biti zatvoreni u, ili vezani za površinu mehura, a potonja fuzija lipozoma sa ćelijskom membranom će isporučiti DNK u ćeliju. Lipozomi se koriste da se razvije efikasan postupak transfekcije za bakterije *Streptomyces*.

liquefaction Enzymatic digestion (often by alpha-amylase) of gelatinized **starch** to form lower molecular weight **polysaccharides**.

Enzimatska digestija (često sa alfa-amilazom) želatinizovanog skroba da se formiraju polisaharidi sa manjom molekulskom težinom.

liquid medium Culture solution, without a solidifying agent, for *in vitro* cell growth.

Rastvor kulture, bez sredstava za očvršćavanje, za rast ćelija *in vitro*.

liquid membrane Thin films made up of liquids (as opposed to solids) which are stable in another liquid (usually water). Thus the liquid must not dissolve in the water, but nevertheless must be prevented from collapsing into small droplets.

Tanki filmovi načinjeni od tečnosti (nasuprot čvrstim materijama) koji su stabilni u drugoj tečnosti (obično vodi). Tako da se tečnost ne može rastvoriti u vodi, ali ipak mora se sprečiti onemogućiti razbijanje na male kapljice.

liquid nitrogen Nitrogen gas condensed to a liquid with a boiling point of about -196 °C. Commonly used as a medium for long-term storage of biological materials. *See: cryopreservation*.

Azotni gas kondenzovan u tečnosti sa tačkom ključanja od oko -196°C. Obično se koristi kao medijum za dugotrajno skladištenje bioloških materija. *Vidi: cryopreservation*.

litmus paper A **pH** indicator paper. It turns red in acidic and blue in alkaline solutions.

pH indikator papir. Pocrveni u kiselim, a poplavi u alkalnim rastvorima.

live recombinant vaccine A **vaccine** created by the expression of a **pathogen antigen** in a non-pathogenic organism.

Vakcina, stvorena ispoljavanjem patogenog antigena u nepatogenom organizmu.

live vaccine A living, non-virulent form of a pathogenic **micro-organism** or **virus** used to elicit an **antibody** response for the protection against **infection** by a virulent form of the same **pathogen**.

Živi, nevirulentni oblik patogenog mikroorganizma ili virusa, korišćen da utiče na reagovanje antitela za zaštitu protiv infekcije putem virulentnog oblika tog patogena.

living modified organism (Abbreviation: LMO). „Living organism that possess a novel combination of genetic material obtained through the use of **modern biotechnology**“ (Convention on Biological Diversity). Synonym of **GMO**, but restricted to organisms that can endanger biological diversity.

(Skraćenica: LMO) „Živi organizam, koji poseduje novu kombinaciju genetičkog materijala, dobijenog korišćenjem savremene biotehnologije“ (Konvencija o Biološkom Diverzitetu). *Sinonim* od **GMO**, ali ograničen na organizme koji mogu da ugroze biološki diverzitet.

LMO Abbreviation for **living modified organism**

Skraćenica za living modified organism.

locus (pl.: loci) A site on a chromosome. Mesto na hromozomu.

lod score The logarithm of the odds of **linkage** between two loci. Used to measure the statistical support for linkage.

Logaritam nadmoćnosti vezivanja između dva lokusa. Korišćen za merenje statističke podrške za vezanost gena.

logarithmic phase The **growth phase** in cell **culture**, during which **cell**

number doubles every 20–30 minutes. *Synonym*: exponential phase.

Faza rasta u kulturi ćelija, tokom koje se ćelijski broj udvostručava svakih 20–30 minuta. *Sinonim*: eksponencijalna faza.

log phase Abbreviation for logarithmic phase.

Skraćenica za logaritamsku fazu.

long interspersed nuclear element (Abbreviation: LINE). Families of common **DNA** elements, of average length 6.5 kb, which are dispersed at numerous locations within the genome. The human **genome** contains over 500,000 LINEs (representing ca. 16% of the genome). They appear to represent degenerate copies of transposable elements. *See*: **SINE**.

(Skraćenica: LINE) Familije zajedničkih elemenata DNK, prosečne dužine 6.5 kb, koji su rasejani po brojnim lokacijama u okviru genoma. Ljudski genom sadrži preko 500.000 LINE-sa (predstavljajući oko 16% genoma). Izgleda da predstavljaju izrođene kopije premeštajućih elemenata. *Vidi*: **SINE**.

long template A **DNA** strand, synthesized during **PCR**, which has a **primer** sequence at one end but is extended beyond the site that is **complementary** to the second primer at the other end.

Lanac DNK, sintetizovan za vreme **PCR**, koji ima primer sekvencu na jednom kraju, ali je proširena i izvan mesta koje je komplementarno sa drugim primerom na drugom kraju.

long terminal repeat (Abbreviation: LTR). A characteristic sequence of **nucleotides** that occurs at each end of a **retrovirus** element that has become integrated into the host **geno-**

me. Involved in the integration process.

(Skrtaćenica: LTR) Karakteristična sekvencija nukleotida koja nastaje na svakom kraju retrovirusnog elementa, koji je postao integrisan u genom domaćina. Uključene u proces integracije.

long-day plant Plants requiring a period of short nights before the switch from vegetative to reproductive growth can be initiated. *See: Short-day plant.*

Biljke koje zahtevaju period kratkog dana za prolaz vegetativnog u reproduktivni rast. *Vidi: Short day plant.*

loop bioreactor Fermenters in which material is cycled between a bulk tank and a smaller tank or loop of pipes. The circulation helps to mix the materials and to ensure that gas injected into the **fermenter** is well distributed in the liquid. Particularly useful for **photosynthetic** fermentations, where the photosynthesizing organisms are passed through a system of many small transparent pipes, which allow the access of light.

Bioreaktori, u kojima materijal prolazi kroz ciklus između velikog tanka i manjeg tanka ili krivine cevi. Cirkulacija pomaže mešanju materijala, i osigurava da je gas injektiran u bioreaktor dobro raspoređen u tečnosti. Posebno koristan za fotosintetičke fermentacije, gde fotosintetizujući organizmi prolaze kroz sistem niza malih providnih cevi, što omogućava pristup svetlosti.

LPS Abbreviation for **lipopolysaccharide**.

Skrtaćenica za lipopolisaharid.

LTR Abbreviation for **long terminal repeat**.

Skrtaćenica za long terminal repeat.

luteinizing hormone A pituitary hormone which causes growth of the yellow body of the **ovary** and also stimulates activity of the interstitial cells of the testis.

Hormon hipofize, koji izaziva rast žutog tela ovarijuma, a takođe stimuliše aktivnost intersticijalnih ćelija testisa.

luxury consumption Nutrient absorption by an organism in excess of that required for optimum growth and productivity.

Apsorpcija hranljivih materija nekog organizma u višku, u odnosu na potrebe za optimalni rast i produktivnost.

lyase Any of a class of enzymes that catalyse either the cleavage of a double bond and the addition of new groups to a substrate, or the formation of a double bond.

Bilo koja od grupa enzima, koja katalizuje, bilo rastavljanje dvostruke veze i dodavanje novih grupa supstratu, ili formiranje dvostruke veze.

lymphocyte White blood cells that are important components of the immune system of vertebrates. *See: B cell, T cell.*

Bele krvne ćelije (zrnca) koje su važne komponente imunog sistema kičmenjaka. *Vidi: B cell, T cell.*

lymphokine Generic name for **proteins** that are released by **lymphocytes** to act on other cells involved in the immune response. The term includes **interleukins** and **interferons**. A subclass of **cytokines**. *See: monokine.*

Opšti naziv za proteine, koje otpuštaju limfociti da bi delovali na druge ćelije uključene u imunoreagovanje. Izraz uključuje interleukine i interferone. Podklasa citokina. *Vidi: monokine.*

lymphoma Cancer originating in the lymph nodes, spleen and other lympho-reticular sites.

Rak, poreklom od limfnih čvorova, slezine i drugih limfo-retikularnih mesta.

lyophilize See: **freeze-drying**.

Vidi: freeze-drying.

lysis The destruction or breakage of cells either by viruses or by chemical or physical treatment.

Destrukcija ili razgradnja ćelija, putem virusa, ili hemijskog ili fizičkog tretmana.

lysogen A bacterial cell whose **chromosome** contains integrated **bacteriophage DNA**.

Bakterijska ćelija, čiji hromozom sadrži integrisane DNK bakteriofaga.

lysogenic Bacteria or bacteriophages undergoing **lysogeny**.

Bakterije, ili bakteriofage, koji se podvrgavaju lizogeniji.

lysogenic bacterium Bacterium harbouring temperate (non-virulent, **lysogenic**) bacteriophages.

Bakterija koja skriva umerene (nevirulentne) lizogene bakteriofage.

lysogeny A condition in which a **bacteriophage** genome (**pro-phage**) survives within a host bacterium, either as part of the host chromosome or as part of an **extrachromosomal** element, and does not initiate **lysis**.

Stanje, u kojem genom bakteriofage (pro-phage) preživljava u okviru bakterije domaćina, bilo kao deo hromozoma domaćina, ili kao deo ekstrahromozomskog elementa, i ne dovodi do lizije.

lysosome A membrane-bound sac within the **cytoplasm** of animal cells that contains enzymes responsible

for the digestion of material in food vacuoles, the dissolution of foreign particles entering the **cell** and, on the death of the cell, the breaking down of all cell structures. The digestive system of the cell.

Membranski vezana kesica u okviru citoplazme životinjskih ćelija koja sadrži enzime, odgovorne za digestiju materija u vakuolama za hranu, rastvaranje stranih partikula koje ulaze u ćeliju, i posle smrti ćelije, razlaganje svih ćelijskih struktura. Digestivni sistem ćelije.

lysozyme A naturally occurring **enzyme** extracted from egg white **protein** and other animal and plant sources, which attacks the cell wall of gram-positive bacteria leading to cell **lysis** and death.

Prirodno nastali enzim, ekstrahovan iz proteina belanca jajeta i drugih životinjskih i biljnih resursa, koji napada ćelijski zid gram-pozitivnih bakterija i dovodi do lizije ćelija i do smrti.

lytic A phase of the virus life cycle during which the **virus** replicates within the host cell, releasing a new generation of viruses when the infected cell undergoes **lysis**.

Faza životnog ciklusa virusa tokom kog se virus umnožava u okviru ćelije domaćina, otpuštajući novu generaciju virusa kada inficirana ćelija bude podvrgnuta lizi.

lytic cycle The steps in viral production that lead to cell **lysis**.

Ciklus u proizvodnji virusa koji dovodi do lizije ćelija.

M

M13 A single-stranded **DNA bacteriophage** used as a **vector** for **DNA** sequencing.

Molekul jednostrukog DNK lanca bakteriofaga koji sekoristi kao vektor za sekvenciranje DNK.

M13 strand The single-stranded **DNA** molecule that is present in the infective form of **bacteriophage M13**.

Jednolančani molekul DNK, koji je prisutan u infektivnom obliku bakteriofaga M13.

MAAP Abbreviation for **multiple arbitrary amplicon profiling**.

Skraćenica za multiple arbitrary amplicon profiling.

mAb Abbreviation for **monoclonal antibody**.

Skraćenica za monoclonal antibody.

macerate To disintegrate tissue to disrupt cells. Commonly achieved via mechanical shearing, **plasmolysis** or enzymatic **cell wall** degradation.

Razoriti tkivo, da se unište ćelije. Obično se postiže putem mehaničkog seckanja, plazmolize, ili enzimske razgradnje ćelijskih zidova.

macromolecule Any high molecular weight molecule. Often used as a synonym for **polymers**.

Bilo koji molekul velike molekulske mase. Često korišćen kao sinonim za polimere.

macronutrient A major chemical element essential for normal growth and development. In **tissue culture** media, macronutrients are those requi-

red in concentrations above 0.5 millimole/litre.

Glavni hemijski element bitan za normalan rast i razviće. U medijumima kulture tkiva, makronutrijenti su oni koji su potrebni u koncentracijama iznad 0,5 milimola/litru.

macrophage Large white blood cells that ingest foreign substances and display on their surfaces **antigens** which are recognized by other cells of the immune system.

Velike bele krvne ćelije, koje unose u sebe strane supstance i na svojim površinama ispoljavaju imaju antigene koji se prepoznaju od drugih ćelija imunog sistema.

macropropagation Production of plant clones from growing parts.

Proizvodnja klonova biljaka od delova u porastu.

macrospore *See: megaspore.*

Vidi: megaspore.

mad cow disease Colloquial term for **bovine spongiform encephalopathy**. *See proteinaceous infectious particle*

Popularni izraz za bovinu spongiformnu encefalopatiju. *Vidi: proteinaceous infectious particle.*

MADS box A highly conserved **DNA** sequence **motif** found in a large family of **transcription factors**, most of which play important roles in developmental processes. Most prominently, the MADS box genes known

in flowering plants are intimately involved in the control of flower morphogenesis.

Visoko konzervisana sekvenca DNK, nađena u velikoj grupi transkripcijskih faktora, od kojih većina igra važnu ulogu u procesima razvića. Najistaknutije, MADS box geni, poznati u biljaka cvetnica, su intimno uključeni u kontrolu morfogeneze cveta.

magenta A type of plastic container frequently used for plant **micropropagation** and **tissue culture**.

Tip plastičnog kontejnera, često korišćenog za mikropropagaciju i kulturu tkiva.

major histocompatibility antigen A cell-surface **protein** or **glycoprotein** that allows the immune system to distinguish foreign or „non-self“ from „self“. A better term is **histoglobulin**. These are the **antigens** that must be matched between donors and recipients during **organ** and **tissue** transplants to prevent rejection.

Protein površine ćelije ili gliko-protein koji omogućuje imunom sistemu da razlikuje strane ili „tuđe“ od „svojih“. Bolji izraz je histoglobulin. To su antigeni koji moraju biti usklađeni između donora i recipijenata tokom transplantata organa i tkiva, da bi sprečili odbacivanje.

major histocompatibility complex (Abbreviation: MHC). The large cluster of genes that encode the **major histocompatibility antigens** in mammals.

Veliki skup gena koji enkodira glavne antigene histokompatibilnosti u sisara.

malt extract A mixture of organic compounds prepared from malt, used as a **culture medium** additive.

Smeša organskih jedinjenja pripremljenih od slada. Korišćena kao aditiv u medijumu kulture.

malting Enzymatic reduction of **starch** to sugars in germinating grain, used in brewing.

Enzimatska redukcija skroba u šećer u naklijalog zrna, korišćena u pivarstvu.

mammary gland The milk-producing **organ** of female mammals.

Organ proizvodnje mleka ženki sisara.

management of farm animal genetic resources The sum total of technical, policy and logistical operations involved in understanding (characterization), using and developing (utilization), maintaining (conservation), accessing, and sharing the benefits of animal genetic resources.

Suma ukupnih tehničkih, političkih i logističkih operacija uključenih u razumevanje (karakterizaciju), korišćenje i razvoj (iskorišćavanje), održavanje (konzervaciju), pristup i deobu koristi od životinjskih genetičkih resursa.

mannitol A sugar alcohol widely distributed in plants. Commonly used as a nutrient and **osmoticum** in suspension media for plant **protoplasts**.

Šećerni alkohol, široko rasprostranjen u biljaka. Obično se koristi kao hranljiva materija i osmotik u medijumima suspenzije za biljne protoplaste.

mannose A hexose component of many polysaccharides, occasionally used as a **carbohydrate** source in plant **tissue culture** media.

Heksozna komponenta mnogih polisaharida, povremeno korišćena kao izvor ugljenog hidrata u medijumu kulture tkiva biljaka.

map 1. verb: to determine the relative positions of loci (genes or **DNA** sequences) on a **chromosome**. **Linkage** maps are obtained from the frequency of **recombination** between lo-

ci. Physical maps are obtained commonly by the use of *in situ* hybridization of cloned **DNA** fragments to **metaphase** chromosomes, or by **somatic-cell hybrids** or **radiation hybrids**. 2. noun: a diagram showing the relative position of, and distances between, loci on a chromosome.

1. glagol: Odrediti relativne položaje lokusa (gena ili sekvenci DNK) na hromozomu. Mape vezanih gena dobijaju se u zavisnosti od učestalosti rekombinacije između lokusa. Fizičke mape se dobijaju obično korišćenjem *in situ* hibridizacije kloniranih fragmenata DNK od metafaznih hromozoma, ili putem somatsko-čelijskih hibrida ili radijacionih hibrida. 2. ime: dijagram koji pokazuje relativan položaj, i distance između, lokusa na hromozomu.

map distance The standard measure of **genetic distance** between loci, expressed in **centiMorgans** (cM) or **map units**. Estimated from **recombination** fraction via a **mapping function**. For small recombination fractions, map distance in cM equals the **recombination fraction** in %.

Standardna mera genetičke distance između lokusa, izražene u centiMorganima (cM) ili jedinicama mape. Izračunata preko frakcije rekombinacije i funkcije mapiranja. Za male rekombinacione frakcije, distanca mape u cM jednaka je frakciji rekombinacije u %.

map unit One **centiMorgan** (1 cM)
See: map distance; crossing-over unit.

Jedan centiMorgan (1cM). *Vidi: map distance; crossing-over unit.*

mapping The construction of a localized (around a gene), or broad-based (whole **genome**) genetic map. More

generally, determining the location of a locus (gene or genetic marker) on a chromosome.

Konstrukcija lokalizovane (oko gena), ili široko bazirane (ceo genom) genetičke mape. Više uopšteno, određivanje lokacije lokusa (gena ili genetičkog markera) na hromozomu.

mapping function A mathematical expression relating observed **recombination fraction** to **map distance**.

Matematički izraz koji se odnosi na viđenu rekombinacionu frakciju do distantne mape.

mariculture *See: aquaculture.*

Vidi: aquaculture.

marker An identifiable **DNA** sequence that is inherited in Mendelian fashion, and which facilitates the study of **inheritance** of a **trait** or a linked gene.

Identifikujuća DNK sekvenca koja se nasleđuje na Mendelovski način, i koja olakšava proučavanje nasleđivanja osobine ili vezanog gena.

marker gene A gene of known function or known location, used for **marker-assisted selection** or genetic studies.

Gen poznate funkcije ili poznate lokacije, korišćen za selekciju primenom markera, ili genetičkih proučavanja.

marker peptide A portion of **fusion protein** that facilitates its identification or purification.

Deo fuzionog proteina koji olakšava njegovu identifikaciju ili prečišćavanje.

marker-assisted introgression The use of **DNA** markers to increase the speed and efficiency of **introgression** of a new allele(s) or gene(s) into a breeding population. The markers will be closely linked to the **gene(s)** in question.

Korišćenje markera DNK za povećanje brzine i efikasnosti uvođenja novog

(ih) alela ili gena u populaciji. Markeri će biti usko, vezani sa genima koji su u pitanju.

marker-assisted selection (Abbreviation: MAS). The use of **DNA** markers to improve response to selection in a population. The markers will be closely linked to one or more target loci, which may often be **quantitative trait loci**.

(Skraćenica: MAS) Korišćenje markera DNK za poboljšanje reagovanja na selekciju u nekoj populaciji. Markeri će biti usko povezani za jedan ili više ciljnih lokusa, koji često mogu biti lokusi za kvantitativne osobine.

MAS Abbreviation for **marker-assisted selection**.

Skraćenica za marker-assisted selection. **mass selection** As practised in plant and animal breeding, the selection of a number of individuals, on the basis of their individual **phenotypes**, to interbreed to form the next generation.

Kako je praktikovana u gajenju bilja i životinja, selekcija broja individua, na bazi njihovih individualnih fenotipova, da bi se parili unutar zatvorene populacije radi nastanka sledeće generacije.

maternal effect An effect attributable to a genetic contribution of the female parent of the individual being evaluated.

Efekt, koji se pripisuje genetičkom doprinosu ženskog roditelja individue koja se ocenjuje.

maternal inheritance Inheritance controlled by non-nuclear genes (e.g. **mitochondria**, **chloroplast**) that are transmitted only through the female line.

Nasledjivanje, kontrolisano od nenuklearnih gena (na pr. mitohondrije, hlo-

roplasta), koji se prenose samo kroz žensku liniju.

matric potential A **water potential** component, always of negative value, resulting from the presence of solid (often finely divided) surfaces; primarily responsible for water uptake by a dry **seed** prior to germination.

Komponenta vodnog potencijala, uvek sa negativnom vrednosti, nastala od prisustva čvrstih (često fino podeljenih) površina; prvenstveno odgovorna za upijanje suvog semena pre klijanja.

maturation The formation of gametes or spores.

Formiranje gameta ili spora.

MCS Abbreviation for **multiple cloning site**. *See: polylinker*.

Skraćenica za multiple cloning site. *Vidi: polylinker*.

MDA Abbreviation for multiple drop array. *See: microdroplet array*.

Skraćenica za multiple drop array. *Vidi: microdroplet array*.

mean In statistics, the arithmetic average; the sum of all measurements or values in a sample divided by the sample size.

U statistici, aritmetička sredina; suma svih merenja ili vrednosti u uzroku podeljena sa veličinom uzorka.

media *See: culture medium; medium*. *Vidi: culture medium; medium*.

median In a set of measurements, the central value above and below which there are an equal number of measurements.

U nizu merenja, centralna vrednost iznad i ispod koje je jednak broj merenja.

medium (pl.: media) 1. In plant tissue culture, a term for the liquid or solid

formulation upon which plant cells, tissues or organs develop. *See:* **culture medium**. 2. In general terms, a **substrate** for plant growth, such as nutrient solution, soil, sand, etc., e.g. potting medium.

1. U kulturi tkiva biljaka, izraz za tečnu ili suhu formulaciju na kojoj se razvijaju biljne ćelije, tkiva ili organi. *Vidi:* culture medium. 2. U opštim izrazima, supstrat za rast biljke, kao što je hranljivi rastvor, zemljište, pesak itd., na pr. medijum za presađivanje u posude.

medium formulation In tissue culture, the particular constituents for the culture medium, commonly comprising macro- and micro-elements, **vitamins**, plant **hormones**, and a **carbohydrate** source. Some formulations are very specific to the kind of **explant** or plant species that can be maintained; some are very general.

- U kulturi tkiva, posebni sastojci za medijum kulture, obično koji sadrži makro- i mikroelemente, vitamine, biljne hormone i izvor ugljenih hidrata. Neke recepture su veoma specifične u odnosu na vrstu i eksponat biljne vrste, koji može da se održava; neke su vrlo opšte.

mega yeast artificial chromosome A **yeast artificial chromosome** (YAC) which can carry particularly large inserts (up to 1Mbp) – standard YACs typically carry inserts of up to 500kbp.

- Veštački hromozom kvasca (YAC) koji može da nosi posebno velike inserte (do 1 Mbp) – standardni YAC-ovi obično nose inserte od do 500 kbp.

megabase (Abbreviation: Mb). A length of **DNA** consisting of 10^6 **bases**.

- (Skracenicica: Mb) Dužina DNK koja se sastoji od 10^6 baza.

megabase cloning The **cloning** of large **DNA** fragments of the order of 1Mb. Kloniranje velikih fragmenata DNK, veličine od 1Mb.

megaDalton (Abbreviation: MDa). One megaDalton is equal to 10^6 **Dalton**. (Skracenicica: Mda) Jedan megaDalton je jednak 10^6 Daltona.

megagametophyte The female gametophyte; the plant that develops from a **megaspore**.

- Ženski gametofit; biljka koja se razvija iz megaspore.

megaspore The female **gametophyte** in heterosporous plants. *Synonym:* **macrospore**.

- Ženski gametofit u heterosporovih biljaka. *Sinonim:* macrospore.

meiosis The two-stage process in sexual reproduction by which the **chromosome** number is reduced from the **somatic** to the **haploid** number. The first division, in which **homologous** chromosomes pair and exchange genetic material, is followed by amitotic division. The nucleus divides twice, but the chromosomes only once, generating haploid nuclei, which develop into the **gametes** (**egg** and **sperm** in animals; **egg** and **s** in plants).

- Dvostadijumski proces u seksualnoj reprodukciji putem kojeg se broj hromozoma smanjuje od somatskog (diploidnog) do haploidnog broja. Prva podela, u kojoj se homologni hromozomi pare i razmenjuju genetički materijal, praćena je amitotičkom deobom. Nukleus se deli dva puta, ali hromozomi samo jednom, dajući haploidne nukleuse, koji se razvijaju u gamete (jaja i sperm u životinja; jaja i s u biljaka).

meiotic analysis The use of patterns of **chromosome pairing** at meiotic **prophase** and **metaphase** to detect

relationships between chromosomes, from which can be deduced the relationship between the parents of the organism studied..

Korišćenje parenja hromozoma u profazi i metafazi mejoze, da se otkrije odnosi između hromozoma, od kojih se može izvesti odnos između roditelja organizma koji se proučava.

meiotic drive Any mechanism that causes a particular **allele** or **chromosome** to be over-represented in a **population** of gametes.

Bilo koji mehanizam koji izaziva da poseban alel ili hromozom bude previše predstavljen u populaciji gameta.

meiotic product *See: gamete.*

Vidi: gamete.

melanin Dark pigment, produced by specialized epidermal cells called melanocytes.

Tamni pigment, proizveden od specijalizovanih epidermalnih ćelija, zvan melanocyte.

melting temperature (Abbreviation: T_m). The temperature at which a **double-stranded DNA** molecule denatures into separate single strands. T_m is determined by the length of the molecule and its base composition. **DNAs** rich in G:C base pairs have higher T_m than A:T rich **DNA**, because since three hydrogen bonds are formed between G and C, but only two between A and T.

(Skraćenica: T_m) Temperatura pri kojoj se molekul dvostruki lanac DNK, denaturišu u posebna dva lanca. T_m je određena dužinom molekula i njegovog baznog sastava. DNK kiseline, bogate u G:C baznim parovima imaju veću T_m nego A:T bogata DNK, pošto su tri vodonikove veze formirane između G i C, a samo dve između A i T.

membrane bioreactor A vessel in which cells are cultured on or behind a permeable membrane, which allows the diffusion of nutrients to the cells, but retains the cells themselves. A variation is the hollow-fibre reactor.

Posuda u kojoj se ćelije kultiviraju na, ili iza propustljive membrane, koja dopušta difuziju hranljivih materija u ćelije, ali zadržava same ćelije. Varijacija je reaktor šupljih vlakana.

memory cell Long-lived **B cells** and **T cells** that mediate rapid secondary immune responses to a previously encountered **antigen**.

Dugovečne B i T ćelije, koje djeluju brzim sekundarnim imunoreagovanjima na prethodno sukobljeni antigen.

Mendel's Laws Two laws summarizing Gregor Mendel's theory of inheritance. The Law of **Segregation** states that each hereditary characteristic is controlled by two 'factors' (now called **alleles**), which segregate and pass into separate germ cells. The Law of Independent **Assortment** states that pairs of 'factors' segregate independently of each other when germ cells are formed. *See: independent assortment; linkage.*

Dva zakona, sumirajući teoriju nasleđa Gregora Mendela. Zakon o razdvajanju kaže, da je svaka nasledna osobina kontrolisana sa dva „faktora“ (sada nazvanih alelima), koji se razdvajaju i odlaze u posebne klicine ćelije. Zakon nezavisnog razdvajanja kaže da se parovi „faktora“ razdvajaju nezavisno jedan od drugog, kada se formiraju klicine ćelije. *Vidi: independent assortment, linkage.*

Mendelian population A natural, interbreeding unit of sexually reprodu-

cing plants or animals sharing a common **gene pool**.

Prirodna jedinica, gajena unutar uske populacije seksualno reprodukujućih biljaka ili životinja, deleći zajednički gen pul.

Mendelian segregation Occurs when **alleles** are inherited according to **Mendel's Laws**.

Nastaje kada se aleli nasleđuju prema Mendelovim zakonima.

mericlinal Refers to a **chimera** with tissue of one **genotype** partly surrounded by that of another genotype.

Odnosi se na himeru, sa tkivom jednog genotipa, delom okružemog tkivom od drugog genotipa.

mericlone A propagation method using shoot tips in culture to proliferate multiple buds, which can then be separated, rooted and planted out.

Metod razmnožavanja, korišćenjem vrhova izdanaka u kulturi da bi došlo do proliferacije višestrukih pupoljaka, koji tada mogu da se razdvoje, ukorene i presade.

meristele The branch of a **stele** supplying the leaf.

Grana vaskularnog cilindra stabla koja snabdeva list.

meristem Undifferentiated but determined plant tissue, in which the cells are capable of active division and **differentiation** into specialized tissues such as shoots and roots.

Nerazvijeno, ali određeno biljno tkivo, u kojem su ćelije sposobne za aktivnu deobu i diferencijaciju u specijalizovana tkiva kao što su izdanci i koreni.

meristem culture A tissue culture containing meristematic dome tissue without adjacent leaf **primordia** or stem tissue. The term may also imply the culture of meristemoid regions

of plants, or meristematic growth in culture.

Kultura tkiva, koja sadrži tkivo meristemske kupole, bez susednih lisnih primordija ili tkiva stabla. Izraz takođe može da znači kulturu meristemoidnih regiona biljaka, ili meristemskog rasta u kulturi.

meristem tip An **explant** comprising the **meristem** (meristematic dome) and usually one pair of leaf **primordia**. Also refers to explants originating from **apical meristem** tip or lateral or axillary meristem tip.

Ekspozat koji se sastoji od meristema (meristemske kupole) i obično jednog para lisnih primordija. Takođe se odnosi na ekspozate koji potiču od vršnog meristemskog, ili bočnog ili sporednog meristemskog vrha.

meristem tip culture Cultures derived from **meristem** tip **explants**. Used widely to achieve **virus** elimination and axillary shoot proliferation, less commonly for callus production.

Kulture nastale od kalema meristemskog vrha. Korišćene široko, da se postigne eliminacija virusa i proliferacija sporednog izdanaka, manje uobičajeno za proizvodnju kalusa.

meristemoid A localized group of **callus** cells, characterized by their accumulation of starch, **RNA** and **protein**, and giving rise to **adventitious** shoots or roots.

Lokalizovana grupa ćelija kalusa, koja se karakteriše nakupljanjem skroba, RNK i proteina, i dajući porast adventivnim izdancima ili korenovima.

merozygote Partial **zygote** produced by a process of partial genetic exchange, such as **transformation** in bacteria.

Parcijalan zigot, nastao procesom parcijalne genetičke promene, kao što je transformacija u bakterija.

mesh bioreactor *See: filter bioreactor.*
Vidi: filter bioreactor.

mesoderm The middle germ layer that forms in the early animal **embryo** and gives rise to parts such as bone and connective tissue.

Srednji sloj klice, koji se formira u ranom animalnom embrionu i daje podsticaj delovima kao što su kost i vezivno tkivo.

mesophile A micro-organism able to grow in the temperature range 20–50 °C; optimal growth often occurs at about 37 °C. *See: psychrophile, thermophile.*

Mikroorganizam, sposoban da raste u rasponu temperatura 20–50°C; optimalan rast se obično dešava na oko 37°C. *Vidi: psychrophile, thermophile.*

mesophyll Leaf parenchyma **tissue** found between epidermal layers.

Tkivo parenhima lista koje se nalazi između epidermalnih slojeva.

messenger RNA Abbreviation: **mRNA**.
Skraćenica: mRNK.

metabolic cell A cell that is not dividing. *See: metabolism*

Ćelija koja se ne deli. *Vidi: metabolism.*

metabolism The biochemical processes whereby nutritive material is converted to living matter, or aids in building living matter, or by which complex substances and food are broken down into simple substances.

Biohemijski procesi kojima se hranljive materije prevode u živu materiju, ili pomažu i izgradnji žive materije, ili pri čemu se kompleksne supstance i hrana razlažu na jednostavne supstance.

metabolite A low-molecular-weight biological compound that is usually synthesized enzymically.

Biološko jedinjenje nisko-molekularne težine koje se obično sintetizuje enzيماتski.

metabolomics The large-scale study of the full complement of **secondary metabolites** produced by a given species in all its tissues and growth stages.

Proučavanje velikog obima uzajamnih sekundarnih metabolita, proizvedenih od datih vrsta u svim tkivima i stadijumima rasta.

metacentric chromosome A chromosome in which the **centromere** is located in the middle and, consequently, the chromosome arms are of about equal length.

Hromozom, u kojem je centromera locirana u sredini i kraci hromozoma su približno jednake dužine.

metal affinity chromatography A chromatographic technique, in which a compound interacting with a specific metal ion can be captured by immobilizing the relevant ion on the column's solid matrix.

Hromatografska tehnika, u kojoj jedinjenje u interakciji sa specifičnim metalnim jonom može da bude imobilisan relevantnim jonom na čvrstom matriksu.

metalloenzyme An enzyme which requires the presence of a metal in order to be catalytically active.

Enzim koji zahteva prisustvo metala, da bi bio katalitički aktivan.

metallothionein A protective **protein** that binds heavy metals such as cadmium and lead.

Zaštitni protein koji vezuje teške metale, kao što su kadmijum i olovo.

metaphase Stage of **mitosis** or **meiosis** (following **prophase** and preceding **anaphase**) during which the **chromosomes**, or at least the **kinetochores**, lie in the central plane of the spindle. The stage of maximum chromosome condensation, at which

karyotypes are generally described. In the first division of meiosis, metaphase represents the stage at which **meiotic analysis** is generally performed.

Stadijum mitoze ili mejoze (posle profaze i pre anafaze) tokom koje se hromozomi, ili bar kinetohore, u centralnoj ravni vretena. Stadijum maksimalne kondenzacije hromozoma, pri kojem se kariotipovi, opšte uzev, opisuju. U prvoj mejotičkoj deobi, metafaza predstavlja stadijum pri kojem se, obavlja analiza mejoze.

metastasis The spread of cancer cells to previously unaffected organs.

Širenje ćelija raka na predhodno nenapadnute organe.

methylation The addition of a methyl group (-CH₃) to a molecule, most commonly in the context of **DNA** where **cytosine** and, less often, **adenine** residues can be modified in this way, sometimes resulting in a change in **transcription**. *See: epigenetic variation.*

Dodavanje metilne grupe (-CH₃) molekulu, najčešće u kontekstu DNK, gde rezidue citozina, i ređe adenina mogu biti izmenjene dovodeći do promene u transkripciji. *Vidi: epigenetic variation.*

MHC Abbreviation for **major histocompatibility complex**.

Skraćenica za major histocompatibility complex.

Michaelis constant *See: K_m .*

Vidi: K_m .

microalgal culture Culture in **bioreactors** of microalgae (including seaweeds).

Kultura mikroalgi u bioreaktorima (uključujući morske alge).

micro-array A large set of cloned **DNA** molecules immobilized as a compact

and orderly pattern of sub-microlitre spots onto a solid matrix (typically a glass slide). Used to analyse patterns of gene expression, presence of markers, or **nucleotide** sequence. The major advantage of micro-arrays is the extent to which the process of genotyping can be automated, thereby enabling large numbers of individuals to be simultaneously genotyped at many loci. A similar approach may be used with other immobilized components for other purposes. *Synonym: chip or DNA chip. See: somatic cell hybrid panel, radiation hybrid cell panel*

Niz kloniranih molekula DNK, imobiliziranih kao kompaktni redovan obrazac podmikrolitarskih tačaka na čvrstoj matrici (tipično stakleno klizište). Koriisti za analizu ispoljavanja gena, prisustvo markera, ili sekvence nukleotida. Glavna prednost mikronizova je obim do kojeg proces genotipovanja može da bude automatizovan, time omogućavajući velikom broju individua da bude simultano genotipovan na mnogim lokusima. Sličan pristup može se koristiti sa drugim imobilizovanim komponentama u druge svrhe. *Sinonim: chip ili DNK chip. Vidi: somatic cell hybrid panel, radiation hybrid cell panel.*

microbe *See: micro-organism.*

Vidi: micro-organism.

microbial mat Layered microbial populations, usually growing on the surface of a **solid medium** or on a membrane.

Složene mikrobne populacije, koje obično rastu na površini čvrstog medijuma, ili na membrani.

microbody A frequently spherical cellular organelle, bound by a single

membrane, 20–60 nm in diameter, and containing a variety of enzymes. Sferna ćelijska organela, vezana membranom, prečnika 20-60 nm i sadrži razne enzime.

micro-carrier Small particles used as a support material for (particularly mammalian) cells, which are too fragile to be pumped and stirred as bacterial cells are in a large-scale culture. Mali delići, korišćeni kao potporni materijal za (posebno u sisara) ćelije, koje su suviše osjetljive da se kreću kao bakterijske ćelije u velikoj kulturi.

microdroplet array (Abbreviation: MDA). A technique used to simultaneously evaluate large numbers of media modifications, employing small quantities of medium into which are placed small numbers of cells or **protoplasts**. These form a **monolayer** at the droplet meniscus and can easily be examined. *Synonyms*: multiple drop array, hanging droplet technique

(Skracjenica: MDA) Tehnika, koja se koristi da simultano oceni veliki broj modifikacija maloj količini medijuma u koje se stavljaju mali brojevi ćelija ili protoplasta. One formiraju monosloj na meniskusu kapljice, i mogu lako da se ispitaju. *Sinonimi*: multiple drop array, hanging droplet technique.

micro-element A nutritional element required in very small quantities.

Hranljivi element, potreban u vrlo malim količinama.

micro-encapsulation A process of enclosing a substance in very small sealed capsules from which material is released by heat, solution or other means.

Proces zatvaranja supstance u vrlo male zatvorene kapsule, iz kojih se materijal

ispušta toplotom, rastvorom ili na drugi način.

micro-environment A small-scale environment in which the conditions (temperature, humidity, **pH** etc.) are distinct; typically used in connection with the surroundings of a living object.

Mikro spoljna sredina u kojoj su uslovi (temperatura, vlažnost, pH itd.) striktni; obično korišćena u vezi sa okruženjima živog objekta.

microfibril Microscopic fibres visible only at the high magnification of the electron microscope.

Mikroskopska vlakna, vidljiva jedino pri velikom uveličavanju elektronskog mikroskopa.

microgametophyte *See*: pollen.

Vidi: pollen.

micrograft *See*: shoot-tip graft.

Vidi: shoot-tip graft.

micro-injection The introduction of small amounts of (usually) liquid material (**DNA**, **RNA**, **enzymes**, cytotoxic agents) into a defined **tissue** or single cell with a fine, microscopic needle.

Uvođenje malih količina (obično) tečnih materija (DNK, RNK, enzima, citotoksičnih sredstava) u određeno tkivo ili pojedinu ćeliju putem fine, mikroskopske igle.

micro-isolating system Mechanical separation of single cells or protoplasts thus allowing them to proliferate individually.

Mehaničko odvajanje pojedinih ćelija ili protoplasta, dozvoljavajući im tako da se individualno razmnožavaju.

micronucleus A **nucleus**, distinct from and smaller than the main **nucleus**, but lying within the same cell. They usually arise following abnormal meiotic or mitotic **telophases**, where in-

dividual **chromosomes** or chromosome fragments do not reach the pole.

Nukleus, poseban, i manji nego glavni nukleus, koji se nalazi u okviru iste ćelije. Obično nastaju nakon abnormalne mejotičke ili mitotičke telofaze, gde individualni hromozomi ili hromozomski fragmenti ne idu na polove.

micronutrient An essential element normally required in **cell culture** at concentrations under 0.5 millimole/litre.

Bitan element, normalno potreban u kulturi ćelija pri koncentracijama ispod 0,5 milimola/litru.

micro-organism Organism visible only under magnification.

Organizam, vidljiv samo pri povećanju.

microplast Vesicle produced by subdivision and fragmentation of protoplasts or thin-walled cells.

Kesica, proizvedena pododelom ili fragmentacijom protoplasta, ili ćelija tannih zidova.

microprojectile bombardment *See: biolistics.*

Vidi: biolistics.

micropropagation Miniaturized *in vitro* multiplication and/or **regeneration** of plant material under **aseptic** and controlled environmental conditions.

Minijaturisano *in vitro* umnožavanje i/ili regeneracija biljnog materijala pod aseptičnim i kontrolisanim uslovima spoljne sredine.

micropyle 1. A small opening in the surface of a plant **ovule** through which the **pollen** tube passes prior to fertilization. 2. A small pore in some animal cells or tissues.

1. Mali otvor na površini neoplođene jajne ćelije biljaka, kroz koji polenova cevčica prolazi pre oplođenja. 2. Ma-

la pora u nekim životinjskim ćelijama ili tkivima.

microsatellite A segment of **DNA** characterized by a variable number of copies (typically 5–50) of a sequence of around 5 or fewer bases (called a **repeat unit**). At any one locus (genomic site), there are usually several different „**alleles**“ in a population, each allele identifiable according to the number of repeat units. This existence of **multiple alleles** (high level of **polymorphism**) has enabled microsatellites to be developed as powerful markers in many different species. They are detected by the **polymerase chain reaction**..

Segment DNK, koji se karakteriše različitim brojem kopija (obično 5–50) sekvence od oko 5 ili manje baza (ponovljiva jedinica). Na bilo kojem lokusu (genomskom mestu) ima obično nekoliko „alela“ u populaciji, svaki alel identifikujući prema broju ponovljenih jedinica. To postojanje multiplih alela (visoki nivo polimorfizma) omogućilo je mikrosatelitima da se koriste kao moćni markeri u kod različitih vrsta. Otkrivaju se putem lančane reakcije polimeraze.

microspore The immature male **gametophyte** in **seed** plants; the **haploid** male cell that ripens into a **pollen** grain.

Nezreli muški gametofit u biljaka koje formiraju seme; haploidna muška ćelija koja sazreva u polenovom zrcu.

microtuber Miniature tuber, produced in **tissue culture**, which is readily regenerable into a normal tuberous plant.

Minijaturna krtola, proizvedena u kulturi tkiva, koja se lako regeneriše u normalnu krtolastu biljku.

microtubule Self-assembling components of the cytoskeleton. Microtubules are cylindrical **protein** polymers, interconnected by cross-bridging proteins, which structurally and dynamically organize functional activities in living cells. They form the **spindle** during **mitosis**.

Samoskupljajuće komponente citoskeleta. Mikrotubule su cilindrični proteinski polimeri, od proteina, koji strukturno i dinamički organizuju funkcionalne aktivnosti u živih ćelija. Oni formiraju deobno vreteno tokom mitoze.

middle lamella A thin exclusively plant membrane separating two adjacent **protoplasts** and remaining as a distinct cementing layer between adjacent **cell walls**.

Tanka ekskluzivna biljna membrana koja razdvaja dva susedna protoplasta, ostaje kao cementirajući sloj između susednih ćelijskih zidova.

mid-parent value The average of the phenotypic measure, with respect to a given trait, of the two parents used to generate the **population** being analysed.

Prosek mere fenotipa, sa gledišta date osobine, dva roditelja, korišćena da stvori populaciju koja se analizira.

mineralization The conversion of organic compounds into inorganic (mineral) ones. For example, the conversion of **ethanol** into carbon dioxide and water.

Konverzija organskih jedinjenja u neorganska (mineralna). Na primer, konverzija etanola u ugljen dioksid i vodu.

minimum effective cell density The cell density below which reproducible cell growth fails. The minimum density is determined by both the so-

urce function of the **tissue (species, explant, cell line)** and by the culture phase of the initial **inoculum**.

Ćelijska gustina ispod koje izostaje reprodukujući rast ćelije. Minimalna gustina je određena, kako izvornom funkcijom tkiva (vrsta, kalem, ćelijska linija) tako i fazom kulture početnog inokuluma.

minimum inoculum size The critical volume of **inoculum** required to initiate culture growth, due to the diffusive loss of cell materials into the medium. The subsequent culture growth cycle is dependent on the inoculum size, which is determined by the volume of **medium** and size of the culture vessel.

Kritična veličina infekcionog materija koja je potrebna da započne rast kulture, usled difuzivnog gubitka ćelijskih materijala u medijumu. Potonji ciklus rasta kulture je zavisao od veličine inokuluma, koji je određen zapreminom medijuma i veličine posude u kojoj se gaji kultura.

mini-prep A small-scale preparation of **plasmid** or **phage DNA**. Used to purify cloned **DNA** from the **DNA** of the vector.

Mali obim plazmida ili DNK faga. Korišćen da prečisti cloniranu DNK od DNK vektora.

minisatellite A form of **variable number tandem repeats** in which the **repeat unit** size ranges from 10–100 bp. Used for **DNA fingerprinting** following **Southern hybridization**. Generally concentrated at the ends of chromosomes and in regions with a high frequency of **recombination**.

Oblik varijabilnog broja tandem ponavljanja u kojem se veličina jedinice ponavljanja kreće od 10-100 bp.

„Fingerprint“ korišćen za DNK tehniku otiska prsta posle southern hibridizacije. Koncentrisan na krajevima hromozoma i u regionima sa visokom frekvencijom rekombinacija.

minituber Small tubers (5–15 mm in diameter) formed on shoot cultures or cuttings of tuber-forming crops, such as potato.

Male krtole (prečnika 5–15 mm), formirane na kulturama izdanka ili odrešcima biljaka koje formiraju krtole, kao što je krompir.

mismatch The occurrence of a non-complementary pairs of bases in a **double helix** of DNA, e.g. A:C, G:T. Pojava nekomplementarnih parova baza u dvostrukoj spirali DNK, na pr. A:C, G:T.

mismatch repair A DNA repair process that corrects mismatched base pairs.

Proces reparacije DNK koji koriguje nekomplementarne bazne parove.

missense mutation A mutation that changes a **codon** for one **amino acid** into a codon specifying another amino acid.

Mutacija koja menja kodon za jednu aminokiselinu u kodon koji označava drugu aminokiselinu.

mist propagation Application of fine droplets of water to maintain humidity around **plantlets** or cuttings, which have not yet developed effective roots.

Primena finih kapljica vode za održavanje vlažnosti oko biljčica ili odsečaka, koji još nisu razvili funkcionalne korenove.

mite Free-living and parasitic arachnids. Infestation of plant crops reduces yield through the destruction of leaf tissue. Also can infest plant **tissue**

culture work areas, contaminating culture vessels, thereby spreading bacteria and fungi.

Slobodno živeći ili parazitski arahnidi. Napad na biljke smanjuje prinose usled uništavanja tkiva listova. Takođe, mogu napasti radne oblasti kulture tkiva biljaka, kontaminirajući posude kulture, i time šireći bakterije ili gljivice.

mitochondrial DNA (Abbreviation: mtDNA). A circular DNA found in mitochondria. In mammals, mtDNA makes up less than 1% of the total DNA, but in plants the amount is variable. It encodes **rRNA** and **tRNA** and some mitochondrial **proteins** (up to 30 in animals).

(Skracenicica: mtDNK) Kružna DNK, nađena u mitohondrijama. U sisara, mtDNK čini manje od 1% od ukupnih DNK, ali u biljaka količina je varijabilna. Ona enkodira rRNK i tRNK i neke proteine mitohondrija (do 30 u životinja).

mitochondrion (pl.: mitochondria) Organelle possessing its own DNA which appear in all eukaryotic cells (and never in prokaryotic cells) and produce **adenosine triphosphate** as an energy source for the cell via oxidative phosphorylation. Mitochondria contain many enzymes of the respiratory cycle, although most of these **proteins** are nuclear encoded.

Organela, koja poseduje sopstvenu DNK, koja se pojavljuje u svim eukariotskim ćelijama (a nikad u prokariotskim ćelijama), i proizvodi adenozin trifosfat, kao izvor energije za ćeliju, preko oksidativne fosforilacije. Mitohondrije sadrže mnoge enzime respiratornog ciklusa, iako je većina od tih proteina nuklearno enkodirana.

mitogen A substance that can cause cells to initiate mitosis.

Supstanca, koja može izazvati da ćelije započnu mitozu.

mitosis Splitting of replicated chromosomes, and the division of the **cytoplasm** to produce two genetically identical daughter cells. On the basis of the appearance of the **chromosomes**, it is separated into five stages: **interphase**, **prophase**, **metaphase**, **anaphase** and **telophase**.

Deoba repliciranih hromozoma, i podela citoplazme, da se proizvodu dve genetički identične kćeri ćelije, ćerke. Na bazi izgleda hromozoma, se sastoji u od pet stadijuma: interfaza, profaza, metafaza, anafaza i telofaza.

mixed bud A bud containing both rudimentary leaves and flowers.

Pupoljak, koji sadrži oboje, rudimentarne listove i cvetove.

mixoploid Groups of cells with variable (a mix of **euploid**, **aneuploid**, **polyploid**) **chromosome** numbers.

Grupe ćelija sa varijabilnim (euploidi, aneuploidi, poliploidi) brojevima hromozoma.

mobilization 1. The transfer between bacteria of a non-conjugative **plasmid** by a conjugative plasmid. 2. The transfer between bacteria of chromosomal genes by a conjugative plasmid.

1. Prenos između bakterija nespojivog plazmida putem spojivog plazmida.
2. Transfer između bakterija hromozomskih gena putem spojivog plazmida.

mobilizing function The genes on a **plasmid** that give it the ability to facilitate the transfer of either a non-conjugative or a conjugative plasmid from one bacterium to another.

Geni plazmida koji mu daju sposobnost da olakša transfer, bilo nespojivog, ili spojivog plazmida, od jedne do druge bakterije.

mode In a frequency distribution, the class having the greatest frequency.

U distribuciji učestalosti, klasa koja ima najveću učestalost.

model 1. A mathematical description of a biological phenomenon. 2. A simplified biological system used to test hypotheses (e.g. *Arabidopsis thaliana* as a model plant).

1. Matematički opis biološkog fenomena.
2. Uprošćen biološki sistem, korišćen za testiranje hipoteza (na pr. *Arabidopsis thaliana*, kao model biljku).

modern biotechnology The application of: a. In vitro nucleic acid techniques, including recombinant deoxyribonucleic acid (DNA) and direct injection of nucleic acid into cells or organelles, or b. Fusion of cells beyond the taxonomic family, that overcome natural physiological reproductive or recombination barriers and that are not techniques used in traditional breeding and selection (Convention on Biological Diversity).

Primena: a. *In vitro* tehnike nukleinske kiseline, uključujući i rekombinantnu deoksiribonukleinsku kiselinu (DNK), i direktno injektiranje nukleinske kiseline u ćelije ili organele, ili b. Fuzija ćelija taksonomske familije, koja prevazilazi prirodne fiziološke reproduktivne i rekombinacione barijere, a da to nisu tehnike korišćene u tradicionalnom oplemenjivanju i selekciji (Konvencija o biološkom diverzitetu).

modification Enzymatic attachment of one or more chemical groups to a **macromolecule**, affecting its biologi-

cal activity or properties. *See:* **methylation, glycosylation, phosphorylation.**

Enzimatsko dodavanje jedne ili više hemijskih grupa makromolekulu, koji utiču na biološku aktivnost ili osobine. *Vidi:* methylation, glycosylation, phosphorylation.

modifying gene A gene that affects the expression of some other gene.

Gen koji utiče na ispoljavanje nekog drugog gena.

MOET Abbreviation for **multiple ovulation and embryo transfer.**

Skraćenica za multiplu ovulaciju i embrio transfer.

molecular biology The study of living processes at the molecular level.

Proučavanje životnih procesa na molekularnom nivou.

molecular chaperone *See:* **chaperone.** *Vidi:* chaperone.

molecular cloning The biological **amplification** of a **DNA** sequence via the mitotic division of a host cell into which it has been transformed or transfected. *See:* **cloning.**

Biološko umnožavanje sekvence DNK mitototskom deobom ćelije domaćina, u koju je ona bila transformisana ili preneti. *Vidi:* cloning.

molecular genetics The study of the expression, regulation and inheritance of genes at the level of **DNA** and its **transcription** products.

Proučavanje ekspresije, regulisanja i nasleđivanja gena na nivou DNK i njenih transkripcionih produkata.

molecular marker A genetic marker which is assayed at the **DNA** level.

Genetički marker koji je ispitan na nivou DNK.

molecular pharming *See:* **biopharming.**

Vidi: biopharming.

molecule The stable union of two or more atoms; some organic molecules contain very large numbers of atoms. Stabilno sjedinjenje dva ili više atoma; neki organski molekuli sadrže vrlo veliki broj atoma.

monoclonal antibody (Abbreviation: mAb). An **antibody**, produced by a **hybridoma**, directed against a single **antigenic determinant** of an antigen. (Skraćenica: mAb) Antitelo, proizvedeno od hibridoma, usmereno protiv jedne antigene determinante nekog antigena.

monocot Abbreviation for **monocotyledon.**

Skraćenica za monocotyledon.

monocotyledon (Abbreviation: monocot). A flowering plant whose **embryo** has one **cotyledon**. Examples are cereals (corn, wheat, rice etc.), banana, and lily.

(Skraćenica: monocot) Cvetnica čiji embriion ima jedan kotiledon. Primeri su cerealije (kukuruz, pšenica, pirinač itd.) banana i ljiljan.

monoculture The agricultural practice of cultivating a single crop over a whole farm or area.

Poljoprivredna praksa gajenja jednog useva na celoj farmi ili oblasti.

monoecious A plant species that has separate male and female flowers on the same plant (e.g. maize).

Biljna vrsta koja ima posebno muške i ženske cvetove na istoj biljci (na pr. kukuruz).

monogastric animal A non-ruminant animal with a simple stomach.

Životinja nepreživar, sa jednostavnim stomakom.

monogenic Trait controlled by a single gene. *Opposite:* multigenic, **polygenic.**

Osobina kontrolisana jednim genom.
Suprotno: multigenic, polygenic.

monohybrid Heterozygous with respect to one gene.

U vezi sa jednim genom.

monohybrid cross A cross between parents differing in only one trait or in which only one **trait** is being considered.

Hibrid između roditelja koji se razlikuju samo u jednoj osobini, ili kod kojih se razmatra samo jedna osobina.

monokine Generic name for **proteins** that are released by monocytes to act on other cells involved in the immune response. A sub-class of **cytokines**.

Zajedničko ime za proteine, koje otpuštaju monociti da bi delovali na druge ćelije, uključene u imunoreagovanje. Podklasa citokina.

monolayer A single layer of cells growing on a surface.

Jedan sloj ćelija koje rastu na površini.

monolignols The building blocks of **lignin** that undergo polymerization.

Građevni blokovi lignina koji se polimerizaciju.

monomer A small molecule (in the biological sciences typically individual amino acids, nucleotides or monosaccharides) that can combine with identical or similar others to form a larger, more complex molecule called a **polymer**.

Mali molekul (u biološkim naukama individualne aminokiseline, nukleotidi ili monosaharidi) koji se mogu kombinovati sa identičnim, ili drugim sličnim, da formiraju veći, kompleksniji molekul zvan polimer.

monomorphic Absence of variation for a **marker, gene, chromosome**, or genetically determined **trait** in a **population**.

Odsustvo varijacije za marker, gen, hromozom, ili genetički određenu osobinu u populaciji.

monophyletic A group of organisms that are assumed to have originated from the same ancestor.

Grupa organizama koji potiču od istog pretka.

monoploid *See*: **haploid**.

Vidi: haploid.

monosaccharide A simple sugar (e.g. glucose, fructose). *See*: **disaccharide, polysaccharide**.

Jednostavni šećer (na pr. glukoza, fruktoza). *Vidi*: disaccharide, polysaccharide.

monosomic A form of aneuploidy in which a **diploid** organism lacks one member of a **homologous chromosome** pair.

Oblik aneuploidije u kojem diploidni organizam kome nedostaje jedan od homolognog hromozomskog para.

mono-unsaturates Oils containing mono-unsaturated fatty acids (i.e. where one $-CH_2-CH_2-$ group in the hydrocarbon chain is replaced by $-CH=CH-$).

Ulja koja sadrže mono-nezasićene masne kiseline (t.j. gde je jedna $-CH_2-CH_2-$ grupa u ugljovodonikovom lancu zamenjena sa $-CH=CH-$).

monozygotic twin One of a pair of twins derived from a single fertilized egg. *Synonym*: **identical twin**.

Jedan od para blizanaca, nastao od jedne oplodene jajne ćelije. *Sinonim*: identični blizanci.

morphogen A substance that stimulates the **development** of form or structure in an organism.

Supstanca koja stimuliše razviće oblika i strukture u nekom organizmu.

morphogenesis The development, through growth and differentiation, of form and structure in an organism.

Razviće, kroz rast i diferencijaciju forme i strukture u organizmu.

morphogenic response The effect on the developmental history of a plant or its parts exposed to a given set of growth conditions or to a change in the environment.

Efekt na razviće biljke ili njenih delova, izloženih datim uslovima rasta, ili promeni spoljne sredine.

morphology Shape, form, external structure or arrangement.

Oblik, forma, spoljna struktura ili raspored.

mosaic An organism or part of an organism that is composed of cells with different origin.

Organizam, ili deo organizma, sastavljen od ćelija različitog porekla.

mother plant *See: donor plant.*

Vidi: donor plant.

motif A conserved sequence of nucleotides or amino acids that can be associated with some function of, respectively, a length of DNA or a protein.

Konzervisana sekvenca nukleotida ili aminokiselina koja može da bude povezana sa nekom funkcijom, dužinom DNK, odnosno proteina.

movable genetic element *See: transposon.*

Vidi: transposon.

mRNA Abbreviation for messenger RNA. The RNA molecule resulting from transcription of a protein-encoding gene, following any splicing (1). The information encoded in the mRNA molecule is translated into a gene product by the ribosomes.

Skraćenica za messenger RNK. Molekul RNK nastao od transkripcije protein-

ski enkodiranog gena, sledeći bilo kakvo cepanje (1). Informacija, enkodirana u mRNA molekul, je sintetisana u genski produkt putem ribozoma.

MRU Abbreviation for minimum recognition units. *See: dAb.*

Skraćenica za minimum recognition units. *Vidi: dAb.*

mtDNA Abbreviation for mitochondrial DNA.

Skraćenica za mitohondralnu DNK.

multi-copy Describing plasmids which replicate to produce many copies per host bacterial cell.

Opisuje plazmide koji se repliciraju, kako bi proizveli mnogo kopija po bakterijskoj ćeliji domaćina.

multigene family A set of genes (not necessarily mapping to the same genomic location) that are related in nucleotide sequence and/or that produce polypeptides with similar amino acid sequences. Sequence similarity does not always result in functional similarity.

Niz gena (ne obavezno mapirajućih do iste genomske lokacije) koji su povezani u sekvenci nukleotida i/ili da proizvode peptide sa sličnim sekvencama aminokiselina. Sličnost sekvenci ne dovodi uvek do funkcionalne sličnosti.

multigenic Trait controlled by several genes, as opposed to monogenic. *Synonym: polygenic.*

Osobina kontrolisana sa više gena, nasuprot monogeničnoj. *Sinonim: polygenic.*

multi-locus probe A DNA sequence that hybridizes to a number of different genomic sites.

Sekvenca DNK koja hibridizuje sa različitim brojem genomskih mesta.

multimer A **protein** made up of more than one **polypeptide** chain.

Protein, sačinjen od više od jednog polipeptidnog lanca.

multiple alleles The existence of more than two **alleles** at a locus in a population.

Postojanje više od dva alela na lokusu u populaciji.

multiple arbitrary amplicon profiling A collective term for a number of related **polymerase chain reaction** techniques, all of which use arbitrary primers, and which generate a number of distinct **amplification** products. *See: random amplified polymorphic DNA.*

Zajednički izraz za jedan broj srodnih tehnika lančane reakcije polimeraze, koji koriste proizvoljne primere i koji daju jedan broj striktno umnožavajućih proizvoda. *Vidi: random amplified polymorphic DNK.*

multiple cloning site (Abbreviation: MCS). *See: polylinker.*

(Skraćenica: MCS) *Vidi: polylinker.*

multiple drop array (Abbreviation: MDA). *See: microdroplet array.*

(Skraćenica: MDA) *Vidi: microdroplet array.*

multiple ovulation and embryo transfer (Abbreviation: MOET). A technology by which a single female that usually produces only one or two **offspring** can produce a litter of offspring. Involves stimulation of a female to shed large numbers of ova; natural mating or artificial insemination; collection of fertilized ova (either surgically, or non-surgically through the cervix); and transfer (usually non-surgical, through the cervix) of these fertilized ova to recipient females.

(Skraćenica: MOET) Tehnologija kojom jedna ženka, koja obično ima samo jednog ili dva potomka, može da proizvede leglo potomaka. Uključuje stimulaciju ženke da stvori velike broj jajnih ćelija; prirodnim parenjem ili veštačkim osemenjavanjem; sakupljanje oplođenih jaja (bilo operativno ili neoperativno kroz cerviks); i prenos (obično neoperativno, kroz cerviks) tih oplođenih jajnih ćelija u ženke receptivente.

multiplex 1. The simultaneous **amplification** of a number of **amplicons** in a single **polymerase chain reaction**, achieved by including more than one set of **primers** in the reaction mix. 2. The inheritance pattern of alleles in **autopolyploids**. *See: quadruplex.*

1. Simultano umnožavanje jednog broja amplicona u jednoj lančanoj reakciji polimeraze, postignutoj uključivanjem više od jednog seta primera u reakcionu smešu. 2. Oblik nasleđivanja alela kod autopoliploida. *Vidi: quadruplex.*

multivalent vaccine A **vaccine** designed to elicit an **immune response** either to more than one **infectious agent** or to several different **antigenic determinants** of a single agent.

Vakcina, proizvedena da izvede imunoreagovanje, bilo za jedan infektivni agens, ili za nekoliko različitih antigenskih determinanata jednog agensa.

mutable gene A gene which has an unusually high rate of mutation.

Gen koji ima neuobičajeno visoku stopu mutacija.

mutagen An agent or process capable of inducing **mutations** (e.g. **irradiation**, **alkylating agents**).

Sredstvo ili proces, sposoban da izazove mutacije (na pr. zračenje, alkilirajuća sredstva).

mutagenesis Induction of heritable change(s) in the genetic constitution of a cell through alterations to its **DNA**.

Izazivanje naslednih promena u genetičkoj konstituciji ćelije promenom njenih DNK.

mutant An organism or an allele bearing a **mutation**. Usually applied when a characteristic change in **phenotype** can be recognized.

Bilo koji organizam ili alel koji nosi mutaciju. Obično primenjen kada se može prepoznati karakteristična promena fenotipa.

mutation Any change in the genome with respect to a defined **wild type**. Can occur at the level of **ploidy**, **karyotype**, or **nucleotide sequence**. Most of the latter mutations are silent (i.e. cannot be associated with any change in **phenotype**), either because the **DNA** sequence affected is in the non-coding part of the genome, or because the specific change does not alter the function of a coding sequence. *See:* **back mutation**, **single nucleotide polymorphism**.

Bilo kakva promena u genomu u vezi sa divljim tipom. Može se desiti na nivou ploidije, kariotipa ili sekvence nukleotida. Većina od poslednjih mutacija su tihe „silent“ (t.j. ne mogu da budu povezane sa bilo kakvom promenom u fenotipu), bilo pošto je promenjena sekvenca DNK u nekodira-

jućem delu genoma, ili pošto specifična promena ne menja funkciju kodirajuće sekvence. *Vidi:* back mutation, single nucleotide polymorphism.

mutation pressure A constant mutation rate that adds mutant genes to a population; repeated occurrences of mutations in a population.

Konstantan stepen mutacije koji dodaje mutantne gene u populaciju; ponovljena dešavanja mutacija u populaciji.

mutualism *See:* **symbiosis**.

Vidi: symbiosis.

mycelium (pl.: mycelia) Threadlike filament making up the vegetative portion of **thallus** fungi.

Končasti filament koji čini vegetativni deo talusa gljiva.

mycoprotein Fungal **protein**.

Gljivični protein.

mycorrhiza Fungi that form an association with, or have a symbiotic relationship with roots of more developed plants.

Gljive koje formiraju združenje, ili imaju simbiotski odnos sa korenima razvijenijih biljaka.

mycotoxin Toxic substance of fungal origin, e.g. **aflatoxin**.

Toksična supstanca gljivičnog porekla, na pr. aflatoksin.

myeloma A plasma cell cancer.

Rak ćelijske plazme.

myo inositol *See:* **inositol**.

Vidi: inositol.

N

naked bud A bud not protected by bud scales.

Pupoljak koji nije zaštićen rudimentarnim listićima.

narrow-host-range plasmid A **plasmid** that can replicate in one, or at most a few, different bacterial species.

Plazmid koji se može replicirati u jednoj, ili u većini nekoliko različitih bakterijskih vrsta.

narrow-sense heritability The proportion of the phenotypic **variance** that is due to **variation in breeding** values; the proportion of the phenotypic variance that is due to **additive genetic variance**.

Proporcija fenotipske varijanse koja je usled varijacije u oplemenivačkim vrednostima; proporcija fenotipske varijanse koja je nastala usled aditivne genetičke varijanse.

native protein The naturally occurring form of a **protein**.

Prirodno nastala forma proteina.

natural selection The differential survival and **reproduction** of organisms because of differences in characteristics that affect their ability to utilize environmental resources.

Diferencijalno preživljavanje i reprodukcija organizama, zbog razlika u osobinama koje utiču na njihovu sposobnost da koriste resurse spoljne sredine.

necrosis Death of **tissue** evidenced by discolouration, dehydration and loss of organization.

Smrt tkiva, izražena gubitkom boje, dehidracijom i gubitkom organizacije.

negative autogenous regulation Inhibition of the expression of a gene or set of co-ordinately regulated genes by the product of the gene or the product of one of the genes. *Synonym*: **negative self-regulation**.

Inhibicija ispoljavanja gena ili niza koordinatno regulisanih gena putem produkta više gena ili produkta jednog od gena. *Sinonim*: Negativna samoregulacija.

negative control system A mechanism by which a regulatory **protein** is required to turn off **gene** expression.

Mehanizam putem kojeg je potreban regulatorni protein da zaustavi ispoljavanje gena.

negative selection Selection against individuals possessing a certain character. *Opposite*: positive selection.

Selekcija protiv individua koje poseduju određeno svojstvo. *Suprotno*: pozitivna selekcija.

negative self-regulation *See*: **negative autogenous regulation**.

Vidi: negativna autogenua regulacija.

nematode Slender, unsegmented worms, often parasitic. Also known as eelworm, especially when phytoparasitic.

Tanke, nesegmentirane gliste, često parazitske. Takođe poznata kao nematoda, naročito kada je fitoparazitska.

neo-formation *See*: **organogenesis**.

Vidi: organogeneza.

neomycin phosphotransferase II (Abbreviation: npt-II). An enzyme which detoxifies the **antibiotic** neomycin, used as a **marker gene** to select for successfully transformed cells in plant **transgenesis**. *See: neo^r*.

(Skracenica: npt-II) Enzim koji detoksifikuje antibiotik neomicin, korišćen kao marker gen za izbor uspešno transformisanih ćelija u biljnoj transgenezi. *Vidi: neo^r*.

neoplasm Localized **cell** multiplication, forming a tumour. Generally the result of genetic **transformation**. Neoplastic cells differ in structure and function from the original cell type.

Lokalizovano umnožavanje ćelija, koje formiraju tumor. Uopšteno rezultat genetičke transformacije. Neoplazmičke ćelije se razlikuju u strukturi i funkciji od originalnog tipa ćelije.

neo^r Neomycin-resistance gene. *See: antibiotic resistance marker gene, neomycin phosphotransferase II, selectable marker.*

Neomicin-rezistentan gen. *Vidi: antibiotic resistance marker gene, neomycin phosphotransferase II, selectable marker.*

neoteny The retention of juvenile body characters in the adult state, or the occurrence of adult characters in the juvenile state.

Zadržavanje juvenilnih telesnih osobina u odraslom stanju, ili pojava osobina odraslog organizma u juvenilnom stanju.

net photosynthesis Photosynthetic activity minus respiratory activity, measured by the net absorption of carbon dioxide.

Fotosintetička aktivnost bez respiratorne aktivnosti, merena putem neto apsorpcije ugljen dioksida.

neutral mutation A mutation that changes the **nucleotide** sequence of a gene, but has no observable effect on the **fitness** of the organism.

Mutacija koja menja sekvencu nukleotida ali nema primetan efekat na fitness vrednost preživljavanja organizma.

neutral theory The theory that much of **evolution** has been primarily due to random **drift** of neutral mutations.

Teorija, da je veći deo evolucije nastao primarno, usled slučajnog razilaženja neutralnih mutacija.

neutrophil A type of **leukocyte** involved in the early inflammatory response.

Tip leukocita, uključen u rano zapaljensko reagovanje.

NFT Abbreviation for **nutrient film technique**.

Skracenica za nutrient film technique.

nick To break (*or* a break in) a **phosphodiester bond** in one of the strands of a **double-stranded DNA** molecule.

Raskinuti (ili probiti) fosfodiestersku vezu u jednom od lanaca molekula dvolančane DNK.

nick translation A procedure for **labeling DNA** by treating a fragment with **DNase** to produce single-stranded nicks followed by **excision** of a **nucleotide** and repair of the gaps with radiolabelled nucleotide.

Postupak za markiranje DNK tretiranjem fragmenta sa DNKzom, da se proizvedu sa jednim lancem, posle isecanja nukleotida i popravke praznina sa radiooznačenim nukleotidom.

nicked circle During the extraction of **plasmid DNA** from a bacterial cell, one strand of the **DNA** often becomes nicked. This relaxes the torsional strain which normally ensures a

supercoiled structure. *Synonym*: **relaxed circle**.

Tokom ekstrakcije plazmidne DNK iz bakterijske ćelije, jedan lanac DNK često postane urezan. To olakšava torziona zategnuće, koje normalno osigurava jako savijenu strukturu. *Vidi*: relaxed circle.

nif gene cluster Group of bacterial genes responsible for the biological **fixation** of atmospheric nitrogen.

Grupa bakterijskih gena, odgovornih za biološku fiksaciju atmosferskog azota.

nitrate The form of nitrogen that can be used directly by plants; a major component of inorganic fertilizers.

Oblik azota koje biljke direktno koriste; glavna komponenta neorganskih đubriva.

nitrification The natural process in which nitrogen in plant and animal wastes is oxidized, first to nitrites and then to nitrates, through the action of soil-borne microbes.

Prirodan proces u kojem se azot u otpacima biljaka i životinja oksidiše, prvo u nitrite a zatim u nitrate, delovanjem mikroba iz zemljišta.

nitrocellulose A derivative of **cellulose**, which has the property of binding to many biological **macromolecules**, in particular **DNA**, **RNA** and **protein**. Filters made from nitrocellulose are commonly used in **Southern** and **northern blotting** experiments. *Synonym*: **cellulose nitrate**

Derivat celuloze, koji ima osobinu vezivanja za mnoge biološke makromolekule, posebno DNK, RNK i protein. Filteri načinjeni od nitroceluloze, se obično koriste u eksperimentima southern i northern blotting-a (prenošenja). *Sinonim*: cellulose nitrate.

nitrogen assimilation The incorporation of nitrogen into the cells of living organisms.

Uključenje azota u ćelije živih organizama.

nitrogen fixation The conversion of atmospheric nitrogen gas to oxidized forms that can be assimilated by plants, particularly by blue-green algae and some genera of bacteria (e.g. *Rhizobium* spp.; *Azotobacter* spp.). An important source of nitrogen in unfertilized soils. *See*: **nif gene cluster**.

Konverzija atmosferskog azota u oksidisanе oblike koji mogu da budu asimilovani od biljaka, posebno od plavo-zelenih algi i nekih rodova bakterija (na pr. *Rhizobium* spp., *Azotobacter* spp.). Važan izvor azota u neadubrenom zemljištima. *Vidi*: nif gene cluster.

nitrogenous base The purines (adenine and guanine) and pyrimidines (**cytosine**, and **thymine** or **uracil**) that are present in **DNA** and **RNA**.

Purini (adenin i guanin) i pirimidini (citozin i timin ili uracil), koji su prisutni u DNK i RNK.

NO Abbreviation for **nucleolar organizer**.

Skraćenica za nucleolar organizator.

nod box A **DNA** sequence that controls the transcriptional regulation of *Rhizobium nodulation* genes.

Sekvenca DNK koja kontroliše transkripciono regulisanje *Rhizobium* kvržičnih (nodulacionih) gena.

nodal culture The culture of a lateral **bud** and a section of adjacent **stem** tissue.

Kultura lateralnog pupoljka i dela obližnjeg tkiva stabla.

node Slightly swollen structure on the stem, where leaves and buds arise

and where branches originate. Stems have nodes but roots do not.

Nešto zadebljala struktura stabla, gde se pojavljuju listovi i pupoljci, i odakle potiču grane. Stabla imaju noduse, ali koreni ne.

nodular Term commonly used to describe the pebbly (rough) texture of a callus.

Izraz obično korišćen da opiše oblu (grubu) strukturu kalusa.

nodulation The formation of **nodules** on the roots of legumes following colonization by symbiotic nitrogen-fixing bacteria.

Formiranje nodusa na korenju leguminoza posle kolonizacije sa simbiotnim bakterijama, azotofiksatorima.

nodule Swollen globular structures formed on the roots of legumes, containing the nitrogen-fixing bacteria.

Zadebljale globularne strukture, formirane na korenju leguminoza, koje sadrže bakterije azotofiksatore.

non repetitive DNA/RNA A nucleotide sequence which does not include a significant proportion of repetitive sequences of **nucleotides**.

Sekvenca nukleotida koja ne uključuje signifikantnu proporciju repetitivnih (ponovljivih) sekvenci nukleotida.

non-additive genetic variation The proportion of the total genetic variation in a **population** that does not respond to simple **mass selection** and that causes specific pairwise crosses to depart from performance values predicted by the breeding values of the parents.

Proporcija ukupne genetičke varijacije u populaciji koja ne reaguje na jednostavnu masovnu selekciju, i koja izaziva specifične sparane hibride da se odvoje od vrednosti performanse

predviđenih uzgojnim vrednostima roditelja.

non-autonomous A term referring to biological units that cannot function by themselves; such units require the assistance of another unit, or „helper“. *Opposite: autonomous.*

Izraz koji se odnosi na biološke jedinice koje ne mogu da funkcionišu same; takve jedinice zahtevaju pomoć druge jedinice, ili „pomagača“. *Suprotno: autonomous.*

non-coding strand *See: antisense DNA.*

Vidi: antisense DNK.

non-disjunction Failure of separation of **homologous** chromosomes or **chromatids** in **mitosis** or **meiosis**, resulting in too many chromosomes in some daughter cells and too few in others.

Propust odvajanja homolognih hromozoma ili hromatida u mitozu ili mejozi, dovodeći do većeg broja hromozoma u nekih ćelija ćerki, a suviše malo u drugih.

non-histone chromosomal protein In chromosomes, all of the **proteins** except the **histones**.

U hromozomima, svi proteini, izuzev histona.

nonsense mutation A mutation which converts an amino-acid-specifying **codon** into a **stop codon**, e.g. a single base change from UAU to UAG generates the premature termination of the **polypeptide** chain at the position where a tyrosine was incorporated in the **wild type**.

Mutacija koja pretvara aminokiselinski specifičirajući kodon u stop kodon, na pr. promena jedne baze od UAU do UAG stvara prerano završavanje stvaranje polipeptidnog lanca na po-

ložaju gde je tirozin bio uključen u divlji tip.

non-target organism An organism which is affected by a treatment (e.g. **pesticide** application) for which it was not the intended recipient.

Organizam koji je pod uticajem tretmana (na pr. primena pesticida) za koji nije bio predviđen kao recipijent.

non-template strand The non-transcribed strand of **DNA**. *Synonyms*: sense strand, coding strand

Netranskribovani lanac DNK. *Sinonimi*: sense strand, coding strand.

non-virulent agent *See*: **attenuated vaccine**.

Vidi: attenuated vaccine.

NOR Abbreviation for **nucleolar organizer region**.

Skraćenica za nucleolar organizer region.

northern blot A technique analogous to Southern blotting, but involving the transfer of **RNA** from an **agarose gel** to a membrane, prior to probing.

Tehnika analogna southern prenosu blotting-u, ali uključujući transfer RNK od agaroznog gela do membrane, pre probe.

npt-II Abbreviation for **neomycin phosphotransferase II**.

Skraćenica za neomycin phosphotransferase II.

nucellar embryo An embryo which has developed vegetatively from somatic tissue surrounding the **embryo sac**, rather than by **fertilization** of the **egg** cell.

Embriion koji se razvio vegetativno iz somatskog tkiva koje okružuje embrionu kesu, pre nego putem oplodjenja jajne ćelije.

nucellus Tissue forming the major part of the young **ovule** in which the **em-**

bryo sac develops; Also known as megasporangium.

Tkivo koje formira glavni deo mlade ovule u kojoj se razvija embriona kesa; takođe poznato kao megasporangium.

nuclear transfer A technology by which novel animals are generated by **cloning** a single **diploid** somatic cell. It involves inserting a single diploid cell from a culture of cells into an enucleated ovum. The resultant diploid ovum develops into an **embryo** that is placed in a recipient female, which gives birth to the cloned animal in the normal manner. Note that the term is somewhat of a misnomer, since it is a whole cell that is transferred, not just the nucleus.

Tehnologija putem koje se nove životinje stvaraju kloniranjem jedne diploidne somatske ćelije. To uključuje ubacivanje jedne diploidne ćelije iz kulture ćelija u jedno enukleisano jaje. Nastalo diploidno jaje razvije se u embrion koji je postavljen u ženku recipijenta, koja rađa kloniranu životinju na normalan način. Zapazite, da je izraz od pogrešnog naziva, pošto je to cela ćelija koja je preneti a ne samo nukleus.

nuclease A class of largely bacterial enzymes that degrade **DNA** or **RNA** molecules by catalysing the cleavage of the **phosphodiester bonds** that link adjacent **nucleotides**. For **deoxyribonuclease** (**DNase**) the substrate is DNA, for **ribonuclease** (**RNase**) the substrate is RNA, and for **S1 nuclease**, the substrate is **single-stranded DNA** or RNA. Endonucleases **cleave** at internal sites in the substrate molecule, while exonucleases progressively cleave from the

end of the substrate molecule. Nucleases have varying degrees of base-sequence specificity, the most specific being the **restriction endonucleases**.

Grupa bakterijskih enzima koji degradiraju DNK ili RNK molekule, katalizujući cepanje fosfodieterskih veza koje vezuju susedne nukleotide. Za deoksiribonukleazu (DNKzu) supstrat je DNK, za ribinukleazu (RNAza) supstrat je RNK, a za S1 nukleazu, supstrat je DNK ili RNK, sa jednim lancem. Endonukleaze se dele na unutrašnjim mestima u molekulu supstratu, dok se egzonukleaze progresivno dele od kraja molekule supstrata. Nukleaze imaju različite stepene specifičnosti sekvence baza, a najspecifičnije su restrikcione endonukleaze.

nucleic acid A macromolecule consisting of polymerized **nucleotides**. Two forms are found, **DNA** and **RNA**. Nucleic acids may be linear or circularized, and single- or double-stranded. *See: helix*.

Makromolekul koji se sastoji od polimerizovanih nukleotida. Dva oblika su nađena, DNK i RNK. Nukleinske kiseline mogu da budu linearne ili kružne, i sa jednim ili dva lanca. *Vidi: helix*.

nucleic acid probe *See: DNA probe*.
Vidi: DNK probe.

nuclein The term used by Friedrich Miescher to describe the nuclear material he discovered in 1869, which today is known as **DNA**.

Izraz, koji je koristio Friedrich Miescher da opiše nuklearni materijal kojeg je on otkrio u 1869., a koji je danas poznat kao DNK.

nucleo-cytoplasmic ratio In a cell, the ratio of nuclear to cytoplasmic volu-

me. This ratio is high in meristematic cells and low in differentiated cells.

U ćeliji, odnos nuklearne prema citoplazmičnoj zapremini. Taj odnos je visok u meristematskim ćelijama, a nizak u diferenciranih ćelija.

nucleolar organizer (Abbreviation: NO). *See: nucleolar organizer region*.

(Skraćenica: NO) *Vidi: nucleolar organizer region*.

nucleolar organizer region (Abbreviation: NOR). A chromosomal segment containing a large array of genes that encode ribosomal **RNA**; located at the secondary constriction of specific chromosomes.

(Skraćenica: NOR) Hromozomski segment koji sadrži niz gena koji enkodiraju ribozomnu RNK; lociran na sekundarnom suženju specifičnih hromozoma.

nucleolus An **RNA-rich nuclear organelle** in the **nucleus** of eukaryotic cells, produced by a nucleolar organizer. It represents the storage place for **ribosomes** and ribosome precursors. The nucleolus consists primarily of ribosomal precursor **RNA**, ribosomal RNA, their associated **proteins**, and some, perhaps all, of the enzymatic equipment (RNA polymerase, RNA methylase, RNA cleavage enzymes) required for synthesis, conversion and assembly of **ribosomes**. Subsequently the ribosomes are transported to the cytoplasm.

Nuklearna organela, bogata u RNK, u nukleusu eukariotskih ćelija, koju stvara nukleolarni organizator. Predstavlja mesto skladištenja za ribozome i prekursore ribozoma. Nukleolus se prvenstveno sastoji od ribozomalnog prekursora RNK, ribozomne

RNK, njihovih proteina, i neki, možda i svi od enzima (RNK polimeraze, RNK metilaze, RNK enzima delitelja) potrebnih za sintezu, konverziju i skup ribozoma. Kasnije se ribozomi transportuju u citoplazmu.

nucleoplasm The non-staining or slightly chromophilic, liquid or semi-liquid, ground substance of the **interphase nucleus** and which fills the nuclear space around the chromosomes and the nucleoli. Little is known of the chemical composition of this ground substance, which is not easily defined. Sometimes called „karyoplasm“ when it is gel-like, and „karyolymph“ when it is a colloidal fluid.

Neobojavajuća, i slabo hromofilna, tečna ili polutečna osnovna supstanca međufaznog nukleusa, koja puni nuklearni prostor oko hromozoma i nukleusa. Manje se zna o hemijskom sastavu ove osnovne supstance, koji nije lako definisana. Ponekad nazvana „karioplazma“ kada je slična gelu, i „kariolimfa“, kada je to koloidna tečnost.

nucleoprotein Conjugated **protein** composed of **nucleic acid** and **protein**; the material of which the chromosomes are made.

Sjedinjen protein, sastavljen od nukleinske kiseline i proteina; materijal od kojeg se hromozomi sastoje.

nucleoside A **base (purine or pyrimidine)** that is covalently linked to a 5-carbon (pentose) sugar. When the sugar is **ribose**, the nucleoside is a ribonucleoside; when it is 2-deoxyribose, the nucleoside is a deoxyribonucleoside. *See: nucleotide.*

Baza (purin ili pirimidin), koja je kovalentno vezana za 5-ugljenikov (pen-

tozni) šećer. Kada je šećer riboza, nukleozid je ribonukleozid; kada je to 2-deoksiriboza, nukleozid je deoksiribonukleozid. *Vidi: nucleotide.*

nucleoside analogue A synthetic molecule that resembles a naturally occurring **nucleoside**.

Sintetička molekula koja je nalik na prirodni nukleozid.

nucleosome Spherical sub-units of eukaryotic **chromatin** that are composed of a core particle consisting of an octamer of **histones** (two molecules each of histones H_{2a}, H_{2b}, H₃ and H₄) and 146 bp of **DNA**.

Sferne podjedinice eukariotskog hromatina koje su sastavljene od delića jedra koji sadrži oktamer histona (dva molekula svaki od histona H_{2a}, H_{2b}, H₃ i H₄) i 146 bp od DNK.

nucleotide A **nucleoside** with one or more phosphate groups linked at the 3'- or 5'-hydroxyl of a pentose sugar. When the sugar is **ribose**, the nucleotide is a ribonucleotide; when it is 2-deoxyribose, the nucleotide is a deoxyribonucleotide. **RNA** and **DNA** are polymers of, respectively, **ribonucleoside** 5'-monophosphates and deoxyribonucleoside 5'-monophosphates. Nucleotides containing the **bases adenine, guanine** and **cytosine** (A, G, C) occur in both DNA and RNA; **thymine** (T) occurs only in DNA, and **uracil** (U) only in RNA. Ribonucleoside mono-, di-, and triphosphates for which a specific base is not assigned are abbreviated NMP, NDP, and NTP, while deoxyribonucleoside mono-, di-, and triphosphates are abbreviated dNMP, dNDP, and dNTP. Otherwise, the „N“ is replaced by the base letter abbreviation. *See: base pair.*

Nukleotid, sa jednim ili više fosfatnih grupa, vezanih na 3'- ili 5'- hidroksil pentoznog šećera. Kada je šećer riboza, nukleotid je deoksiribonukleotid; kada je 2-deoksiriboza, nukleotid je ribonukleotid. RNK i DNK su polimeri ribonukleoizida 5' monofosfata, odnosno, deoksiribonukleoizida 5' monofosfata. Nukleotidi koji sadrže baze adenin, guanin i citozin (A, G, C) zastupljene u DNK i RNK; timin (T) se javlja samo u DNK, a uracil (U) samo u RNK. Ribonukleoizid mono-, di-, i trifosfata, za koje specifična baza nije određena, su skraćene kao NMP, NDP i NTP, dok su deoksiribonukleoizid mono-, di- i trifosfati skraćeni dNMP, dNDP i dNTP. Drukčije, „N“ je zamenjen skraćeni-com slova baze. *Vidi*: base pair.

nucleotide sequence *See*: **sequence**.

Vidi: sequence.

nucleus A dense protoplasmic membrane-bound region of a eukaryotic **cell** that contains the chromosomes, separated from the **cytoplasm** by a membrane; present in all eukaryotic cells except mature sieve-tube elements and red blood cells.

Gust, protoplazmičan, membranom vezan region eukariotske ćelije, koji sadrži hromozome koji su odvojeni membranom od citoplazme, prisutan u svim eukariotskim ćelijama, izuzev zrelih elementima sitaste cevi i crvenim krvnim ćelijama.

null allele An allele which produces no functional gene product.

Allel koji proizvodi nefunkcionalni gen-ski proizvod.

null mutation *See*: **amorph**.

Vidi: amorph.

nullisomic (Adj.) *See*: **nullisomy**.

Vidi: nullisomy.

nullisomy An otherwise diploid cell or organism lacking both members of a **homologous chromosome** pair.

Diploidna ćelija ili organizam, bez homolognog para hromozoma.

nurse culture Culturing cells from a **suspension culture** on a raft of filter paper above a callus **tissue** piece (nurse tissue). The filter paper serves to prevent tissue union but allows the flow of essential substances from the nurse to the isolated cells.

Kultivisanje ćelija od suspenzione kulture na od filter papiru, iznad dela kalusnog tkiva (zaštitno tkivo). Filter papir služi da spreči sjedinjavanje tkiva, ali dopušta tok esencijalnih supstanci od zaštitnih do izolovanih ćelija.

nutriceutical A conventional food product that has been modified (potentially by genetic engineering) to have improved nutritional characteristics and/or pharmaceutical properties.

Uobičajeni hranljivi produkt koji je modifikovan (potencijalno putem genetičkog inženjeringa) da ima poboljšane hranljive osobine i/ili farmaceut-ske osobine.

nutrient cycle The passage of a nutrient or element through an ecosystem, including its assimilation and release by various organisms and its transformation into various organic or inorganic chemical forms.

Prolaz hranljive materije ili elementa kroz ekosistem, uključujući njenu asimilaciju i otpuštanje od različitih organizama, i njenu transformaciju u različite organske i neorganske hemijske oblike.

nutrient deficiency Absence or insufficiency of an essential factor for normal growth and development.

Otsustvo ili insuficijencija nekog bitnog faktora za normalna rast i razviće.

nutrient film technique (Abbreviation: NFT). A hydroponic technique used to grow plants. NFT delivers a thin film of water or nutrient solution either continuously or through on-off cycles.

(Skráćenica: NFT) Tehnika hidropona, korišćena za gajenje biljaka. NFT izdaje tanak film vode ili hranljivog rastvora, bilo kontinuirano, ili kroz cikluse.

nutrient gradient A diffusion gradient of nutrients and gases that develops in tissues where only a portion of the

tissue is in contact with the medium. Gradients are less likely to form in liquid media than in callus cultures.

Difuzioni gradient hranljivih materijai gasova, koji se razvija u tkivima gde je samo deo tkiva u kontaktu sa medijumom. Gradijenti se manje verovatno formiraju u tečnim medijumima nego u kalusnim kulturama.

nutrient medium (pl.: nutrient media) A solid, semi-solid or liquid **formulation** for *in vitro* cell or tissue growth.

Čvrsta, polučvrsta ili tečna formulacija za *in vitro* ćelijski ili tkivni rast.

O

ochre stop codon *See: stop codon.*

Vidi: stop codon.

octoploid. An organism, or a tissue whose cells contain eight **haploid** sets of chromosomes.

Organizam, ili tkivo, čije ćelije sadrže osam haploidnih setova hromozoma.

oestrogen The generic term for a group of female **sex hormones** which control the development of sexual characteristics and control oestrus. *AlteRNAive spelling: estrogen.*

Opšti izraz za grupu ženskih polnih hromozoma koji kontrolišu razviće seksualnih karakteristika i kontrolišu estrus. *Alternativna ortografija: estrogen.*

oestrous (adj.) *See: oestrus.*

Vidi: oestrus.

oestrous cycle The cycle of reproductive activity shown by most sexually mature non-pregnant female mammals. *AlteRNAive spelling: estrous.*

Ciklus reproduktivne aktivnosti, kod većine seksualno odraslih nebremenitih ženki sisara. *Alternativna ortografija: estrous.*

oestrus In female mammals, the period of sexual excitement and acceptance of the male. *Synonyms: rut, heat. AlteRNAive spelling: estrus* (adj.: estrous).

Estrus u ženki sisara, period seksualnog uzbuđenja i prihvatanja mužjaka. *Sinonimi: polni žar, uspaljenost. Alter-*

nativna ortografija: estrus (pridev: estrous)

offset Young plant produced at the base of a mature plant.

Mlada biljka, proizvedena na osnovi odrasle biljke.

offshoot Short, usually horizontal, **stem** produced near the **crown** of a plant.

Kratko, obično horizontalno stablo, proizvedeno blizu vrha biljke.

offspring New individuals resulting from sexual or asexual reproduction.

Synonym: progeny.

Nove individue, nastale seksualnom ili aseksualnom reprodukcijom. *Sinonim: progeny.*

Okazaki fragment Replicated **DNA** fragments formed on the **lagging strand** in **DNA** synthesis from a double-stranded **template**. The fragments are subsequently joined together by **DNA ligase**. *See: primosome.*

Repliciran fragment DNK, formiran na oblagajućem lancu u sintezi DNK od dvolančanog kalupa. Fragmenti se posle toga spajaju putem DNK liganze. *Vidi: primosome.*

OLA Abbreviation for **oligonucleotide ligation assay**.

Skraćenica za oligonucleotide ligation assay.

oligomer A molecule formed by the covalent joining of a small (undefined) number of **monomers**. *See: polymer.*

Molekul, formiran kovalentnim spajanjem malog (nedefinisanog) broja monomera. *Vidi:* polymer.

oligonucleotide A nucleotide oligomer. Often synthesized for use as **primers** for *in vitro* DNA synthesis. *See:* **polymerase chain reaction.**

Nukleotidni oligomer. Često sintetisan za korišćenje kao primeri za *in vitro* DNK sintezu. *Vidi:* polymerase chain reaction.

oligonucleotide ligation assay (Abbreviation: OLA). A diagnostic technique for determining the presence or absence of a **single nucleotide polymorphism** within a **target DNA** sequence, often indicating whether the gene is wild type (normal) or **mutant** (usually defective).

(Skraćenica: OLA) Dijagnostička tehnika za određivanje prisustva ili odsustva pojedinog nukleotidnog polimorfizma u okviru ciljne DNK sekvence, često pokazujući da li je gen divljeg tipa (normalan) ili je mutant (obično defektan).

oligonucleotide-directed mutagenesis *See:* **site-specific mutagenesis.**

Mutageneza usmerena nukleotidnim oligomerom. *Vidi:* site-specific mutagenesis.

oligonucleotide-directed site-specific mutagenesis *See:* **site-specific mutagenesis.**

Vidi: site-specific mutagenesis.

oligosaccharide Carbohydrate consisting of several linked **monosaccharide** units.

Ugljeni hidrat koji sadrži nekoliko vezanih jedinica monosaharida.

oncogene A gene that causes cells to grow in an uncontrolled (i.e. tumorous) manner. Oncogenes are **mutant** forms of normal functional ge-

nes (called proto-oncogenes) that have a role in regulating cell proliferation. *See:* **cellular oncogene; dominant oncogene; immortalizing oncogene; recessive oncogene, p53 gene.**

Gen koji uzrokuje da ćelije rastu na nekontrolisani (t.j. tumorozan) način. Onkogeni su mutantni oblici normalno funkcionalnih gena (zvanih proto-onkogeni), koji imaju ulogu u regulisanju razmnožavanja ćelija. *Vidi:* cellular oncogene; dominant oncogene; immortalizing oncogene; recessive oncogene, p53 gene.

oncogenesis The progression of cytological, genetic and cellular changes that culminate in the development of a tumour.

Napredovanje citoloških, genetičkih i ćelijskih promena, koje kulminiraju u razviću tumora.

onco-mouse A mouse that has been genetically modified to incorporate an oncogene, which acts as an animal **model** for studies of human cancer.

Miš koji je bio genetički modifikovan da bi primio onkogen, koji deluje kao životinjski model za proučavanje raka u ljudi.

ontogeny Developmental life history of an organism.

Razviće životne istorije organizma.

oocyte The **egg** mother cell; it undergoes two meiotic divisions (**oogenesis**) to form the egg cell. The **primary** oocyte refers to the state before completion of the first meiotic division; the **secondary** oocyte after completion of the first meiotic division.

Jajna ćelija majke; ona se podvrgava dvema mejotičkim podelama (oogeneza) da bi formirala jajnu ćeliju. Primarni oocit sa odnosi na stanje

pre kompletiranja prve mejotičke deobe; sekundarni oocit posle završetka prve mejotičke podela.

oogenesis The formation and growth of the **egg** in an animal **ovary**.

Formiranje i rast jajne ćelije u ovarijumu životinje.

oogonium 1. A **germ cell** of the female animal, that gives rise to oocytes by mitotic division. 2. The female sex organ of algae and fungi.

1. Klicina ćelija ženke životinje, koja daje rast oocitima putem mitotičke deobe. 2. Ženski polni organ algi i gljiva.

oosphere The non-motile female **gamete** in plants and some algae.

Nepokretna ženska gameta u biljaka i nekih algi.

oospore A spore developing from a **zygote** of certain algae and fungi, following the fusion of **heterogametes**.

Spora koja se razvija iz zigota nekih algi i gljiva, sledeći fuziju heterogameta.

opal stop codon *See: stop codon.*

Vidi: stop codon.

open continuous culture A continuous culture system, in which inflow of fresh medium is balanced by **outflow** of a corresponding volume of **spent medium** plus cells. In the steady state, the rate of cell **wash-out** equals the rate of formation of new cells in the system. *See: continuous culture; batch culture; closed continuous culture.*

Sistem kontinuirane kulture, u kojem je utok svežeg medijuma balansirana sa istokom odgovarajuće zapremine utrošenog medijuma plus ćelija. U stadijumu mirovanja, stepen ćelij-skog ispiranja je jednak brzini formiranja novih ćelija u sistemu. *Vidi:*

continuous culture; batch culture; closed continuous culture.

open pollination Pollination by wind, insects or other natural mechanisms.

Polinacija pomoću vetra, insekata ili drugih prirodnih mehanizama.

open reading frame (Abbreviation: ORF). A sequence of nucleotides in a **DNA** molecule that has the potential to **encode** a **peptide** or **protein**: comprises a start **triplet** (ATG), followed by a series of triplets (each of which encodes an **amino acid**), and ending with a **stop codon** (TAA, TAG or TGA). The term is generally applied to sequences of **DNA** fragments, for which no function has yet been determined. The number of ORFs provides an estimate of the number of genes transcribed from the **DNA** sequence.

(Skracenicica: ORF) Sekvenca nukleotida u molekulu DNK koja ima potencijal da enkodira peptid ili protein: obuhvata inicijalni triplet (ATG), praćen serijom tripleta (od kojih svaki enkodira aminokiselinu), i završavajući sa stop-kodonom (TAA, TAG ili TGA). Izraz se koristi za sekvence DNK fragmenta, za koje ni jedna funkcija još nije određena. Broj ORF-ova obezbeđuje izračunavanje broja gena, sintetisanih od DNK sekvence.

operational definition An operation or procedure that can be carried out to define or delimit something.

Rad ili postupak koji se može sprovesti da se nešto definiše ili ograniči.

operator The region of **DNA** that is **upstream** from a **gene** or genes and to which one or more regulatory **proteins** (repressor or activator) bind to control the expression of the gene(s).

Region DNK, koji je naviše od gena ili više gena, i za koji se jedan ili više

regulacionih proteina (represor ili aktivator) vezuje da kontroliše ispoljavanje gena.

operon A functionally integrated genetic unit for the control of **gene expression** in bacteria. It consists of one or more genes that **encode** one or more **polypeptide(s)** and the adjacent site (**promoter** and **operator**) that controls their expression by regulating the **transcription** of the structural genes.

Funkcionalno integrisana genetička jedinica za kontrolu ispoljavanja gena u bakterija. Sastoji se od jednog ili više gena koji enkodiraju jedan ili više polipeptida, i susedno mesto (promoter i operator) koje kontroliše njihovo ispoljavanje regulisanjem transkripcije strukturnih gena.

opine The condensation product of an **amino acid** with either a keto-acid or a sugar, produced by the plant host as a result of *Agrobacterium* infection, and used exclusively by the *Agrobacterium* as a carbon source for growth and **reproduction** within the plant.

Produkt kondenzacije aminokiseline sa bilo keto-kiselinom ili šećerom, proizvedenim od biljke domaćina kao rezultat infekcije *Agrobacterium-a* i koristi ga ekskluzivno *Agrobacterium* kao izvor ugljenika za rast i reprodukciju u biljci.

OPU Abbreviation for **ovum pickup**.

Skraćenica za ovum pickup.

ORF Abbreviation for **open reading frame**.

Skraćenica za open readnig frame.

organ A tissue or group of **tissues** that constitute a morphologically and functionally distinct part of an organism.

Tkivo, ili grupa tkiva koja čini morfološki i funkcionalno određeni deo nekog organizma.

organ culture The **aseptic** culture of complete living organs of animals and plants outside the body in a suitable **culture medium**. Animal organs must be small enough to allow the nutrients in the culture medium to penetrate all the cells.

Aseptična kultura živih organa životinja i biljaka, izvan tela, u pogodnom medijumu kulture. Životinjski organi moraju da budu dovoljno mali da omoguće hranljivim materijama u medijumu kulture da prodru u sve ćelije.

organellar gene Genes located on organelles outside the nucleus.

Geni, locirani na organelama izvan nukleusa.

organelle A membrane-bounded specialized region within a cell, such as the **mitochondrion** or dictyosome, that carries out a specialized function in the life of a cell.

Membranom vezan specijalizovani region u okviru ćelije, kao što je mitohondrija ili diktiozom, koji nosi specijalizovanu funkciju u životu ćelije.

organic complex A chemically undefined compound added to nutrient **media** to stimulate growth, e.g. coconut milk; malt extract; **yeast** extract; **casein** hydrolysate.

Hemijski nedefinisano jedinjenje dodato medijumu hranljivih materija da stimuliše rast, na pr. kokosovo mleko; ekstrat slada; ekstrat kvasca; kazeinski hidrolizat.

organic evolution *See: evolution*.

Vidi: evolution.

organism An individual living system, such as animal, plant or micro-organism.

nism, that is capable of reproduction, growth and maintenance.

Individualni živi sistem, kao što je životinja, biljka ili mikroorganizam, sposoban za reprodukciju, rast i održavanje.

organized growth The development under **tissue culture** conditions of organized **explants** (meristem tips or shoot tips, floral buds or organ primordia). *Opposite*: **unorganized growth**.

Razviće u uslovima kulture tkiva organizovanih kalema. *Suprotno*: unorganized growth.

organized tissue Composed of normally differentiated cells.

Sastavljeno od normalno diferenciranih ćelija.

organogenesis The initiation of **adventitious** or *de novo* shoots or roots from **callus**, **meristem** or suspension cultures. *See*: **micropropagation**; **regeneration**.

Podsticaj adventivnih ili *de novo* izdanaka ili korena iz kalusa, meristema ili lebdećih kultura u obliku suspenzije. *Vidi*: micropropagation; regeneration.

organoid An organ-like structure produced in culture.

Organu slična struktura, proizvedena u kulturi.

organoleptic Having an effect on one of the organs of sense, such as taste or smell.

Koji ima uticaja na jednog od organa osećaja, kao što je ukus ili miris.

origin of replication The **nucleotide** position on a **DNA** sequence from which **DNA** synthesis (replication) is initiated.

Položaj nukleotida na sekvenci DNK od kojeg počinje sinteza (replikacija) DNK.

orphan gene A gene or **DNA sequence** whose function is not known.

Gen ili sekvenca DNK čija funkcija nije poznata.

orphan receptor A **receptor** for which a cellular function or **ligand** has yet to be identified.

Receptor za koji ćelijska funkcija ili ligand još treba da se definišu.

ortet The plant from which a **clone** is obtained. *Synonym*: **donor plant**.

Biljka od koje je dobijen klon. *Sinonim*: donor plant.

orthologous Homologous genes/gene products that have evolved divergently *between* species; many rice genes have orthologues in other cereal genomes, because of the common ancestry of cereal species. *See*: **paralogous**.

Homologni geni / genski produkti koji su se razvili razlazno *između* vrsta; mnogi geni pirinča imaju ortologe u drugim genomima cerealijskih, zbog zajedničkih predaka vrsta cerealijskih. *Vidi*: paralogous.

osmosis Diffusion of water across a **semi-permeable** membrane from zones of low solute concentration to zones of higher solute concentration.

Difuzija vode kroz polupropustljivu membranu, od zona niske koncentracije, do zona veće koncentracije rastvorene supstance.

osmotic potential Change in the energy state of solvent brought about by dissolving a substance in the solvent - water in the biological sciences. The potential of aqueous solutions is always negative compared to pure water. Solvent flows from higher to lower osmotic potential solutions by **diffusion** or **osmosis**.

Promena u energetskom stanju rastvarača, nastala putem rastvaranja sup-

stance u rastvaraču – vodi u biološkim naukama. Potencijal vodenog rastvora je uvek negativan u poređenju sa čistom vodom. Rastvarač teče od jačih, do slabijih osmotskih potencijalnih rastvora putem difuzije ili osmoze.

osmoticum A chemical agent (e.g. **polyethylene glycol**, **mannitol**, glucose or sucrose) employed to maintain the **osmotic potential** of a nutrient medium equivalent to that of the cultured cells, i.e. the medium and the cells are **isotonic**. Because of this osmotic equilibrium, cells are not damaged *in vitro*.

Hemijsko sredstvo (na pr. polietilenglikol, manitol, glukoza ili saharoza), korišćeno da održava osmotski potencijal hranljivog medijuma koji je ekvivalentan onome kultivisanih ćelija, t.j. medijum i ćelije su izotonični. Zbog tog osmotskog ekvilibrijuma, ćelije *in vitro* nisu oštećene.

outbreeding A mating system characterized by the inter-breeding of genetically unrelated or dissimilar individuals. Since **genetic diversity** tends to be enhanced, and vigour or **fitness** of individuals increased by this process, it is often used to counter the detrimental effects of continuous inbreeding. *Synonym*: **exogamy**.

Sistem parenja, koji se karakteriše gajenim genetički nesrodnim ili različitim individuama. Pošto genetički diverzitet teži da bude povećan, i vigor ili fitnes individua da budu povećani putem tog procesa, isti je često korišćen da vrši protivnapad štetnim efektima kontinuiranog gajenja u inbreedingu.

outflow The volume of growing cells that is removed from a **bioreactor**

during a **continuous fermentation** process.

Masa ćelija koje rastu, koja je odstranjena iz bioreaktora tokom kontinuiranog procesa fermentacije.

ovary 1. Enlarged basal portion of the **pistil** of a plant flower that contains the **ovules**. 2. The reproduction **organ** in female animals in which eggs are produced.

1. Povećani osnovni deo tučka cveta biljaka koji sadrži neoplođene jajne ćelije. 2. Reprodukcionni organ ženki u kojem se proizvode jajne ćelije.

overdominance Where **heterozygote** performance is superior to that of either parental **genotype**.

Gde je heterozigotna performansa superiorna u odnosu na bilo koji roditeljski genotip.

overhang *See*: **extension**.

Vidi: extension.

overlapping reading frame Start **codons** in different **reading frames** generate different **polypeptides** from the same **DNA** sequence.

Startni kodoni, u različitim okvirima očitavanja, stvaraju različite polipeptide od iste sekvence DNK.

ovulation The release of mammalian egg(s) from the ovary.

Izbacivanje jajne ćelije iz jajnika.

ovule The part of the **seed** plant's reproductive organs that comprises the **nucellus**, the **embryo sac** and the integuments.

Deo semenskih biljnih reproduktivnih organa koji sadrži nucelus, embrionovu kesu i integumente.

ovum (pl.: ova) Egg.

Jaje.

ovum pickup (Abbreviation: OPU). The non-surgical collection of ova from a female.

(Skracenica: OPU) Neoperativno sakupljanje jaja iz ženke.

oxidative phosphorylation The enzymatic addition of a phosphate to **ADP** to make **ATP**, coupled to electron transport from a **substrate** to molecular oxygen. A critical reaction for the generation of cellular energy.

Enzimatsko dodavanje fosfata na ADP da se obrazuje ATP, povezano sa transportom elektrona od podloge do molekularnog kiseonika. Kritična reakcija za stvaranje ćelijske energije.

oxygen-electrode-based sensor Sensor in which an oxygen electrode, which measures the amount of oxygen in a solution, is coated with a biological material such as an **enzyme** which ge-

nerates or absorbs oxygen when the appropriate **substrate** is present. When the biological reaction takes place, the amount of oxygen close to the electrode changes and the signal from the electrode changes, thus signalling the concentration of substrate.

Senzor u kojem je jedna kiseonička elektroda koja meri količinu kiseonika u rastvoru pokrivena sa biološkim materijalom kao što je enzim, koji stvara ili apsorbuje kiseonik, kada je prisutan odgovarajući supstrat. Kada nastane biološka reakcija, količina kiseonika blizu elektrode se menja i signal elektrode se menja, ukazujući na koncentraciju supstrata.

P

p Denotes the shorter of the two **chromosome** arms, e.g. human 14p is the short arm of human chromosome 14. Obeležava kraći od dva hromozomska kraka, na pr. ljudski 14p je kratki krak hromozoma 14.

P element A *Drosophila* **transposon**.
Drosophila transpozon.

P₁, P₂ Generational symbols for the two parents of a given individual.
Generacijski simboli za dva roditelja date individue.

p53 gene A human tumour-suppressor **transcription** factor **gene**, damage or **mutation** to which is believed to be responsible for up to 60% of all human cancer tumours. If, in spite of the presence of p53 **protein**, a cell begins to divide uncontrollably following damage to its **DNA**, the p53 gene acts to prevent tumours by triggering **apoptosis**.

Ljudski tumorsko-suzbijajući gen transkripcionog faktora, oštećenja ili mutacije, za koji se veruje da je odgovoran za do 60% od svih ljudskih kanceroznih tumora. Ako, uprkos prisustva p53 proteina, ćelija počinje da se nekontrolisano deli posle oštećenja njene DNK, p53 gen deluje da spreči tumore zaustavljanjem apoptoze.

pachynema A mid-prophase stage in the first meiotic division, between **zygonema** and **diplonema**. Chromosomes appear as long, paired threads.

Occasionally all four **chromatids** can be recognized.

Stadijum profaze u prvoj mejotičkoj deobi, između zigoneme i diploneme. Hromozomi se pojavljuju kao duga, naparena vlakna. Povremeno, sve četiri hromatide mogu da se prepoznaju.

pachytene (adj.) *See: pachynema*.
Vidi: pachynema.

packaging cell line A cell line designed to produce viral particles that do not contain nucleic acid. After **transfection** of these cells with a full-size viral genome, fully infective viral particles are assembled and released.

Ćelijska linija, stvorena da proizvodi virusne deliće koji ne sadrže nukleinsku kiselinu. Posle transfekcije tih ćelija virusnim genomom pune veličine, potpuno infektivni delići virusa su skupljeni i oslobođeni.

packed cell volume (Abbreviation: PCV). The proportion of a **cell culture** volume that is occupied by cells. Cell volume is determined by sedimenting using low speed centrifugation.

(Skraćenica: PCV) Proporcija mase ćelijske kulture koja je zauzeta ćelijama. Ćelijska masa je određena sedimentacijom, koristeći centrifugiranje malom brzinom.

PAGE Abbreviation for **polyacrylamide gel electrophoresis**.

Skraćenica za polyacrylamide gel electrophoresis.

pairing The pairing of **homologous** chromosomes during the **prophase** of the first meiotic division. Pairing is the first prerequisite before **crossing over** and **recombination** can occur. *Synonym: synapsis.*

Sparivanje homolognih hromozoma tokom profaze prve mejotičke podelje. Parenje je prva pretpostavka pre **crossing-overa** i rekombinacije. *Sinonim: synapsis.*

pair-rule gene A gene that influences the formation of body segments in *Drosophila*.

Gen koji utiče na formiranje telesnih segmenata u *Drosophila*-i.

palaeontology The study of the fossil record of past geological periods and of the phylogenetic relationships between extinct and contemporary plant and animal species.

Proučavanje fosilnih podataka od prošlih geoloških perioda i filogenetičkih odnosa između izumrlih i savremenih biljnih i životinjskih vrsta.

palindrome A segment of double-stranded **DNA**, in which the order of bases, read 5'→3' in one strand, is the same as that in the **complementary** antiparallel strand, also read 5'→3'. If the sequence is written in the normal convention, on two lines with paired bases shown one above the other, the base order on one strand runs in the opposite direction to that on the complementary strand. They are often found at the ends of **transposable elements**, and recognition sites for type II **restriction endonucleases** are also palindromes. *Synonym: inverted repeat.*

Segment dvostrukog lanca DNK, u kojem je redosled baza, očitanih 5'→3' u jednom lancu, isti kao onaj u dopunskom protivparalelnom lancu, takođe

očitanom 5'→3'. Ako je sekvenca napisana na normalan uobičajen način, na dve linije sa naparenim bazama prikazanim jedna iznad druge, red baza u jednom lancu se kreće u suprotnom smeru od dopunskog lanca. Oni se često nalaze na krajevima razmeštenih elemenata, a mesta prepoznavanja za tip II restrikcione endonukleaze su takođe palindromi. *Sinonim: inverted repeat.*

palisade parenchyma Elongated cells found just beneath the upper **epidermis** of leaves, typically rich in **chloroplasts**.

Izdužene ćelije, nađene ispod gornjeg epiderma listova, obično bogate hloroplastima.

pAMP Ampicillin-resistant **plasmid**. Ampicilin-rezistentan plazmid.

panicle An inflorescence, the main axis of which is branched; the branches bear loose racemose flower clusters. Rice is a prominent crop plant with a panicle inflorescence.

Metlica kod koje je glavna osovina razgranata; grane nose slobodne, grozdaste cvetne skupine. Pirinač je tipična biljka koja ima metlicu.

panicle culture Aseptic culture of immature panicle **explants** to induce **microspore** germination and development.

Aseptična kultura nezrelih metličastih eksplanta, da se izazove klijanje i razviće mikrospre.

panmictic population A population in which mating occurs at random.

Populacija kod koje se parenje dešava slučajno.

panmixis Random mating in a population.

Slučajno parenje u populaciji.

paper raft technique *See: nurse culture.* Vidi: nurse culture.

PAR Abbreviation for **photosynthetically active radiation**.

Skraćenica za photosynthetically active radiation.

par gene One of a class of genes required for faithful **plasmid segregation** at **cell** division. Initially, par loci were identified on plasmids, but have also been found on bacterial chromosomes.

Jedna od grupa gena, potrebnih za vernu segregaciju plazmida pri deobi ćelija. Na početku, na plazmidima su identifikovani par lokusa, ali su takođe nađeni na bakterijskim hromozomima.

paracentric inversion A chromosomal rearrangement in which a segment of chromosome, excluding the **centromere**, is rotated.

Hromozomski raspored, u kojem je segment hromozoma, isključujući centromeru, invertiran.

paraffin [wax] A translucent, white, solid hydrocarbon with a low melting point. One use is as an embedding medium to support **tissue** for sectioning for light microscopy observation.

Providan, beli, čvrsti ugljovodonik, sa niskom tačkom topljenja. Jedno korišćenje je kao okružujući medium za podršku tkivu za sekcanje, radi posmatranja podsvetlosnim mikroskopom.

Parafilmä A stretchable film based on paraffin wax; used to seal tubes and Petri dishes. Parafilmä is a proprietary name which is incorrectly applied colloquially to similar products.

Elastičan film, zasnovan na parafinskom vosku; korišćen za zatvaranje epruvete i Petrijevih posuda. Parafilmä je naziv, koji se nepravilno primenjivao na slične produkte.

parahormone A substance with hormone-like properties that is not a secretory product (e.g. ethylene; carbon dioxide).

Supstanca sa osobinama sličnim hormonu, koja nije proizvod lučenja (na pr. etilen; ugljen dioksid).

parallel evolution The development of different organisms along similar evolutionary paths due to similar **selection** pressures acting on them.

Razviće različitih organizama uz slične evolucione putanje usled sličnih selekcionih pritisaka koji deluju nad istim.

paralogous Homologous genes/gene products that have duplicated and evolved divergently *within* a species. e.g. beta- and gamma-globulin genes. Homologni produkti gena koji su udvostručeni i razvijeni divergentno *unutar* vrste. Na pr. beta- i gama-globulinski geni.

parameter A value or measurement that varies with circumstances, and is used as a reference to quantify a situation or a process.

Vrednost merenja koja varira sa okolnoštim, i korišćena je kao referenca za određivanje količine situacije ili procesa.

parasexual cycle A sexual cycle involving changes in **chromosome** number but differing in time and place from the usual sexual cycle; occurring in those fungi in which the normal cycle is suppressed or apparently absent.

Seksualni ciklus koji uključuje promene u broju hromozoma, ali se razlikuje u vremenu i mestu od uobičajenog polnog ciklusa; dešava se u onih gljiva u kojih je normalan ciklus suzbijen, ili odsutan.

parasexual hybridization *See: somatic hybridization.*

Vidi: somatic hybridization.

parasite An organism deriving its food from the living body of another organism.

Organizam koji obezbeđuje hranu od živog tela drugog organizma.

parasitism The close association of two or more dissimilar organisms, where the association is harmful to the **host**, but beneficial to the **parasite**.

Usko povezivanje dva ili više različitih organizama, gde je povezivanje štetno za domaćina, ali korisno za parazita.

parasporal crystal Tightly packaged insect **pro-toxin** molecules that are produced by strains of *Bacillus thuringiensis* during the formation of resting spores.

Zbijeno pakovane protoksinskih molekula insekta koji se proizvode od sojeva *Bacillus thuringiensis*-a tokom formiranja preostalih spora.

paratope Synonym for **antibody binding site**.

Sinonim za antibody binding site.

parenchyma 1. A plant tissue consisting of spherical, undifferentiated cells, frequently with air spaces between them. 2. Loose connective **tissue** formed by large cells.

1. Biljno tkivo koji se sastoji od sfernih, nediferenciranih ćelija, često sa vazdušnim prostorima između njih. 2. Nevezano vezivno tkivo, formirano od velikih ćelija.

parenchymatous (adj.) *See: parenchyma.*

Vidi: parenchyma.

parthenocarp The development of fruit without fertilization.

Razviće ploda bez oplodjenja.

parthenogenesis Production of an **embryo** from an unfertilized egg.

Proizvodnja embriona od neoplođenog jajeta.

partial digest Incomplete reaction of a **restriction enzyme** with **DNA**, such that only a proportion of the target sites are cleaved. Partial digests are often performed to give an overlapping collection of **DNA** fragments for use in the construction of a gene bank. *Synonym: incomplete digest. Opposite: complete digest.*

Nekompletna reakcija restrikcionog enzima sa DNK, tako da samo deo od ciljnih mesta bude razdvojen. Parcijalna razdvajanja su često izvedena da daju prekrivenu kolekciju DNK fragmenata, za korišćenje u konstrukciji u banki gena. *Sinonim: incomplete digest. Suprotno: complete digest.*

particle radiation High energy nuclear emissions, used as physical agents of **mutagenesis**. Three major types typically used: alpha (positively charged), beta (negatively charged), or neutrons (uncharged).

Visoko energetske nuklearne emisije, korišćene kao fizički agensi mutageneze. Obično se koriste tri obična tipa: alfa (pozitivno punjeni) beta (negativno punjeni), ili neutroni (nepunjeni).

parts per million (Abbreviation: ppm).

Unit of concentration: 1ppm = 1mg dissolved matter per litre of solution. (Skraćenica: ppm) Jedinica koncentracije: 1 ppm = 1 mg rastvorene materije po litru rastvora.

parturition The process of giving birth. Proces rađanja.

passage The transfer or transplantation of cells from one **culture medium** to another.

Prenos transplantacije ćelija od jednog medijuma kulture do drugog.

passage number The number of times cells in culture have been sub-cultured.

Broj koliko puta su ćelije u kulturi bile pod-kultivisane.

passage time Time interval between successive sub-cultures.

Vremenski interval između sukcesivnih pod-kultura.

passive immunity 1. Natural acquisition of antibodies by the **foetus** or neonate (newborn) from the mother. 2. The artificial introduction of specific antibodies by the injection of **serum** from an immune animal. In both cases, temporary protection is conferred on the recipient. *See: immunization, immunoprophylaxis.*

1. Prirodno sticanje antitela od majke putem fetusa ili novorođenčeta. 2.- Veštačko uvođenje specifičnih antitela putem injekcije seruma od imune životinje. U oba slučaja privremena zaštita se prenosi na recipijenta. *Vidi: immunization, immunoprophylaxis.*

pat gene A gene obtained from *Streptomyces* sp. encoding resistance to glufosinate-ammonium containing herbicides. (These inhibit plant synthesis of glutamine). Used widely as a means of transgenically inducing **herbicide resistance** in crop plants. *Synonym: bar gene.*

Gen, dobijen od *Streptomyces* sp. koji enkodira rezistentnost na herbicide koji sadrže glufosinat-amonijak (oni inhibiraju biljnu sintezu glutamina). Korišćeni široko kao sredstvo za transgenični izazvanu rezistentnost na herbicide u usevima. *Sinonim: bar gen.*

patent A legal permission to hold exclusive right – for a defined period of

time – to manufacture, use or sell an invention.

Legalna dozvola da se drži ekskluzivno pravo – za određeni period vremena – za proizvodnju, korišćenje ili prodaju pronalaska.

paternal Pertaining to the father.

Pripadajući ocu.

pathogen A disease-causing organism (- generally microbial: bacteria, fungi, viruses; but can extend to other organisms: e.g. nematodes etc.). *Synonym: infectious agent. See: latent agent.*

latent agent.

Organizam izazivač bolesti (opšte mikrobn: bakterije, gljive, virusi, ali se može proširiti na druge organizme: na pr. nematode itd). *Sinonim: infectious agent. Vidi: latent agent.*

pathogenesis related protein (Abbreviation: PR **protein**). One of a group of **proteins** that are characteristically highly expressed as part of a plant's response to **pathogen** attack. Many of these **proteins** are similarly expressed following **infection** with a broad range of pathogens, indicating their role in the **hypersensitive response**.

(Skracenicica: PR protein) Jedan iz grupe proteina koji su karakteristično visoko ispoljeni kao deo biljnog reagovanja na napad patogena. Mnogi od tih proteina su slično ispoljeni sledeći infekciju sa širokim rasponom patogena, pokazujući njihovu ulogu u hipersenzitivnom regovanju.

pathogen-free Uncontaminated with pathogen.

Nezagađen patogenom.

pathotoxin Substance secreted by certain **pathogens**, in order to attack the **host** tissue. Some pathotoxins are also toxic to non-hosts, especially animals or humans.

Supstanca, koju luče neki patogeni, da bi napala tkivo domaćina. Neki patotoksini su takođe toksični za ne-domaćine, naročito životinje i ljude.

pathovar Strain of a plant-attacking bacterium or fungus that can be differentiated from others by their interaction with specific **host cultivars**.

Soj bakterije ili gljive, koji napada biljke koji se razlikuje od drugih interakcijom sa specifičnim domaćinima.

PBR Abbreviation for **plant breeders' rights**.

Skraćenica za plant breeders' rights.

pBR322 One of the first **plasmids** used for cloning **DNA** in *E. coli*.

Jedan od prvih plazmida, korišćenih za kloniranje DNK u *E. coli*.

PCR Abbreviation for **polymerase chain reaction**.

Skraćenica za polymerase chain reaction.

PCR-RFLP Alternative term for **cleaved amplified polymorphic sequence**.

Alternativni izraz za cleaved amplified polymorphic sequence.

PCV Abbreviation for **packed cell volume**.

Skraćenica za packed cell volume.

pectin A group of naturally occurring complex **polysaccharides**, containing galacturonic acid, found in plant **cell walls**, where their function is to cement cells together. Used as a thickening agent in solid **culture media** and as a food additive.

Grupa prirodnih kompleksnih polisaharida, koji sadrže galakturonsku kiselinu, nađenu u ćelijskim zidovima biljke, gde je njihova funkcija da cementira ćelije. Korišćen kao zgušnjavajuće sredstvo u čvrstim medijumima kulture i kao aditiv hrani.

pectinase Enzyme catalysing the **hydrolysis** of **pectin**. Used in co-

njunction with **cellulase** to solubilize plant **cell walls**.

Enzim koji katalizuje hidrolizu pektina.

Korišćen u spoju sa celulozom da rastvori ćelijske zidove biljke.

pedicel Stalk or **stem** of the individual flowers of an inflorescence.

Stablo ili drška pojedinih cvetova na cvasti.

pedigree The ancestry of an individual.

Potomstvo neke individue.

peduncle Stalk or **stem** of a flower that is born singly; the main stem of an inflorescence.

Stablo ili cvetna drška koja je nastala pojedinačno, glavno stablo neke cvasti.

PEG Abbreviation for **polyethylene glycol**.

Skraćenica za polyethylene glycol.

penetrance The proportion of individuals in a **population** that **express** the **phenotype** expected from their **genotype** with respect to a specific gene. Measures the extent to which phenotype predicts genotype.

Proporcija individua u populaciji koje ispoljavaju fenotip u zavisnosti od njihovog genotipa. s obzirom na specifičan gen. Meri obim do kojeg fenotip predviđa genotip.

peptidase An enzyme that catalyzes the **hydrolysis** of a **peptide** bond.

Enzim koji katalizuje hidrolizu peptidne veze.

peptide A sequence of **amino acids** linked by **peptide bonds**; a breakdown or build-up unit in **protein** metabolism. Typically used to describe low molecular weight species. *See: polypeptide*.

Sekvenca aminokiselina vezanih peptidnim vezama; razložena ili građevna jedinica proteinskog metabolizma.

Obično korišćena da opiše vrste niskomolekularne težine. *Vidi*: polypeptide.

peptide bond The chemical bond holding **amino acid** residues together in peptides and **proteins**. The (CO-NH) bond is formed by the condensation, with loss of a water molecule, between the carboxyl (-COOH) group of one amino acid and the amino (-NH₂) of the next amino acid.

Hemijska veza koja drži zajedno rezidue aminokiselina u peptidima i proteinima. Veza (CO-NH) se formira kondenzacijom, gubitkom molekula vode, između karboksilne (-COOH) grupe u jedne aminokiseline i amino (-NH₂) grupe sledeće aminokiseline.

peptide expression library A collection of **peptide** molecules, produced by **recombinant** cells, in which the **amino acid** sequences are varied.

Skup peptidnih molekula, proizveden putem rekombinantnih ćelija, u kojima sekvence aminokiselina variraju.

peptide nucleic acid (Abbreviation: PNA). A synthetic **oligonucleotide** analogue, in which the sugar backbone is replaced by a **peptide** chain, upon which the **nucleoside** residues are strung. **Probes** made from PNA appear to have greater **specificity** than those made from **DNA**.

(Skraćenica: PNA) Sintetički analog oligonukleotida, u kojem je šećer zamenjen peptidnim lancem, na koji su pričvršćene nukleotidne rezidue. Probe načinjene sa PNA izgleda da imaju veću specifičnost nego one od DNK.

peptide vaccine A short chain of amino acids that can induce antibodies against a specific infectious agent.

Kratak lanac aminokiselina koji može da izazove antitela protiv specifičnog infektivnog agensa.

peptidyl transferase An enzyme bound tightly to the large sub-unit of the ribosome, that catalyses the formation of **peptide** bonds between **amino acids** during translation.

Enzim, usko vezan za veliku podjedinicu ribozoma, koji katalizuje formiranje peptidnih veza između aminokiselina tokom sinteze.

peptidyl-tRNA binding site (Abbreviation: P-site). The site on a **ribosome** that hosts the **tRNA** to which the next **amino acid** for the growing **polypeptide** chain is attached.

(Skraćenica: P-site) Mesto na ribozomu, koje udomuje gde se vezuje tRNK, na koju je pričvršćena sledeća aminokiselina za rast polipeptidnog lanca.

perennial A plant that flowers continuously for several years.

Biljka koja cveta kontinuirano tokom nekoliko godina.

pericentric inversion A chromosomal rearrangement in which a segment of chromosome, including the **centromere**, is rotated.

Drugi raspored lokusa na hromozomu, u kojem je invertiran segment hromozoma, uključujući centromeru.

periclinal The orientation of **cell wall** or plane of **cell division** parallel to the reference surface.

Orijentacija ćelijskog zida ili površine ćelijske deobe, paralelno traženoj površini.

periclinal chimera 1. Genotypically or cytoplasmically different tissues arranged in concentric layers. 2. A **chimera** in which one or more layers of tissue derived from one **graft** member enclose the central **tissue** derived from the other member of the graft.

1. Genotipski ili citoplazmički različita tkiva, postavljena u koncentričnim slojevima. 2. Himera, u kojoj jedan

ili više slojeva tkiva, poreklom od jednog dela kalema, okružuje centralno tkivo poreklom od drugog dela kalema.

pericycle Region of the plant bounded externally by the **endodermis** and internally by the **phloem**. Most roots originate from the pericycle.

Region biljke eksterno vezane endodermisom, a interno floemom. Većina korenova potiče od pericikla.

periplasm The space between the **cell** (cytoplasmic) membrane of a bacterium or fungus and the outer membrane or cell wall. *Synonym*: periplasmic space.

Prostor između ćelijske (citoplazmične) membrane bakterije ili gljive i druge membrane ili ćelijskog zida. *Sinonim*: periplasmic space.

permanent wilting point (Abbreviation: PWP). The moisture content of a soil below which plants wilt to such an extent that they fail to recover even when fully watered.

(Skraćenica: PWP) Sadržaj vlage zemljišta ispod kojeg biljke venu do te mere da nisu u stanju da se oporave, čak iako se obilno zalivaju.

permeable Referring to a membrane, cell or cell system through which small molecules can diffuse.

Odnosi se na membranu, ćeliju ili ćelijski sistem, kroz koji mogu da prolaze male molekule.

persistence Ability of an organism to remain in a particular setting for a period of time after it is introduced.

Sposobnost organizma da ostane u posebnom određenju tokom vremena, posle uvođenja istog.

persistent Chemicals with a long inactivation or degradation time, such as some pesticides. Persistent substances can become dangerously concen-

trated in the tissues of organisms at the top end of a food chain.

Hemikalije, sa dugim vremenom neaktivnosti ili degradacije, kao kod nekih pesticida. Perzistentne supstance mogu da postanu veoma koncentrovane u tkivima organizma na gornjem kraju lanca hrane.

PERV Abbreviation for **porcine endogenous retrovirus**.

Skraćenica za porcine endogenous retrovirus.

pesticide A toxic chemical product that kills harmful organisms (e.g. insecticides, fungicide, weedicides, rodenticides).

Toksičan hemijski produkt koji ubija štetne organizme (na pr. insekticidi, fungicid, herbicidi, rodenticidi).

petal One of the parts of the flower that make up the corolla.

Jedan od delova cveta koji čine korolu (venčić).

petiole Stalk of leaf. *See*: **pedicel**; **peduncle**.

Lisna drška. *Vidi*: pedicel; peduncle.

Petri dish Flat round glass or plastic dish with a matching lid, used for small-scale culturing of organisms, germinating seeds etc. Also referred to as plates, hence to **plate** a culture.

Ravna, okrugla staklena ili plastična posuda, sa odgovarajućim poklopcem, koja se koristi za malo kultivisanje organizama, klijajućih semena, itd. Takođe se odnosi na specijalne podloge, dakle postaviti na specijalnu podlogu u kulturi.

PFGE Abbreviation for **pulsed-field gel electrophoresis**.

Skraćenica za pulsed-field gel electrophoresis.

PG Abbreviation for **polygalacturonase**. Skraćenica za polygalacturonase.

pH Logarithmic measure of acidity/alkalinity of a solution. A pH of 7 is neutral (e.g. pure water), whereas below 7 is acid and above 7 is alkaline. Logaritamsko merenje kiselosti / alkalnosti rastvora. pH od 7 je neutralna (na pr. čista voda), dok je ispod 7 kisel, a preko 7 alkalna.

phage Abbreviation for **bacteriophage**. Skraćenica za bacteriophage.

phagemids Cloning vectors that contain components derived from both **phage** and **plasmid DNA**.

Klonirajući vektori koji sadrže komponente koje potiču kako od fage, tako i od plasmidne DNK.

phagocytes Immune system cells that ingest and destroy viruses, bacteria, fungi and other foreign substances or cells.

Imune sistemske ćelije koje gutaju i uništavaju viruse, bakterije, gljivice i druge strane supstance ili ćelije.

phagocytosis The process by which foreign particles invading the body are engulfed and broken down by **phagocytes**.

Proces kojim se razaraju strani delići koji napadaju organizam i kojeg razlažu fagociti.

pharmaceutical agent *See: therapeutic agent*.

Vidi: therapeutic agent.

Pharmacokinetics The quantitative measurement of how drugs move around the body, and the processes which control their absorption, distribution, metabolism, and excretion.

Kvantitativno merenje kretanja lekova po telu i procesa koji kontrolišu njihovu apsorpciju, distribuciju, metabolizam i izlučivanje.

phase change The developmental change from one **maturation** state to another.

Razvojna promena od jednog stanja starjenja do drugog.

phase state The **coupling** or **repulsion** of two linked genes.

Združivanje ili raskidanje dva vezana gena.

PHB Abbreviation for **polyhydroxybutyrate**.

Skraćenica za polyhydroxybutyrate.

pH-electrode-based sensor Sensor in which a standard **pH** electrode is coated with a biological material. Many biological processes raise or lower pH, and the changes can be detected by the pH electrode.

Senzor u kojem je standardna pH elektroda pokrivena biološkim materijalom. Mnogi biološki procesi povećavaju ili snižavaju pH, a promene mogu da budu otkrivene putem pH elektrode.

phenocopy An environmentally induced, non hereditary **variation** in an organism, resembling a genetically determined trait.

Izazvana spoljnom sredinom, nenasledna varijacija u nekom organizmu, slična genetički određenoj osobini.

phenolic oxidation Common aspect of the wound response in plants. Phenolic oxidation is often indicated by blackening of **tissue** and it may be a precursor to growth inhibition or, in severe cases, to tissue **necrosis** and death.

Zajednički aspekt reagovanje na oštećenje u biljkama. Fenolna oksidacija se često manifestuje tkivom koje pocrni može biti prethodnik inhibicije rasta, ili u izrazitim slučajevima, nekroze tkiva i smrti.

phenolics Compounds with hydroxyl group(s) attached to the benzene ring, forming esters, ethers and salts.

Phenolic substances produced from newly explanted tissues are liable to oxidise, and as a result form coloured compounds visible in nutrient media. Jedinjenja sa hidroksilnom grupom (grupama), pridodata na benzenski prsten, formirajući estere, etre i soli. Fenolne supstance, koje proizvedenu novo kalemljena tkiva, podložne su oksidaciji i kao rezultat formiraju obojena jedinjenja, vidljiva u hranljivim medijumima.

phenotype The visible appearance of an individual (with respect to one or more traits) which reflects the reaction of a given **genotype** with a given environment.

Spoljni izgled individue (u vezi jedne ili više osobina), koji odražava reakciju datog fenotipa sa sredinom.

pheromone A hormone-like substance that is secreted by an organism into the environment as a specific signal to another organism, usually of the same species.

Supstanca slična hormonu, koja se luči iz organizma u sredinu kao specifičan signal drugom organizmu, obično od iste vrste.

phloem Specialized **vascular plant** tissue for the transport of assimilates (generally sugars) from the point of synthesis (in the leaf) to other parts of the plant. It consists of sieve tubes, companion cells, phloem parenchyma and fibres.

Specijalizovano vaskularno biljno tkivo za transport asimilata (opšte uzev, šećera) od mesta sinteze (u listu) do drugih delova biljke. Sastoji se od sitastih cevi, pridruženih ćelija, parenhima floema i vlakana.

phosphatase An class of enzymes that catalyze the **hydrolysis** of esters of

phosphoric acid, removing a phosphate group from an organic compound.

Grupa enzima koji katalizuju hidrolizu estera fosforne kiseline, odstranjujući fosfatnu grupu organskog jedinjenja.

phosphodiester (phosphodiester) bond A bond in which a phosphate group joins adjacent carbons through ester linkages. A condensation reaction between adjacent nucleotides results in a phosphodiester bond between 3' and 5' carbons in **DNA** and **RNA**.

Veza, u kojoj fosfatna grupa vezuje okolne ugljenike putem esterskih veza. Kondenzaciona reakcija između susjednih nukleotida dovodi do fosfodiesterne veze između 3' i 5' ugljenika u DNK i RNK.

phospholipase A2 An enzyme which degrades type A2 **phospholipids**.

Enzim koji degradira tip A2 fosfolipida.

phospholipid A class of **lipid** molecules in which glycerol is linked to a phosphate group and two fatty acyl groups. Contains both polar and non-polar regions. A major component of biological membranes. *See: inositol lipid.*

Grupa lipidnih molekula, u kojoj je glicerol vezan za fosfatnu grupu i dve masne acilne grupe. Sadrži, kako polarne, tako i nepolarne regione. Glavna komponenta bioloških membrana. *Vidi: inositol lipid.*

phosphorolysis The cleavage of a bond by orthophosphate; analogous to **hydrolysis** referring to cleavage by water.

Razdvajanje veze putem ortofofata; analog hidrolize koja se odnosi na razdvajanje putem vode.

phosphorylation The addition of a phosphate group to a compound.

Dodavanje fosfatne grupe jedinjenju.

photoautotroph *See:* **autotroph**, **heterotroph**.

Vidi: autotroph, heterotroph.

photo-bioreactor Bioreactor dependent on sunlight, which is taken up by its content of plant material, usually algae.

Bioreaktor, zavisan od sunčeve svetlosti, koja se preuzima od strane sadržaja biljnog materijala, obično algi.

photoheterotroph *See:* **heterotroph**.

Vidi: heterotroph.

photoperiod The length of daylight or period of daily illumination provided for growth.

Dužina dnevnog svetlosti, ili perioda obezbeđenog dnevnog osvetljenja za rast.

photoperiodism The photoperiod required by a plant to switch from the vegetative to the reproductive stage.

Fotoperiod, potreban za biljku da pređe iz vegetativnog u reproduktivni stadijum.

photophosphorylation The formation of ATP from ADP and inorganic phosphate using light energy harvested by photosynthesis.

Formiranje ATP od ADP i neorganskog fosfata, korišćenjem svetlosne energije nakupljene putem fotosinteze.

photoreactivation A light dependent **DNA repair** process.

Proces obnove DNK, zavisan od svetlosti.

photosynthate The carbohydrates and other compounds produced in photosynthesis.

Ugljeni hidrati i druga jedinjenja, proizvedena u fotosintezi.

photosynthesis A chemical process by which green plants synthesize orga-

nic compounds from carbon dioxide and water in the presence of sunlight.

Hemijski proces kojim zelene biljke sintetisaju organska jedinjenja iz ugljen dioksida i vode, u prisustvu sunčeve svetlosti.

photosynthetic Able to use sunlight energy to convert atmospheric carbon dioxide into organic compounds. Nearly all plants, most algae and some bacteria are photosynthetic.

Sposoban da koristi sunčevu energiju, da prevede atmosferski ugljen dioksid u organska jedinjenja. Skoro sve biljke, većina algi i neke bakterije vrše fotosintezu.

photosynthetic efficiency Efficiency of converting light energy into organic compounds.

Efikasnost pretvaranja svetlosne energije u organska jedinjenja.

photosynthetic photon flux (Abbreviation: PPF). A measure of the intensity of light utilized by plants for **photosynthetic** activity.

(Skraćenica: PPF) Mera inteziteta svetlosti, koju biljake koriste za fotosintetičku aktivnost.

photosynthetically active radiation (Abbreviation: PAR). The part of the radiant energy that is capturable by natural **photosynthetic** systems (approximately equivalent to the natural light spectrum of wavelengths 400–700nm).

(Skraćenica: PAR) Deo energije zračenja koji je uhvatljiv od prirodno fotosintetičkih (približno ekvivalentan prirodnom spektru svetlosti talasnih dužina 400–700 nm).

phototropism The tendency of plants to direct shoot growth towards the source of light.

Tendencija biljaka da usmeravaju rast izdanka prema izvoru svetlosti.

phylogeny The deduced evolutionary history of related organisms.

Izvedena evoluciona istorija srodnih organizama.

physical map An indication of the separation, in bp, between pairs of linked loci. *See: mapping.*

Pokazatelj razdavajanja, u bp, između parova vezanih lokusa. *Vidi: mapping.*

phyto- (Prefix) To do with plants.

Odnosi se na biljke.

phytochemical Molecules characteristically found in plants.

Molekuli, karakteristično nađeni u biljkama.

phytochrome A pigment, found in the **cytoplasm** of green plants, which can exist in two forms Pr (biologically inactive) and Pfr (biologically active). Pfr is converted into Pr by exposure to light of wavelength 730 nm. Involved in the timing of many plant processes, e.g. dormancy, leaf formation, flowering and germination.

Pigment, nađen u citoplazmi zelenih biljaka, koji može da postoji u dva oblika, Pr (biološki neaktivan) i Pfr (biološki aktivan). Pfr se prevodi u Pr izlaganjem svetlosti talasne dužine 730 nm. Uključen u mnoge biljne procese, na pr. mirovanje, formiranje lista, cvetanje i klijanje.

phytohormone A substance that stimulates growth or other processes in plants. Major species are **auxins**, **abscisic acid**, **cytokinins**, **gibberellins** and **ethylene**.

Supstanca koja stimuliše rast ili druge procese kod biljaka. Glavne vrste su auksini, abrisinska kiselina, citokini, giberilini i etilen.

phytokinin *See: cytokinin.*

Vidi: cytokinin.

phytoparasite Parasite on plants.

Parazit na biljkama.

phytoparasitic (adj.) *See: phytoparasite.*

Vidi: phytoparasite.

phytopathogen A plant **pathogen**.

Biljni patogen.

phytoremediation The use of plants actively to remove contaminants or pollutants from either soils (e.g. polluted fields) or water resources (e.g. polluted lakes). An example is the exploitation of the Brazil water hyacinth (*Eichhornia crassipes*) to accumulate in its tissues toxic metals such as lead, arsenic, cadmium, mercury, nickel, and copper.

Korišćenje biljaka da odstrane zagađivače ili polutante iz, bilo zemljišta (na pr. zagađena zemljišta), ili vodenih resursa (na pr. zagađena jezera). Primer je iskorišćavanje brazilskog vodenog zumbula (*Eichhornia crassipes*) da akumulira u svojim tkivima toksične metale kao što su olovo, arsen, kadmijum, živa, niki i bakar.

phytosanitary Plant health, including quarantine.

Zdravlje biljaka, uključujući karantin.

phytostat Apparatus designed for the semi-continuous chemostatic culture of plant cells.

Aparat, konstruisan za polukontinuiranu hemostatičku kulturu biljnih ćelija.

phytosterol One of a group of biologically active **phytochemicals** present in the seeds of certain plants. Evidence suggests that human consumption of certain phytosterols, such as **â-sitosterol**, can help to lower total **serum** cholesterol and low-density lipoproteins levels, thereby reducing the risk of coronary heart disease.

Jedna od grupe biološki aktivnih fitohemikalija, prisutnih u semenju izve-

snih biljaka. Podaci ukazuju konzumiranje izvesnih fitosterola kod ljudi, kao što je β -sitosterol, može da pomogne da se smanji ukupan serumski holesterol i nivo lipoproteina niske gustine, time smanjujući rizik od koronarnih srčanih oboljenja.

pigment Compounds that are coloured by the light they absorb. Light absorption is exploited by plants both as a means of energy capture (*see: photosynthesis*) and as a signalling mechanism (*see: phytochrome*).

Jedinjenja, koja su obojena putem svetlosti koju apsorbuju. Apsorpcija svetlosti koriste biljake kao sredstvo za dobijanje energije (vidi: photosynthesis) i kao signalni mehanizam (vidi: phytochrome).

pinocytosis The engulfing of a minute droplet of liquid by a living cell.

Usvajanje male kapljice tečnosti od strane žive ćelije.

pipette Widely used device for accurate dispensing of small volumes of liquids.

Široko korišćena naprava za tačno odmeravanje malih količina tečnosti.

pistil Central organ of the flower, typically consisting of **ovary**, **style** and **stigma**. Usually referred to as the female part of a perfect flower.

Centralni organ cveta, obično sadrži ovarijum, stubić i žig. Obično se odnosi na ženski deo savršenog cveta.

plant breeders' rights (Abbreviation: PBR). Legal protection of a new plant **variety** granted to the breeder or his successor in title. The effect of PBR is that prior authorization is required before the material can be used for commercial purposes.

(Skraćenica: PBR) Legalna zaštita nove biljne vrste, garantovana odgajivaču ili njegovom nasledniku. Efekt PBR-

a je da je potrebna predhodna autorizacija, pre nego što se materijal može koristiti u komercijalne svrhe.

plant cell culture *In vitro* growth of plant cells.

In vitro rast biljnih ćelija.

plant cell immobilization Entrapment of plant cells in **gel** matrices so that they are protected from physical damage. The cells are suspended in liquified droplets which are then allowed to harden. Commonly used matrices are alginates, **agar** or polyacrylamide.

Utapanje biljnih ćelija u matrice gela, tako da su zaštićene od fizičkog oštećenja. Ćelije su odložene u tečne kapljice koje se zatim ostavljaju da očvrstnu. Obično korišćene matrice su alginati, agar ili poliakrilamid.

plant genetic resources (Abbreviation: PGR). The reproductive or vegetative propagating material of: 1. cultivated varieties (cultivars) in current use and newly developed varieties; 2. obsolete **cultivars**; 3. primitive cultivars (landraces); 4. wild and **weed** species, near relatives of cultivated varieties; and 5. special genetic stocks (including elite and current breeder's lines and mutants).

(Skraćenica: PGR) Reproductivni ili vegetativni razmnožavajući materijal od: 1. kultivisanih sorata u tekućem korišćenju i novo stvorenih sorata; 2. zastarelih sorata; 3. lokalnih populacija (landrasa); 4. divljih i korovskih vrsta, bliskih srodnika kultivisanih vrsta; i 5. specijalnih genetičkih skladišta (uključujući elitne i sadašnje linije odgajivača i mutanata).

plant growth regulator An organic compound, either natural or synthetic, and other than a nutrient, that modifies or controls one or more specific

physiological processes within a plant.

Organsko jedinjenje, bilo prirodno ili sintetičko, i drugo osim hranljivih materija, koje modifikuje ili kontroliše jedan ili više specifičnih fizioloških procesa u biljkama.

plant hormone *See: plant growth regulator.*

Vidi: plant growth regulator.

plant variety protection (Abbreviation: PVP). Synonym for **plant breeders' rights**.

(Skraćenica: PVP) *Sinonim* za plant breeders' rights.

plant variety rights *See: plant breeders' rights.*

Vidi: plant breeders' rights.

plantibody An antibody expressed transgenically in an engineered plant.

Antitelo, ispoljeno transgenom u biljci stvorenoj inženjeringom.

plantlet A small rooted shoot regenerated from **cell culture** following **embryogenesis** or **organogenesis**. Plantlets can normally develop into normal plants when transplanted to soil.

Mali izdanak sa korenom, regenerisan iz kulture ćelija posle embriogeneze ili organogeneze. Biljčice mogu da se razvijaju u normalne biljke kada se presade u zemljište.

plaque A clear spot on an otherwise opaque **lawn** of bacteria, where cells have been lysed by **phage** infection.

Jasna tačka na inače retkoj čistini bakterija, gde su ćelije uništene infekcijom fagama.

plasma The fluid portion of the blood in which is suspended the white and red blood cells. Contains 8–9% solids, of which 85% is composed of the **proteins** fibrinogen, albumin, and globulin. The essential function of

plasma is the maintenance of blood pressure and the transport of nutrients and waste.

Tečni deo krvi u kojem su u suspenziji bela i crvena krvna zrnca. Sadrži 8–9% čvrstih materija od kojih je 85% sastavljeno od proteinskog fibriongena, albumina i globulina. Bitna funkcija plazme je održavanje krvnog pritiska i transport hranljivih materija i otpadaka.

plasma cells Antibody-producing white blood cells derived from B **lymphocytes**.

Bele krvna ćelije koje proizvode antitela, postale od B limfocita.

plasma membrane *See: plasmalemma.*

Vidi: plasmalemma.

plasmalemma The **lipid** bilayer and associated **proteins** and other molecules that surrounding the **protoplast**, within the cell wall. *Synonyms: cell membrane; plasma membrane.*

Dvostruki lipidni sloj i povezani proteini i druge molekule koje okružuju protoplast u okviru ćelijskog zida. *Sinonimi: cell membrane; plasma membrane.*

plasmid An circular self-replicating non-chromosomal **DNA** molecule found in many bacteria, capable of transfer between bacterial cells of the same species, and occasionally of different species. **Antibiotic resistance genes** are frequently located on plasmids. Plasmids are particularly important as **vectors** for genetic engineering.

Kružni, samoreprodukujući, nehromozomski molekul DNK, nađen u mnogih bakterija, sposoban za transfer između bakterijskih ćelija iste vrste i

povremeno različitih vrsta. Geni rezistentnosti na antibiotike su često locirani na plazmidima. Plazmidi su naročito važni kao vektori za genetički inženjering.

plasmodesma (pl.: plasmodesmata) Fine protoplasmic thread that connects adjacent plant cells by passing through the plant cell wall. Exploited by viruses as a conduit for cell to cell movement.

Fine protoplazmične niti koje povezuje susedne biljne ćelije prolazeći kroz ćelijski zid biljke. Koristi se od strane virusa kao kanal za kretanje od ćelije do ćelije.

plasmolysis Shrinkage of **protoplasm** caused by removal of water from a cell through **osmosis** when surrounded by a **hypertonic** solution.

Skupljanje protoplazme, izazvano putem osmozu odstranjivanjem vode iz ćelije kada je okružena hipertoničnim rastvorom.

plastid A general term for a number of plant **cell organelles** which carry non-nuclear **DNA**. Includes the **pigment**-carrying bodies: 1. **chloroplasts** in leaves, 2. **chromoplasts** in flowers, and 3. the starch-synthesizing amyloplasts in seeds.

Opšti izraz za neke organele biljne ćelije koje nose nenuklearnu DNK. Uključuje telašca nosioce pigmenta; 1. hloroplast u listovima, 2. hromoplaste u cvetovima i 3. skrobne sintetizujuće amiloplaste u semenu.

plastoquinone One of a group of compounds involved in the transport of electrons as part of the process of **photosynthesis**.

Jedno od grupe jedinjenja uključenih u transport elektrona, kao deo procesa fotosinteze.

plate 1. Verb: to distribute a thin film of micro-organisms or plant cells onto a solid medium. 2. Noun: refers to the two segments of a **Petri dish** or similar.

1. Glagol: rasporediti tanak film mikroorganizama ili biljnih ćelija na čvrsti medijum. 2. Imenica: odnosi se na dva dela Petrijeve posude ili slično.

platform shaker See: **shaker**.

Vidi: shaker.

plating efficiency The percentage of inoculated cells which give rise to cell colonies when seeded into **culture** vessels.

Procent inokulisanih ćelija koje omogućavaju rast kolonijama ćelija kada su zasejane u posude za gajenje kultura.

pleiotropic (adj.) See: **pleiotropy**.

Vidi: pleiotropy.

pleiotropy The simultaneous effect of a given **gene** on more than one apparently unrelated trait.

Pleiotropija. Simultani efekat datog gena ili više od jedne prividno nesrodstvene osobine.

ploidy The number of complete sets of chromosomes per cell, e.g. one set: **haploid**, two sets: **diploid**, etc.

Broj kompletnih nizova hromozoma po ćeliji, na pr. jedan niz: haploidan, dva niza diploidna, itd.

plumule The first **bud** of an **embryo**, or that portion of the young shoot above the **cotyledons**.

Prvi pupoljak jednog embriona, ili deo mladog izdanka iznad kotiledona.

pluripotent See: **totipotent**.

Vidi: totipotent.

plus tree See: **elite tree**.

Vidi: elite tree.

PNA Abbreviation for **peptide nucleic acid**.

Skraćenica za peptide nucleic acid.

pneumatic reactor *See: airlift fermenter.*

Vidi: airlift fermenter.

point mutation A change in **DNA** sequence at a specific **locus**. The smallest change involves the substitution, **deletion** or insertion of a single **nucleotide**. *See: single nucleotide polymorphism.*

Promena u sekvenci DNK na specifičnom lokusu. Najmanja promena uključuje supstituciju, deleciju ili ubacivanje jednog nukleotida. *Vidi: single nucleotide polymorphism.*

polar bodies In female animals, the products of a meiotic division that do not develop into a functional **ovum**. The first polar body comprises one of the two products of the first meiotic divisions, which may fail to divide at the second division. The second polar body comprises one of the products of the second division.

U ženki životinja, produkti mejotičke deobe koji se ne razvijaju u funkcionalnu jajnu ćeliju. Prvo polarno telašće sadrži jedan od dva produkta prve mejotičke deobe, koji ne moraju da se podele u drugoj deobi. Drugo polarno telašće u jedan od produkata druge deobe.

polar mutation A mutation that influences the functioning of genes that are **downstream** from the site of **mutagenesis** but are in the same **transcription** unit.

Mutacija koja utiče na funkcionisanje gena koji su u smeru mesta mutageneze, ali su u istoj jedinici transkripcije.

polar nuclei Two centrally located nuclei in the **embryo sac** that unite with a second **sperm** cell in a triple fusion. In some plant species (particu-

larly the **monocotyledons**), the product of this fusion develops into the endosperm.

Dva, centralno locirana nukleusa u embrionalnoj kesi, koji se sjedinjuju sa drugom ćelijom sperme u trostrukoj fuziji. U nekih biljnih vrsta (posebno monokotiledonih), kao produkt te fuzije razvija se endosperm.

polar transport A directed movement within plants of compounds (usually endogenous plant growth regulators) mostly in one direction; polar transport overcomes the tendency for **diffusion** in all directions.

Usmereno kretanje jedinjenja u okviru biljaka (obično endogenih biljnih regulatora rasta) većinom u jednom smeru; polarni transport prevazilazi tendenciju za difuziju u svim pravcima.

polarity The observed **differentiation** of an **organism, tissue** or **cell** into parts having opposed or contrasted properties or form.

Primećena diferencijacija nekog organizma, tkiva ili ćelije na delove koji imaju suprotne ili različite osobine ili oblik.

pole cells A group of cells in the posterior of *Drosophila* embryos that are precursors to the adult **germ** line.

Grupa ćelija u zadnjem delu embriona *Drosophila*-e, koja je prekursor kličine linije odraslih.

pollen Mature **microspores** of **seed** plants.

Zrele mikrospore biljaka koje formiraju seme.

pollen culture The *in vitro* culture and germination of pollen grains to generate **haploid** plants. *See: anther culture; microspore culture.*

In vitro kultura i klijanje polenovih zrnaca, da bi nastale haploidne biljke.

Vidi: anther culture; microspore culture.

pollen grain The mature **microspore**, produced in the pollen sac of angiosperms or the microsporangium of gymnosperms. Unicellular, with variable shape and size, and an elaborately structured wall.

Zrela mikrospora, proizvedena u pole-novoj kesi angiospermi ili mikrosporangijumu gimnospermi. Jednoćelijska, sa varijabilnim oblikom i veličinom i složenim strukturnim zidom.

pollination Transfer of **pollen** from **anther** to **stigma** in the process of **fertilization** in angiosperms; transfer of pollen from male to female cone in the process of fertilization in gymnosperms.

Prenos polena od prašnika do žiga tučka u procesu oplođavanja u angiospermi; prenos polena od muške do ženske kupe u procesu oplođavanja u gimnospermi.

poly-(A) polymerase Enzyme that catalyses the addition of **adenine** residues to the 3' end of **mRNA** molecules, forming the characteristic **poly-(A) tail**.

Enzim koji katalizuje dodavanje adeninskih rezidua na 3' kraj od mRNK molekula, formirajući karakterističan poly-(A) rep.

poly-(A) tail *See:* **polyadenylation**.

Vidi: polyadenylation.

polyacrylamide gel Inert **electrophoresis** matrix, formed by the **polymerization** of acrylamide **monomer** in the presence of the cross-linker *N,N'*-methylene-*bis*-acrylamide. Gels are usually supported between two glass plates, which need to be removed for post-electrophoresis manipulations. Sometimes referred to incorrectly as acrylamide gels.

Inertna elektroforezna matrica, formirana polimerizacijom akrilamid monomera u prisustvu kros-linkera *N, N'*-metilen - *bis* - akrilamida. Gelovi se obično razlivaju između dve staklene ploče, koje treba da se odstrane za stimulaciju posle elektroforeze. Nekada nekorektno korišćeno, kao akrilamid gelom.

polyacrylamide gel electrophoresis (Abbreviation: PAGE). Ubiquitous method for separating nucleic acids and **proteins** on the basis of their molecular size. The method relies on the migration through an inert matrix (**polyacrylamide gel**) of electrically charged molecules as a result of the imposition of an electric field.

(Skraceniца: PAGE) Metod za odvajanje nukleinskih kiselina i proteina na bazi njihovih molekula. Metod se oslanja na migraciju kroz inertnu matricu (poliakrilamid gel) električki napunjenih molekula, kao rezultat delovanja električnog polja.

polyadenylation Post-transcriptional addition of multiple **adenine** residues to the 3' end of eukaryotic **mRNA**. Also called poly-(A) tailing. The adenine-rich 3' terminal segment is called a poly (A) tail.

Post-transkripciono dodavanje višestrukih rezidua adenina na 3' terminalni kraj eukariotske mRNK. Takođe zvano poly-(A) opadak. Adeninom – bogat segment 3' kraja zove se poli (A) rep.

polycistronic A single **mRNA** that contains the information necessary for the production of more than one polypeptide. Particularly characteristic of prokaryotic **mRNAs**.

Jedna mRNK koja sadrži informaciju, potrebnu za proizvodnju više od jed-

nog polipeptida. Naročito karakteristična od prokariotične mRNK.

polyclonal antibody A serum sample that contains a mixture of distinct **immunoglobulin** molecules, each recognizing a different **antigenic determinant** of a given antigen.

Uzrok seruma koji sadrži smešu imunoglobulinskih molekula, od kojih svaki prepoznaje različitu antigenu determinantu datog antigena.

polycloning site *See: polylinker.*

Vidi: polylinker.

polyembryony The production of more than one **embryo** from a single **egg** cell (in animals) or from a range of embryogenic cell types (in plants). These embryos are genetically identical to one another.

Proizvodnja više od jednog embriona iz jedne jajne ćelije (u životinja), ili iz embriogeničnih ćelijskih tipova (u biljaka). Ti embrioni su genetički identični.

polyethylene glycol (Abbreviation: PEG).

A **polymer** having the general formula $\text{HOCH}_2(\text{CH}_2\text{OCH}_2)_n\text{CH}_2\text{OH}$ and available in a range of molecular weights. Thus PEG 1000 is a polyethylene glycol of average molecular weight 1000. PEG 4000 and 6000 are commonly used to promote **cell** or **protoplast** fusion, and to facilitate **DNA** uptake in the **transformation** of organisms such as yeast. Also used to concentrate solutions by withdrawing water from them via **osmosis**.

(Skraćenica: PEG) Polimer, koji ima opštu formulu $\text{HOCH}_2(\text{CH}_2\text{OCH}_2)_n\text{CH}_2\text{OH}$ i postoji u rasponu molekularnih težina. Tako, PEG 1000 je polietilen glikol prosečne molekularne težine 1000. PEG 4000 i 6000 se obično koriste da stimulišu fuziju će-

lije ili protoplasta, i da olakšaju prihvatanje DNK u transformaciji organizama kao što su kvasci. Takođe, koriste se kao koncentrovani rastvor povlačenjem vode iz njega putem osmoze.

polygalacturonase (Abbreviation: PG).

An **enzyme** which catalyses the breakdown of pectin. A tomato engineered to contain an antisense-PG gene succeeded in delaying the onset of softening, by inhibiting the expression of PG. This allowed the fruit to be picked at a riper stage than is conventionally possible, and represented the first commercialized genetically engineered crop plant.

(Skraćenica: PG) Enzim, koji katalizuje razlaganje pektina. Paradajz, koji sadrži anti-sense PG gen, utiče na odlaganju početka omekšavanja, inhibiranjem ekspresije PG-a. To je omogućilo da plod bude bran u zrelijem stadijumu nego što je uobičajeno i predstavlja prvi komercijalizovan, genetički proizveden usev.

polygene One of a number of genes, each of small effect, which together act to determine the **phenotype** of a quantitative **trait**. The result is continuous **variation** in the trait and a seemingly non-Mendelian mode of inheritance. *See: quantitative trait locus, continuous variation.*

Jedan od niza gena, svaki sa malim efektom, koji zajednički deluju i određuju fenotip kvantitativnog svojstva. Rezultat je stalna varijacija u osobini i prividno nemendelovski način nasleđivanja. *Vidi: quantitative trait locus, continuous variation.*

polygenic Character controlled by many genes of small effect. *See: polygene.* Svojtvo, kontrolisano velikim brojem gena malog efekta. *Vidi: polygene.*

polyhydroxybutyrate (Abbreviation: PHB). A **biopolymer**, with physical properties similar to polystyrene, originally discovered in the bacterium *Alcaligenes eutropus*. The **gene coding** for this compound has since been transformed into both other bacteria and into some crop plants in order to produce a source of renewable raw material for the plastics industry. It is rapidly degraded by soil micro-organisms.

(Skracenica: PHB) Biopolimer, sa fizičkim svojstvima sličan polistirenu, originalno otkriven u bakteriji *Alcaligenes eutropus*. Kodiranje gena za to jedinjenje je od tada transformisano u drugu bakteriju i u neke biljke, da bi se proizveo izvor obnovljive sirovine za plastičnu industriju. Brzo ga razlažu zemljišni mikroorganizmi.

polylinker A synthetic segment of **DNA**, designed to include a number of different **restriction endonuclease** sites. When ligated to a **DNA fragment** that is to be cloned, this enables a wide choice of restriction endonucleases to be used for the **cloning** process. *Synonym*: **multiple cloning site** (MCS).

Sintetički segment DNK, određen da uključi jedan broj različitih mesta restrikcione endonukleaze. Kada je vezan za DNK fragment koji će se klonirati, to omogućava da se koristi široki izbor restrikcionih endonukleaza za proces kloniranja. *Sinonim*: multiple cloning site (MCS).

polymer A **macromolecule** synthesized by the chemical joining of many identical or similar **monomers**. For example, amino acids, monosaccharides and nucleotides give rise to **proteins**, polysaccharides and nucle-

ic acids respectively. Water is eliminated between the monomers as they link to form chains. The individual monomer units condensed within a chain are often referred to as residues, a term which is also employed for the **bases** incorporated in polynucleotides.

Makromolekul, sintetizovan hemijskim spajanjem mnogih identičnih ili sličnih monomera. Na primer, aminokiseline, monosaharidi i nukleotidi su izvor za proteine, polisaharide, odnosno nukleinske kiseline. Voda se eliminiše između monomera, kako se oni vezuju da formiraju lance. Individualne jedinice monomera, kondenzovane u okviru lanca, često se ubrajaju u rezidue, izraz koji je takođe korišćen za baze, uključene u polinukleotide.

polymerase An enzyme that catalyses the formation of **polymers** from **monomers**. A **DNA** polymerase synthesizes DNA from deoxynucleoside triphosphates using a **complementary** DNA strand and a primer. An **RNA** polymerase synthesizes RNA from ribonucleoside triphosphates and a complementary DNA strand.

Enzim koji katalizuje formiranje polimera od monomera. DNK polimeraza sintetiše DNK od deoksinukleozid trifosfata koristeći komplementarni lanac DNK i jedan primer. RNK polimeraza sintetiše RNK od ribonukleozid trifosfata i komplementarnog lanca DNK.

polymerase chain reaction (Abbreviation: PCR). A widespread molecular biology procedure that allows the production of multiple copies (**amplification**) of a specific **DNA sequence**, provided that the base pair sequence of each end of the target is

known. It involves multiple cycles of DNA denaturation, **primer** annealing, and strand extension, and requires a **thermostable** DNA polymerase, deoxyribonucleotides, and specific **oligonucleotides** (primers).

(Skracénica: PCR) Široko raširena metoda molekularne biologije koja omogućava proizvodnju višestrukih kopija (amplifikaciju) specifične sekvence DNK, obezbeđujući da je bazni par sekvence svakog kraja cilja poznat. To uključuje višestruke cikluse denaturacije DNK, kaljenje oligonukleotida i ekstenziju lanca, i zahteva termostabilnu DNK polimerazu, deoksiribonukleotide i specifične oligonukleotide (primere).

polymerization The chemical fusion of a number of identical or similar **monomers** to form a **polymer**. Common biological polymers are **starch** (polymerized **monosaccharides**), **DNA** (**deoxyribonucleotides**) and **proteins** (**amino acids**).

Hemijska fuzija jednog broja identičnih ili sličnih monomera, da bi se formirao polimer. Obični biološki polimeri su skrob (polimerizovani monosaharidi), DNK (deoksiribonukleotidi) i proteini (aminokiseline).

polymery The phenomenon whereby a number of genes at different loci (which may be **polygenes**) can act together to produce a single effect.

Fenomen kojim jedan broj gena na različitim lokusima (koji mogu da budu poligeni), mogu delovati tako da proizvedu jedan efekat.

polymorphism 1. The occurrence of **allelic** variation at a **locus**. Polymorphism in nucleotide sequences has provided powerful diagnostic tools. *See:* **DNA diagnostics, microsatelli-**

tes, restriction fragment length polymorphism. 2. The occurrence of two or more forms in a population. *See:* **balanced polymorphism, chromosomal polymorphism.**

1. Nastanak alelskih varijacija na lokusu. Polimorfizam u sekvencama nukleotida je obezbedio moćna dijagnostička metode. *Vidi:* DNK diagnostics, microsatellites, restriction fragment length polymorphism. 2. Nastanak dve ili više formi u populaciji. *Vidi:* balanced polymorphism, chromosomal polymorphism.

polynucleotide A linear **polymer** composed of covalently linked **nucleotides**. Each link is formed by a single **phosphodiester bond**. The term is used to describe **DNA** and **RNA**.

Linerani polimer, sastavljen od kovalentno vezanih nukleotida. Svaka veza je formirana od jedne fosfodiesterске veze. Izraz se koristi da opiše DNK i RNK.

polypeptide A linear **polymer** composed of covalently linked amino acids. Each link is formed by a single **peptide bond**. Sometimes used as a synonym for **protein**, but also describes non-natural and low-molecular-weight polymers.

Linerani polimer, sastavljen od kovalentno vezanih aminokiselina. Svaka veza je formirana od jedne peptidne veze. Ponekad korišćen kao sinonim za protein, ali takođe opisuje neprirodne polimere i polimere sa niskom molekularnom težinom.

polyploid Organism, **tissue** or **cells** having more than two complete sets of chromosomes. Many crop plants are polyploid, including bread wheat (hexaploid, 6x), cotton and alfalfa (tetraploid, 4x), and banana (triploid, 3x).

Organizam, tkivo ili ćelije, koje imaju više od dva kompletna seta hormona. Mnoge biljke su poliploidi, uključujući hlebnu pšenicu (heksaploid, 6x), pamuk i lucerku (tetraploid, 4x) i bananu (triploid, 3x).

polysaccharide A linear or branched **polymer** (e.g. starch, cellulose, etc.) composed of covalently linked **monosaccharides**, including **cellulose**, **pectin** and **starch**. *Synonym*: carbohydrate.

Linerani ili granati polimer (na pr. skrob, celuloza, itd.), sastavljeni od kovalentno vezanih monosaharida, uključujući celulozu, pektin i skrob. *Sinonim*: ugljeni hidrat.

polysaccharide capsule *See*: capsule.

Vidi: capsule.

polysome A multi-ribosomal structure representing a linear array of **ribosomes** held together by **mRNA**.

Multi-ribozomalna struktura, predstavljajući linerani niz ribozoma vezanih putem mRNK.

polyspermy The entry of several **sperm nuclei** into the egg during fertilization, although only one actually fuses with the egg nucleus.

Ulazak nekoliko nukleusa sperme u jajnu ćeliju tokom oplodjenja, iako se samo jedan stvarno spoji sa nukleusom jajne ćelije.

polytene chromosome Giant chromosomes produced by **interphase replication** without division, and consisting of many identical **chromatids** arranged side by side.

Gigantski hromozomi, nastali replikacijom u interfazi bez deobe i sastoje se od mnogo identičnih hromatida postavljenih jedna do druge.

polyunsaturates Oils in which some of the carbon-carbon bonds are not

fully hydrogenated - i.e. of the form -CH=CH-, rather than -CH₂-CH₂-.

Ulja u kojima neke od ugljenik-ugljenik veza nisu potpuno hidrogenisani-t.j. od forme -CH=CH-, pre nego -CH₂-CH₂

polyvalent vaccine A **recombinant** organism into which antigenic determinants have been cloned from a number of **pathogens**, for use as a **vaccine**.

Rekombinantni organizam, u kojem su antigene determinante klonirane od jednog broja patogena, za korišćenje kao vakcine.

polyvinylpyrrolidone (Abbreviation: PVP). An occasional constituent of plant **tissue culture** isolation media. PVP is of variable molecular weight and of general formula (C₆H₉NO)_n. Its **antioxidant** properties are used to prevent oxidative **browning** of excised plant tissues. Less frequently used as an **osmoticum** in culture media.

(Skracenica: PVP) Povremeni sastojak izolacionih medijuma kulture biljnog tkiva. PVP je od varijabilne molekularne težine i od opšte formule (C₆H₉NO)_n. Njegova antioksidantska svojstva se koriste da spreče oksidativno smeđe obojenje isečenih biljnih tkiva. Redje korišćen kao osmotikum u medijumima kulture.

population A defined group of interbreeding organisms.

Određena grupa organizama, parenih u uskom srodstvu.

population density Number of cells or individuals per unit. The unit could be an area, or a volume of medium.

Broj ćelija ili individua po jedinici. Jedinica bi mogla da bude oblast ili veličina medijuma.

population genetics The branch of genetics that deals with frequencies of

alleles and genotypes in **breeding** populations.

Grana genetike koja se bavi sa frekvencijama alela i genotipova u gajenim populacijama.

porcine endogenous retrovirus (Abbreviation: PERV). The **provirus** of a porcine retrovirus. The possibility that PERVs could be activated after **xenotransplantation** of pig organs into humans has raised concern that xenotransplantation may result in the transfer of novel infections to the human population.

(Skraćenica: PERV) Provirus svinjskog retrovirusa. Mogućnost da bi PERV mogao da bude aktiviran posle ksenotransplantacije svinjskih organa u ljude, tako da ksenotransplantacija može da dovede do prenosa novih zaraza u ljudsku populaciju.

position effect The influence of the location of a gene (particularly a **transgene**) on its expression and hence its effect on phenotype.

Uticaj lokacije gena (posebno transgena) na njegovo ispoljavanje, i otuda njegov efekat na fenotip.

positional candidate gene A gene known to be located in the same region as a **DNA marker** that has been shown to be linked to a single-locus **trait** or to a **QTL**, and whose deduced function suggests that it could be the source of genetic variation in the trait in question.

Gen, lociran u istom regionu kao DNK marker, za kojeg se pokazalo da je vezan za jedno - lokusnu osobinu ili za QTL, i čija funkcija ukazuje da bi mogao biti izvor genetičke varijacije za osobinu koja je u pitanju.

positional cloning A strategy for gene cloning that relies on the identification of closely linked markers to the

target trait, and then uses **chromosome walking** to identify, isolate and characterize the gene(s) responsible for the **trait**. The strategy is particularly appropriate when the biochemical basis of the target trait is unclear, thus precluding the use of a **candidate gene** approach.

Strategija za kloniranje gena, koja se odnosi na identifikaciju usko povezanih markera ka ciljnoj osobini, a zatim koristi hromozomsko premeštanje za identifikaciju, izolaciju i karakterizaciju gena, koji su odgovorni za osobinu. Strategija je posebno odgovarajuća kada biohemijska osnova ciljne osobine nije jasna, i tako sprečava korišćenje pristupa kandidat gena.

positive control system A mechanism in which a regulatory **protein(s)** is required to turn on **gene expression**.

Mehanizam u kojem je potreban regulacioni protein da se uključi ispoljavanje gena.

positive selectable marker *See: dominant selectable marker.*

Vidi: dominant selectable marker.

positive selection A method by which cells that carry a **DNA insert** integrated at a specific chromosomal location can be selected, since this integration confers a predictable **phenotype**.

Metod, putem kojeg ćelije koje nose insert DNK, integrisane na specifičnoj hromozomskoj lokaciji, mogu, da se odabiru, pošto se ta integracija poređi sa predviđenim fenotipom.

post-replication repair A recombination-dependent mechanism for repairing damaged **DNA**.

Mehanizam, zavisan od rekombinacije za reparaciju oštećene DNK.

post-translational modification The addition of specific chemical residu-

es to a **protein** after it has been translated. Common residues are phosphate groups (phosphorylation) and sugars (glycosylation).

Dodavanje specifičnih hemijskih rezidua proteinu, pošto je sintetisan. Uobičajene rezidue su fosfatne grupe (fosforilacija) i šećeri (glikolizacija).

potentiometric *See: enzyme electrode.*
Vidi: enzyme electrode.

PPF Abbreviation for **photosynthetic photon flux**.

Skraćenica za photosynthetic photon flux.

ppm Abbreviation for **parts per million**.

Skraćenica za parts per million.

PR protein Abbreviation for **pathogenesis related protein**.

Skraćenica za pathogenesis related protein.

precautionary principle The approach whereby any possible risk associated with the introduction of a new technology is avoided, until a full understanding of its impact on health, environment etc. is available. Particularly applied to the release of genetically modified organisms, since unlike many technologies, these cannot be recalled if problems arise.

Pristup, pri kojem se izbegava bilo kakav mogući rizik povezan uvođenjem nove tehnologije, dok nije na potpuno poznat uticaj na zdravlje, sredinu itd. Posebno primenjen na oslobađanje genetički modifikovanih organizama, pošto, za razliku od mnogih tehnologija, ove se ne mogu opozvati ako se pojave problemi.

precocious germination Early germination of a **seed** or **embryo**, prior to the full maturation of the embryo.

Rano klijanje semena ili embriona, pre potpunog sazrevanja embriona.

pre-filter A coarse filter used to screen out large particles from a fluid or gas, before it is passed through a much finer filter.

Grub filter, korišćen za izdvajanje većih delova iz tečnosti ili gasa, pre nego što oni prođu kroz mnogo finiji filter.

pre-mRNA *See: primary transcript.*

Vidi: primary transcript.

pressure potential The pressure generated within a cell, being the net difference between the cell's **osmotic potential** and the **water potential** of the external environment.

Pritisak, nastao u okviru ćelije, koji pokazuje neto razliku između osmotskog potencijala ćelije i vodnog potencijala spoljne sredine.

pre-transplant A stage in **micropropagation** - the rooting and hardening process prior to transfer to soil.

Stadijum u mikropropagaciji ukorenjavanja i očvršćavanja pre prenosa u zemljište.

preventive immunization Infection with an **antigen** to elicit an **antibody** response that will protect the organism against future infections. *Synonym: vaccination.*

Infekcija antigenom, da bi se izvelo reagovanje antitela koje će zaštititi organizam protiv budućih infekcija. *Synonym: vaccination.*

Pribnow box Consensus **sequence** near the **mRNA** start-point of prokaryotic genes. *See: TATA box.*

Sekvanca sadejstva blizu startne tačke mRNK prokariotskih gena. *Vidi: TATA box.*

primary First in order of time or development.

Prvi u redosledu vremena ili razvića.

primary antibody In an **ELISA** or other immunological assay, the **anti-**

body that binds to the **target** molecule.

U ELIZA, ili drugom imunološkom testu, antitelo koje se vezuje za ciljani molekul.

primary cell A cell or **cell line** taken directly from a living organism, which is not immortalized.

Ćelija ili ćelijska linija, uzeta direktno sa živog organizma koji nije besmrtnan.

primary cell wall The cell wall layer formed during cell expansion. Plant cells possessing only primary walls may divide or undergo differentiation.

Sloj ćelijskog zida formiran tokom širenja ćelije. Biljne ćelije koje poseduju samo primarne zidove mogu da se dele, ili da se diferenciraju.

primary culture A culture started from cells, tissues or organs taken directly from organisms. A primary culture may be regarded as such until it is sub-cultured for the first time. It then becomes a cell line.

Kultura, započeta od ćelija, tkiva ili organa, uzetih direktno od organizama. Primarna kultura se može smatrati takvom dok nije po prvi put subkultivirana. Ona tada postaje ćelijska linija.

primary germ layers *See: germ layer.* Vidi: germ layer.

primary growth 1. Apical **meristem**-derived growth; the tissues of a young plant. 2. **Explant** growth during the initial culture period.

1. Rast, poreklom od vršnog meristema; tkiva mlade biljke. 2. Rast eksplanta tokom početnog perioda kulture.

primary immune response The immune response that occurs during the first encounter of a mammal with a given **antigen**.

Imunoregovanje koje nastaje tokom prvog dodira sisara sa datim antigenom.

primary meristem **Meristem** of the shoot or root tip giving rise to the primary plant body.

Meristem izdanka, ili korenski vrh, dajući rast primarnom delu biljke.

primary structure The linear sequence of **residues** making up a **polymer** such as a nucleic acid, **polysaccharide** or **protein**. *See: secondary structure, tertiary structure and quaternary structure.*

Linerna sekvenca rezidua koja obrazuje polimer kao što je nukleinska kiselina, polisaharid ili protein. *Vidi: secondary structure, tertiary structure i quaternary structure.*

primary tissue A tissue that has differentiated from a primary **meristem**.

Tkivo koje se diferenciralo od primarnog meristema.

primary transcript The **RNA** molecule produced by **transcription** prior to any **post-transcriptional modifications**; also called a **pre-mRNA** in eukaryotes.

Molekul RNK proizveden putem transkripcije, pre bilo kakvih post-transkripcionih modifikacija, takođe nazvan pre-mRNK u eukariota.

primer A short **oligonucleotide** annealed to a **template** of **single-stranded DNA**, providing a doubled stranded structure from which **DNA polymerase** will synthesize a new **DNA** strand to produce a duplex molecule.

Kratak oligonukleotid, doveden do kalupa jednostrukog lanca DNK, obezbeđujući strukturu sa dva lanca od koje će DNK polimeraza sintetisati nov lanac dvostruke DNK.

primer walking A method for sequencing long (>1 kbp) cloned pieces of **DNA**. The initial sequencing reaction reveals the **sequence** of the first

few hundred **nucleotides** of the cloned **DNA**. Using this, a new **primer** of about 20 nucleotides is synthesized, which is complementary to a sequence near the end of sequenced DNA, and used to sequence the next few hundred nucleotides of the cloned DNA. This procedure is repeated until the complete nucleotide sequence of the cloned DNA is determined.

Metod sekvenciranja dugih (> 1 kbp) kloniranih delova DNK. Početna reakcija sekvenciranja otkriva sekvencu prvih nekoliko stotina nukleotida klonirane DNK. Koristeći to, sintetiše se novi primer od oko 20 nukleotida, koji je komplementaran sekvenci blizu kraja sekvencirane DNK i korišćen da sekvencira sledećih nekoliko stotina nukleotida klonirane DNK. Postupak se ponavlja, sve dok se ne utvrdi kompletna sekvenca nukleotida klonirane DNK.

primordium A group of cells which gives rise to an organ.

Grupa ćelija koja omogućava rast nekog organu.

primosome A **protein**-replication complex that catalyses the initiation of synthesis of **Okazaki fragments** during discontinuous replication of **DNA**. It involves **DNA primase** and **DNA helicase** activities.

Proteinsko-ponavljajući kompleks koji katalizuje početak sinteze Okazaki fragmenata tokom diskontinuirane replikacije DNK. To uključuje aktivnost DNK primaze i DNK helikaze.

prion *See: proteinaceous infectious particle.*

Vidi: proteinaceous infectious particle.

probability The frequency of occurrence of an event.

Učestalost dešavanja nekog događaja.

proband The individual in a family in whom an inherited **trait** is first identified.

Individua u familiji u kojoj je najpre identifikovana nasledna osobina.

probe A labelled **DNA** or **RNA** sequence used to detect the presence of a **complementary** sequence by **hybridization** with a **nucleic acid** sample.

Označena sekvenca DNK ili RNK, korišćena da otkrije prisustvo komplementarne sekvence putem hibridizacije sa uzorkom nukleinske kiseline.

procambium A primary **meristem** that gives rise to primary vascular tissues and, in most woody plants, to the **vascular cambium**.

Primarni meristem, koji omogućava primarnim vaskularnim tkivima i, u većini drvenastih biljaka, vaskularnom kambijumu.

procaryote *See: prokaryote, prokaryotic.*

Vidi: prokaryote, prokaryotic.

procaryotic (adj.) *See: procaryote.*

Vidi: procaryote.

processed pseudo-gene A copy of a functional gene which has no promoter, no introns and which, consequently, is not itself transcribed.

Kopija funkcionalnog gena koji nema ni promotera niti introna i koji, ni sam nije transkribovan.

production environment All input-output relationships, over time, at a particular location. The relationships include biological, climatic, economic, social, cultural and political factors, which combine to determine the productive potential of a particular enterprise. Production environments are classified as *high-*, *medium-* and *low-input*

Svi odnosi inputa i outputa tokom vremena na određenoj lokaciji. Odnosi

uključuju biološke, klimatske, ekonomske, socijalne, kulturne i političke faktore, koji se kombinuju da odrede produktivni potencijal odođenog poduhvata. Produkcione sredine su klasifikovane kao *visoko-*, *srednje-* i *nisko-ulagajuće*.

production traits Characteristics of animals, such as the quantity or quality of the milk, meat, fibre, eggs, work, etc., they (or their progeny) produce, which contribute directly to the value of the animals for the farmer, and that are identifiable or measurable at the individual level.

Svojstva životinja, kao što su količina ili kvalitet mleka, mesa, vlakna, jaja, rada itd., koje one (ili njihovi potomci) proizvode, što direktno doprinosi vrednosti životinja za farmera, a koje su identifikujuće i merljive na individualnom nivou.

productivity The amount of economically significant product generated within a given period of time from a specified quantity of resource.

Količina ekonomski značajnog produkta, dobijena u datom prirodu vremena od specifičnog resursa.

pro-embryo A group of cells arising from the division of the fertilized **egg** cell or **somatic embryo** before those cells which are to become the **embryo** are recognizable.

Grupa ćelija, nastalih od podele oplodne jajne ćelije ili somatskog embriona, pre nego što su te ćelije, koje će se razviti u embrion, prepoznatljive.

progeny Synonym of **offspring**.

Sinonim za offspring.

progeny testing With respect to discrete loci, the inference of the **allelic** state of an individual from the pattern of **segregation** among its **offspring**. For a quantitative trait, the use of

progeny performance to estimate the **breeding value** of an individual.

U vezi sa odvojenim lokusima, uvodjenje alelnog stanja neke individue u zavisnosti načina segregacije njenog potomstva. Za kvantitativnu osobinu, korišćenje performanse potomstva za izračunavanje oplemenjivačke vrednosti individue.

progesterone A **hormone** produced primarily by the corpus luteum, but also by the placenta. Its function in mammals is to prepare the inner lining of the uterus for the implantation of a fertilized egg. Also made by non-placental animals, including fish.

Hormon, koji proizvodi uglavnom žuto telo, ali takođe i placenta. Njegova funkcija je da pripremi unutarnju oblogu uterusa sisara za implantaciju oplodnog jajeta. Takođe se pravi od strane neplacentnih životinja, uključujući ribe.

programmed cell death *See:* **apoptosis**, **p53 gene**.

Vidi: apoptosis, p53 gene.

prokaryote A member of the large group of organisms, including bacteria and blue-green algae, in which the **chromosome** is not enclosed within a **nucleus**, but instead exists as a linear or circular strand. Prokaryotes do not undergo **meiosis** and do not have functional **organelles** such as mitochondria and **chloroplasts**. *See:* **eukaryote**.

Član velike grupe organizama, uključujući bakterije i plavo-zelene alge, u kojima se hromozom ne nalazi u nukleusu, nego, umesto toga, postoji kao linearan ili u obliku kruga. Prokarioti ne prolaze mejozi i nemaju funkcionalne organele kao što su mitohondrije i hloroplasti. *Vidi:* eukaryote.

prolactin A hormone, produced by the anterior pituitary gland, that stimulates and controls lactation in mammals.

Hormon, proizveden od prednjeg režnja hipofize, koji stimulira i kontrolira laktaciju u sisara.

proliferation Increase by frequent and repeated reproduction; growth by cell division.

Povećanje putem učestale i ponovljene reprodukcije; rast putem deobe ćelija.

pro-meristem The embryonic meristem that is the source of organ initials or foundation cells.

Embrioni meristem koji je izvor začetog stanja organa ili osnovnih ćelija.

promoter 1. A short DNA sequence, usually upstream of (5' to) the relevant coding sequence, to which RNA polymerase binds before initiating transcription. This binding aligns the RNA polymerase so that transcription will initiate at a specific site. The nucleotide sequence of the promoter determines the nature of the enzyme that attaches to it and the rate of RNA synthesis. 2. A chemical substance that enhances the transformation of benign cells into cancerous cells. *See: constitutive promoter.*

1. Kratka sekvenca DNK, obično navije od (5' do) relevantne kodirajuće sekvence, do koje se RNK polimeraza vezuje pre započinjanja transkripcije. To vezivanje formira RNK polimerazu tako da će transkripcija biti započeta na specifičnom mestu. Sekvenca nukleotida promotera određuje prirodu enzima koji se vezuje za nju, i brzinu sinteze DNK. 2. Hemijska supstanca koja povećava transformaciju benignih u kancerogene ćelije. *Vidi: constitutive promoter.*

promoter sequence *See: promoter* (1). *Vidi: promoter* (1).

pro-nuclear micro-injection An early, low success-rate method to achieve transgenesis in animals, involving the micro-injection of many gene copies into one of the two pro-nuclei of a fertilized egg. Now being replaced by micro-injection into a culture of cloned embryos produced by nuclear transfer, which can be tested for expression of the transgene before transfer to recipient females.

Rani metod malog uspeha za postizanje transgeneze u životinja, uključujući mikro-injekciju mnogih kopija gena u jedan od dva pro-nukleusa, oplodjenog jajeta. Sada je zamenjen mikro-injekcijom u kulturi kloniranih embriona proizvedenih putem nuklearnog transfera, koji može biti ispitan za ispoljavanje transgena pre transfera u ženke recipijente.

pro-nucleus Either one of the two haploid gamete nuclei, just prior to their fusion in the fertilized egg.

Bilo koji od dva nukleusa haploidnih gameta, neposredno pre njihove fuzije u oplodjeno jaje.

proofreading The scanning of newly synthesized DNA for structural defects, such as mis-matched base pairs. A functional activity of most DNA polymerases.

Skeniranje novo sintetizovane DNK za strukturne defekte kao što su neusklađeni bazni parovi. Funkcionalna aktivnost većine DNK polimeraza.

propagation The duplication of a whole plant from a range of vegetative materials; adapted for *in vitro* culture as micropropagation.

Duplikacija cele biljke od raznih vegetativnih materijala; adaptirana za *in vitro* kulture kao mikropropagacija.

propagule Any structure capable of giving rise to a new plant by asexual or sexual reproduction, including bulbils, leafbuds, etc.

Bilo koja struktura, sposobna da podstakne rast nove biljke putem seksualne ili aseksualne reprodukcije, uključujući male lukovice, lisne pupoljke, itd.

pro-phage The genome of a bacteriophage integrated into the chromosome of a lysogenic bacterial cell, and replicated along with its host chromosome.

Genom bakteriofaga, integrisan u hromozom lizogene bakterijske ćelije, repliciran sa hromozomom domaćinom.

prophase The first stage of nuclear division. The stage during which chromosome pairing occurs in the first division of meiosis (*see: leptonema, zygonema, pachynema, diplonema, diakinesis*). In mitosis and the second division of meiosis, the chromosomes shorten and thicken as a result of coiling.

Prvi stadijum deobe jedra. Stadijum tokom kojeg nastaje parenje hromozoma u prvoj mejotičkoj deobi (*vidi: leptonema, zygonema, pachynema, diplonema, diakinesis*). U mitozu i drugoj mejotičkoj deobi, hromozomi se skraćuju i zadebljavaju kao rezultat spiralizacije.

protamine A class of small basic proteins that replace the histones in the chromosomes of some sperm cells.

Grupa malih bazičnih proteina koji zamjenjuju histone u hromozomima nekih ćelija sperme.

protease An enzyme that catalyses the hydrolysis of proteins, cleaving the peptide bonds that link amino acids

in protein molecules. *Synonym:* peptidase.

Enzim koji katalizuje hidrolizu proteina, cepajući peptidne veze koje vezuju aminokiseline u proteinske molekule. *Sinonim:* peptidaza.

protein A macromolecule composed of one or more polypeptides, each comprising a chain of amino acids linked by peptide bonds.

Makromolekula, sastavljena od jednog ili više polipeptida, od kojih svaki sadrži lanac aminokiselina vezanih peptidnim vezama.

protein crystallization The production of a pure preparation of a protein. In this form, the three-dimensional structure of the molecule can be determined.

Proizvodnja čistog preparata proteina. U tom obliku može da se odredi trodimenzionalna struktura molekula.

protein drug *See: therapeutic agent.*

Vidi: therapeutic agent.

protein engineering Generating proteins with modified structures that confer novel properties such as higher catalytic specificity or thermal stability.

Proizvodnja proteina sa modifikovanom struktura koja prenose nova svojstva, kao što su veća katalitička specifičnost ili termalna stabilnost.

protein kinase An enzyme that catalyses the addition of a phosphate group(s) to a protein molecule at the sites of serine, threonine or tyrosine residues.

Enzim koji katalizuje dodavanje fosfatne grupe molekulu proteina na mestima serinskih, treoninskih ili tirozinskih rezidua.

protein metabolic step One step in the chain of reactions that take place in

an organism and dictate the composition of that organism.

Korak u lancu reakcija koje nastaju u organizmu i određuju sastav tog organizma.

protein sequencing The process of determining the **amino acid** sequence of a **protein**. Usually achieved following initially partial **hydrolysis** of the **protein** into smaller **peptides** by enzymatic digestion.

Proces određivanja sekvence aminokiselina proteina. Obično se postiže sledeći početnu parcijalnu hidrolizu proteina na manje peptide, putem enzimatskog razlaganja.

protein synthesis The creation of **proteins** from their constituent **amino acids**, in accordance with the encoding gene **DNA** sequence.

Stvaranje proteina iz njihovih sadržanih aminokiselina, u skladu sa enkodiranim DNK sekvencijom.

proteinaceous infectious particle Believed to be the agent responsible for the class of diseases called spongiform encephalopathies, including **scrapie** in sheep, bovine spongiform encephalopathy (BSE; mad cow disease) in cattle and CJD in humans. It is an abnormal form of a brain **protein**, and has no detectable **nucleic acid** content. *Synonym*: **prion**.

Veruje se da je agens, odgovoran za grupu bolesti zvanu spongiformne encefalopatije, uključujući skrepi kod ovaca, bovinu spongiformnu encefalopatiju (BSE; bolest ludih krava) u goveda, i CJD kod ljudi. To je abnormalni oblik proteina mozga, i ne sadrži nukleinske kiseline koji se može otkriti. *Sinonim*: prion.

proteolysis Enzymatic degradation of a **protein**.

Enzimatska razgradnja proteina.

proteolytic Having the ability to degrade **protein** molecules.

Sposobnost razgrađivanja molekula proteina.

proteome The complete complement of **proteins** made by a given **species** in all its tissues and growth stages.

Komplet proteina, sačinjen od datih vrsta u svim tkivima i stadijumima rasta.

proteomics An approach that seeks to identify and characterize complete sets of **protein**, and **protein-protein** interactions in a given species. *See*: **proteome**, **genomics**.

Pristup koji traži da identifikuje i karakteriše kompletne setove proteina i interakcije protein-protein u datoj vrsti. *Vidi*: proteome, genomics.

protocloning Regenerated plant derived from **protoplast culture** or a single **colony** derived from protoplasts in culture.

Regenerisana biljka, poreklom od kulture protoplasta, ili jedne kolonije nastale od kulture protoplasta.

protocol The step-by-step experiments proposed to describe or solve a scientific problem, or the defined steps of a specific procedure.

Korak po korak eksperimenti, predviđeni da opišu ili reše naučni problem, ili definisani koraci specifičnog postupka.

protocorm A tuberous structure, formed following the **germination** of orchid seeds, from which develops a complete plant. It develops from an unorganized embryo in the seed, comprising only a few hundred cells. In culture, vegetative **explants** of several orchid species form round, smooth protocorms which can be multiplied indefinitely or induced to regenerate into a whole plant.

Gomoljasta struktura, formirana klijanjem semena orhideje (kaćuna), od koje se razvije kompletna biljka. Ona se razvija od neorganizovanog embriona u semenu, i sadrži samo nekoliko stotina ćelija. U kulturi, vegetativni eksplantati nekoliko vrsta orhideja formiraju okrugle, glatke protokorme, koji se mogu umnožavati neograničeno, ili se navode da regenerišu celu biljku.

protoderm A primary **meristem tissue** that gives rise to epidermis.

Primarno meristemsko tkivo koje omogućava rast epidermisu.

protogyny The condition in which the female reproductive organs (**carpels**) of a flower mature before the male ones (**stamens**), thereby ensuring that self-fertilization does not occur.

Stanje u kojem ženski reproduktivni organi (plodni listići) cveta sazrevaju pre muških (prašnika), time sprečavaju samooplodnju.

protomeristem *See: pro-meristem.*

Vidi: pro-meristem.

proto-oncogene A normal gene that can be mutated to an **oncogene**. *Synonym: cellular oncogene.*

Normalan gen koji može mutirati u onkogen. *Sinonim: cellular oncogene.*

protoplasm The essential, complex living substance of cells, upon which all vital functions of nutrition, secretion, growth and **reproduction** depend.

Bitna, kompleksna živa supstanca ćelija, od koje zavise sve vitalne funkcije ishrane, sekrecije, rasta i reprodukcije.

protoplast A bacterial or plant cell for which the **cell wall** has been removed either chemically or enzymatically, leaving its **cytoplasm** enveloped by a peripheral membrane. Pro-

toplasts are spherical and smaller than the elongate, angular shaped and often vacuolated cells from which they have been released.

Bakterijska ili biljna ćelija, kojoj ćelijski zid odstranjen, bilo hemijski ili enzimatski, ostavljajući citoplazmu obavijenu perifernom membranom. Protoplasti su sferični, uglastog oblika, i često ćelije, sa vakuolama od kojih su oslobođeni.

protoplast culture The culturing *in vitro* of plant **protoplasts**. Where protoplasts can be regenerated into whole plants, they represent an attractive target for genetic manipulation.

Kultivisanje *in vitro* biljnih protoplasta. Gde protoplasti mogu da se regenerišu u cele biljke, oni predstavljaju atraktivan cilj za genetsku manipulaciju.

protoplast fusion The induced or spontaneous coalescence of two or more **protoplasts** of the same or different species origin. Where fused protoplasts can be regenerated into whole plants, the opportunity exists for the creation of novel genomic combinations. *See: cybrid.*

Izazvano ili spontano srastanje dva ili više protoplasta istog, ili od različitih vrsta. Tamo gde spojeni protoplasti mogu biti regenerisani u cele biljke, postoji prilika za stvaranje novih genomičnih kombinacija. *Vidi: cybrid.*

prototroph A nutritionally independent cell. *Opposite: auxotroph.*

Ishrambeno nezavisna ćelija. *Suprotno: auxotroph.*

pro-toxin A latent, non-active precursor form of a **toxin**.

Latentna, neaktivna forma prekursora toksina.

protozoan (pl.: protozoa) A microscopic, single-cell organism.

Mikroskopski, jednoćelijski organizam.

protruding end *See: extension.*

Vidi: extension.

provenance The geographical and/or genetic origin of an individual.

Geografsko i/ili genetičko poreklo individue.

provirus A double stranded DNA copy of the single RNA strand of a **retrovirus**, which has been integrated into a **host** genome.

Kopija dvostrukog lanca DNK, od jednog RNK lanca retrovirusa, koji je integrisan u genom domaćina.

pseudo-affinity chromatography A chromatographic technique in which a **ligand** is immobilized selectively to retain enzymes or other **proteins**.

Hromatografska tehnika, u kojoj je ligand selektivno imobilisan, da sadrži enzime ili druge proteine.

pseudo-autosomal region A section at one end of the X and Y chromosomes for which there is sufficient **homology** that there is **synapsis** between them during **meiosis**.

Deo na jednom kraju X i Y hromozoma, za koju ima dovoljno homologije da postoji sinapsis između njih za vreme mejoze.

pseudocarp A fruit that incorporates, in addition to the **ovary** wall, other parts of the flower, such as the **receptacle** (e.g. strawberry). *Synonym: false fruit.*

Plod koji uključuje, uz zid ovarijuma, druge delove cveta, kao što je cvetište (na pr. jagode). *Sinonim: false fruit.*

pseudogene An incomplete or mutated copy of a gene which is not transcribed because it lacks a continuous **open reading frame**. Those that lack **introns** are called processed pseudo-

genes and are most likely **cDNA** copies synthesized from **mRNA** by reverse transcriptase

Nekompletna ili mutirana kopija gena koji nije transkribovan, jer nema kontinuirani otvoreno čitajući okvir. Oni koji nemaju introne zovu se obrađeni pseudogeni, i najverovatnije su cDNK kopije, sintetizovane od mRNK putem reverzne transkriptaze.

Pseudomonas spp. A widely distributed Gram-negative bacterial genus. Many of the soil forms produce a **pigment** that fluoresces under ultraviolet light, hence the descriptive term fluorescent *Pseudomonas*.

Široko rasprostranjen Gram-negativni bakterijski rod. Mnoge od zemljišnih oblika proizvode pigment koji fluorescira pod ultravioletnom svetlošću, odakle požiče izraz fluorescentan *Pseudomonas*.

P-site Abbreviation for **peptidyl-tRNA binding site**.

Skraćenica za peptidyl-tRNK binding site.

psychrophile A micro-organism that can grow at temperatures below 30 °C and as low as 0 °C. *See: mesophile, thermophile.*

Mikroorganizam, koji može da raste na temperaturama ispod 30°C, i čak nisko na 0°C. *Vidi: mesophile, thermophile.*

PUC A widely used **plasmid**, containing as a **marker** a galactosidase gene.

Široko korišćen plazmid, koji sadrži kao marker gen galaktozidaze.

pulsed-field gel electrophoresis (Abbreviation: PFGE). A procedure used to separate very large (50 kbp to several Mbp) DNA molecules by alternating the direction of electric current in a pulsed manner across a gel.

(Skraćenica: PFGE) Postupak, izdvajanje vrlo velikih (50 kbp do nekoliko Mbp) DNK molekula putem promene smera električne struje, na način pulsiranja kroz gel.

punctuated equilibrium The occurrence of **speciation** events in bursts, separated by long intervals of **species** stability.

Pojava specijacije razgradnji, odvojen dugim intervalima stabilnosti vrsta.

pure line A strain in which all members are genetically nearly identical and are indistinguishable by **phenotype**. Usually created by repeated generations of self-fertilization or close inbreeding.

Soj (rod) u kojeg su svi članovi skoro identični i ne razlikuju se po fenotipu. Obično stvoren nizom generacija samooplodnje, ili u uskom srodstvu.

purification tag *See: affinity tag.*

Vidi: affinity tag.

purine A double-ring, nitrogen-containing **base** present in **nucleic acids**. **Adenine** (A) and **guanine** (G) are the two purines normally present in **DNA** and **RNA** molecules.

Baza sa dva prstena koja sadrži azot, prisutan u nukleinskim kiselinama. Adenin (A) i guanin (G) su dva purina normalno prisutna u molekulima DNK i RNK.

PVP 1. Abbreviation for **polyvinylpyrrolidone**. 2. Abbreviation for **plant variety protection**.

1. Skraćenica za polyvinylpyrrolidone.
2. Skraćenica za plant variety protection.

PVR Abbreviation for **plant variety rights**.

Skraćenica za plant variety rights.

PWP Abbreviation for **permanent wilting point**.

Skraćenica za permanent wilting point.

pyrethrins Active constituents of pyrethrum (*Tanacetum cinerariifolium*) flowers, used as insecticides.

Aktivni sastojci cvetova buhača (*Tanacetum cinerariifolium*), korišćenih kao insekticida.

pyrimidine A single-ring, nitrogen-containing **base** present in **nucleic acids**.

Cytosine (C) and **thymine** (T) are present in **DNA**, whereas **uracil** (U) replaces T in **RNA**. Thymine is a synonym for 5-methyluracil.

Baza sa jednim prstenom, koja sadrži azot, prisutna u nukleinskoj kiselini. Citozin (C) i timin (T) su prisutne u DNK, dok uracil (U) zamenjuje T u RNK. Timin je sinonim za 5-metiluracil.

pyrogen Bacterial substance that causes fever in mammals.

Bakterijska supstanca koja izaziva groznicu u sisara.

pyrophosphate A phosphate ion **dimer**; may be released on **hydrolysis** of **ATP**.

Fosfatni dimer joda; može da bude otpušten pri hidrolizi ATP-a.

Q

q Denotes the longer of the two **chromosome** arms, e.g. human 10q is the long arm of human chromosome 10.

Označava duži krak hromozoma, na pr. ljudski 10q je dugi krak od ljudskog hromozoma 10.

q-beta replicase A viral **RNA polymerase** secreted by a **bacteriophage** that infects *E. coli*. It has the property of being able to copy **RNA** sequences at a rapid rate.

Virusna RNK polimeraza, koju luči bakteriofag koja inficira *E. coli*. Ima svojstvo da velikom brzinom kopira sekvence RNK.

QSAR Abbreviation for **quantitative structure-activity relationship**.

Skraćenica za kvantitativan odnos struktura-aktivnost.

QTL Abbreviation for **quantitative trait locus**.

Skraćenica za lokus kvantitativne osobine.

quadrivalent A chromosome configuration visible in late **prophase** and **metaphase** of the first meiotic division, where four **chromosomes** are linked by chiasmata. Can occur in **autotetraploids** when four **homologous** chromosomes pair, or in **diploids** as a result of heterozygosity for a reciprocal translocation between two non-homologous chromosomes.

Hromozomska konfiguracija, vidljiva u kasnoj profazi i metafazi prve mejo-

tičke podele, gde su četiri hromozoma vezana hiazmama. Može nastati kod autotetraploida kada se četiri homologna hromozoma sparuju, ili kod diploida kao rezultat heterozigotnosti za recipročnu translokaciju između dva nehomologna hromozoma.

quadruplex The inheritance of alleles in **autotetraploids**. A **genotype** *AAAa* will produce gametes *AA*, *Aa* in the ratio 3:1.

Nasleđivanje alela u autotetraploidima. Genotip *AAAa* će proizvesti gamete *AA*, *Aa* u odnosu 3:1.

qualitative trait A trait that shows **discontinuous variation** - i.e. individuals can be assigned to one of a small number of discrete classes.

Osobina koja pokazuje diskontinuiranu varijaciju – t.j. individue mogu da budu grupisane u jednoj od malog broja odvojenih klasa.

quantitative genetics The area of genetics concerned with the **inheritance** of **quantitative traits** that show continuous variation, as opposed to **qualitative traits**. Since many of the critical targets in both plant and animal **breeding** are of this type, most practical improvement programs involve the application of quantitative genetics.

Oblast genetike koja se odnosi na nasleđivanje kvantitativnih osobina, koje pokazuju kontinuiranu varijaciju, na-

suprot kvalitativnim osobinama. Pošto su mnogi od kritičnih ciljeva u oplemenjivanju biljaka i životinja kvantitativne prirode, većina praktičnih programa unapređenja uključuje primenu kvantitativne genetike.

quantitative inheritance Inheritance of measurable traits that depend on the cumulative action of many genes and/or involve a significant proportion of non-genetic determination.

Nasleđivanje merljivih osobina koje zavise od kumulativnog delovanja većeg broja gena i/ili uključuje signifikantnu proporciju ne-genetičke varijabilnosti.

quantitative structure-activity relationship (Abbreviation QSAR). A computer modelling technique that enables the prediction of the likely activity of a molecule before it is synthesized. QSAR analysis relies on recognizing associations of molecular structures and activity from historical data.

(Skracenicica: QSAR) Tehnika kompjuterskog modelovanja koja omogućava predviđanje verovatne aktivnosti molekula pre nego što je sintetizovan. QSAR analiza odnosi se na prepoznavanje povezanosti molekularnih struktura i aktivnosti iz istorijskih podataka.

quantitative trait A measurable **trait** that shows **continuous variation** (e.g. height, weight, colour intensity, etc.) - i.e. the **population** cannot be classified into a few discrete classes.

Merljiva osobina koja pokazuje kontinuiranu varijaciju (na pr. visine, težine, intenziteta boje, itd.) t.j. populacija ne može da bude klasifikovana u nekoliko odvojenih klasa.

quantitative trait locus (Abbreviation: QTL). A locus where **allelic varia-**

tion is associated with variation in a **quantitative trait**. The presence of a QTL is inferred from genetic mapping, where the total variation is partitioned into components linked to a number of discrete **chromosome** regions.

(Skracenicica: QTL) Lokus gde je alelska varijacija povezana sa varijacijom u jednoj kvantitativnoj osobini. Prisustvo QTL-a je rezultat mapiranja gena, gde je totalna varijacija podeljena na komponente, vezane za jedan broj odvojenih hromozomskih regiona.

quantum speciation The rapid formation of new species, primarily by **genetic drift**.

Brz nastanak novih vrsta, prvenstveno putem genetičkog razilaženja.

quarantine Isolation for a period after arrival in a new location, to allow any pre-existing disease symptoms to appear. Used in the context of regulations restricting the sale or shipment of living organisms, usually to prevent disease or pest invasion of an area.

Izolacija za period posle dolaska na novu lokaciju, da omogući pojavu nekih predhodno postojećih simptoma bolesti. Korišćena u kontekstu regulacija koje ograničavaju isporuku ili prodaju živih organizama, obično da se spreči bolest ili invazija štetnika u jednoj oblasti.

quaternary structure A level of **protein** structure where several individual molecules assemble together and form a functional cluster. A classic example is haemoglobin, a complex of four myoglobin-like units. *See: tertiary structure.*

Nivo proteinske strukture, gde se nekoliko pojedinačnih molekula skupljaju

i formiraju funkcionalni skup. Klasičan primer je hemoglobin, kompleks od četiri jedinice slične mioglobinu. *Vidi: tertiary structure.*

quiescent A temporary suspension or reduction in the rate of activity or growth, while retaining the potential to resume prior activity. Applies par-

ticularly to **cell** division. *See: dormancy.*

Privremena suspenzija ili redukcija brzine aktivnosti ili rasta, dok se zadržava potencijal da se povрати predhodna aktivnost. Primenjuje se naročito na deobu ćelija. *Vidi: dormancy.*

R

R genes A class of plant genes conferring **resistance** to a specific **strain** (or group of strains) of a particular **pathogen**. Their primary function is to sense the presence of the pathogen and to trigger the defence pathways in the plant. *R* genes have been cloned from a number of plant species.

Grupa biljnih gena koji prenose rezistentnost na specifičan soj (ili grupu sojeva) određenog patogena. Njihova primarna funkcija je da osete prisustvo patogena, i da prekidaju putanje odbrane u biljci. *R* geni su klonirani kod jednog broja biljnih vrsta.

R₁ The first-generation **offspring** of a **recombinant** (genetically modified) organism. Not standard terminology. *See: T₀, T₁, and T₂.*

Potomstvo prve generacije rekombinantnog (genetički modifikovanog) organizma. Nema standardne terminologije. *Vidi: T₀, T₁ i T₂.*

race A distinguishable group of organisms of a particular species. Criteria for distinctness can be one or a combination of geographic, ecological, physiological, morphological, genetic and karyotypic factors.

Grupa organizama određene vrste koji se jasno razlikuju. Kriterijumi za posebnost mogu biti jedan, ili kombinacija geografskih, ekoloških, fizioloških, morfoloških, genetičkih i kariotipskih faktora.

raceme An **inflorescence** in which the main axis is elongated but the flowers are borne on **pedicels** that are about equal in length.

Grozdsta cvast u koje je glavna osovina izdužena, ali se cvetovi nalaze na peteljčkama koje su približno jednake po dužini.

rachilla Shortened axis of a **spikelet**.

Skraćena osa klasića.

rachis Main axis of a **spike**; axis of fern leaf (frond) from which pinnae arise; in compound leaves, the **extension** of the **petiole** corresponding to the midrib of an entire leaf.

Glavna osa klasa; osa lista paprati, od koje rastu delovi perastog lišća; u složenih listova, pružanje lisne drške u skladu sa centralnim nervom celog lista.

radiation hybrid cell panel (Abbreviation: RH). A **somatic cell hybrid panel** in which the chromosomes from the species of interest have been fragmented by **irradiation** prior to **cell fusion**. The resultant small fragments of chromosomes greatly increase the power of **physical mapping** in the species of interest.

(Skraćenica: RH) Hibridni panel somatske ćelije u kojem su hromozomi vrsta od interesa fragmentirani zračenjem pre ćelijske fuzije. Nastali mali fragmenti hromozoma jako povećavaju moć fizičkog mapiranja u vrsti koja je od interesa.

radicle The portion of the plant **embryo** which develops into the primary root. Deo biljnog embriona koji se razvija u primarni koren.

radioimmunoassay (Abbreviation: RIA). An **assay** based on the use of a radioactively labelled antibody, where the amount of radiation detected indicates the amount of target substance present in the sample.

(Skraćenica: RIA) Proba zasnovana na korišćenju radioaktivno obeleženog antitela, gde količina otkrivene radijacije pokazuje količinu ciljne supstance koja je prisutna u uzorku.

radioisotope An unstable **isotope** that emits ionizing radiation. *Synonym*: radioactive isotope.

Nestabilan izotop koji emituje jonizujuće zračenje. *Sinonim*: radioaktivni izotop.

raft culture *See*: nurse culture. Vidi: nurse culture.

ramet An individual member of a clone, descended from the **ortet**. Individualni član klona, poreklom od orteta.

random amplified polymorphic DNA (Abbreviation: RAPD). A **PCR**-based genotyping technique in which genomic **template** is amplified with single, short (usually 10-mer) randomly chosen **primers**. Typical patterns consist of a small number of amplified products of up to 2 kbp in length, which are separated by electrophoresis.

(Skraćenica: RAPD) PCR – zasnovana tehnika genotipiziranja u kojoj je genomski kalup umnožen pojedinim, kratkim (obično 10-mer), slučajno izabranim primerima. Tipični tipovi sastoje se od malog broja umnoženih produkata do 2 kbp dužine, koji su razdvojeni elektroforezom.

random genetic drift *See*: genetic drift.

Vidi: genetic drift.

random mutagenesis A non-directed change of one or more **nucleotide** pairs in a **DNA** molecule.

Neusmerena promena jednog ili više parova nukleotida u molekulu DNK.

random primer method A method for **labelling DNA** probes, mainly for **Southern hybridization** experiments. A mixture of short oligonucleotides is hybridized to a **single-stranded DNA** probe. In the presence of **DNA polymerase** and **deoxyribonucleotides** – one of which is labelled - DNA synthesis then generates labelled copies of **probe DNA**.

Metod za obeležavanje proba DNK, uglavnom za eksperimente southern hibridizacije. Smeša kratkih oligonukleotida je hibridizovana sa probom jednonolančane DNK. U prisustvu DNK polimeraze i deoksiribonukleotida – od kojih je jedan obeležen – DNK sinteza stvara obeležene kopije DNK probe.

RAPD Abbreviation for **random amplified polymorphic DNA**.

Skraćenica za slučajno umnoženu polimofornu DNK.

rate-limiting enzyme The enzyme whose activity controls the output of final product from a multi-enzyme metabolic pathway.

Enzim čija aktivnost kontroliše finalni produkt od multi - enzimske metaboličke putanje.

rational drug design A systematic method of creating compounds by analysing their structure, function and stereochemical interactions.

Sistematski metod stvaranja jedinjenja putem analize njihove strukture, funkcije i stereohemijskih interakcija.

reading frame The reading frame defines which sets of three **nucleotides** are read as triplets, and hence as **codons**, in **DNA transcription**. The start point is usually determined by the **initiation codon**, AUG. Thus the sequence AUGGCAAAA would be read as AUG/GCA/AAA not as A/UGC/CAA/AA. *See: open reading frame.*

Čitajući okvir definiše koji nizovi od tri nukleotida se čitaju kao tripleti, tj. kao kodoni, u transkripciji DNK. Startna tačka je obično određena početnim kodonom, AUG. Tako, sekvencA AUGGCAAAA bila se čitala kao AUG/GCA/AAA, a ne kao A/UGC/CAA/AA. *Vidi: otvoreni čitajući okvir.*

read-through Transcription or **translation** that proceeds beyond the normal stopping point because of the absence of the usual **transcription** or translation **termination signal** of a gene. Transkripcija ili sinteza koja se produžava, iza normalne tačke zaustavljanja zbog odsustva uobičajenog transkripcionog ili terminacionog signala gena.

recA A **protein**, found in most bacteria, that is essential for **DNA repair** and **DNA recombination**.

Protein, nađen u većini bakterija, koji je bitan za reparaciju DNK i rekombinaciju RNK.

recalcitrant Of seeds, unable to survive drying and subsequent storage at low temperature. *See: field gene bank.*

Od semena, nesposobnih da prežive sušenje i potonje skladištenje na niskoj temperaturi. *Vidi: field gene bank.*

receptacle Enlarged end of the **pedicel** or **peduncle**, to which other flower parts are attached.

Izduženi kraj peteljke ili cvetne drške, kojoj su pridodati drugi cvetni delovi.

receptor A trans-membrane **protein** located in the **plasma** membrane that can bind with a **ligand** on the extracellular surface, as a result of which it induces a change in activity on the cytoplasmic surface. More generally, a site in a molecule that allows the **binding** of a ligand.

Trans-membranski protein, lociran u membrani plazme koja može da se veže sa ligandom na vanćelijskoj površini, kao rezultat izazvane promene u aktivnosti na citoplazmičnoj površini. Više uopšteno, mesto na molekulu koje omogućava vezivanje liganda.

receptor-binding screening A biotechnology-based method for **drug** discovery, which relies on the fact that many drugs act by binding to specific **receptors** on or in cells. Since receptors *in vivo* bind to hormones or to other cells, and thereby control the cell's behaviour, a receptor bound with a drug will likely affect the normal activity of the cell.

Metod zasnovan na biotehnologiji, za otkrivanje droge, koji se oslanja na činjenicu da mnoge droge deluju vezivanjem na specijalne receptore, na, ili u ćelijama. Pošto se receptori *in vivo* vezuju za hormone ili na druge ćelije i time kontrolišu ponašanje ćelija, receptorska veza sa drogom će verovatno uticati na normalnu aktivnost ćelije.

recessive Describing an allele whose effect with respect to a particular **trait** is not evident in **heterozygotes**. *Opposite: dominant.*

Opisivanje alela čiji uticaj u vezi sa određenom osobinom nije evidentan u heterozigota. *Suprotno: dominant.*

recessive allele Allelic state of a gene, where homozygosity is required for

the expression of the relevant **phenotype**. *Opposite*: **dominant allele**. Alelno stanje gena, gde je homozigotnost potrebna za ispoljavanje određenog fenotipa. *Suprotno*: dominant allele.

recessive oncogene A single copy of this gene is sufficient to suppress **cell proliferation**; the loss of both copies of the gene contributes to cancer formation. *Synonym*: **anti-oncogene** recessive-acting oncogene. *See*: **oncogene**.

Jedna kopija tog gena je dovoljna da zaustavi umnožavanje ćelija; gubitak obe kopije gena doprinosi formiranju raka. *Sinonim*: anti oncogene recessive-acting oncogene. *Vidi*: oncogene.

recessive-acting oncogene *See*: **recessive oncogene**.

Vidi: recessive oncogene.

reciprocating shaker A platform **shaker** used for agitating culture flasks, with a back and forth action at variable speeds.

Platformni vibrator, korišćen za potresanje flaša kulture, sa dejstvom nazad i napred pri različitim brzinama.

recognition sequence *Synonym* of **recognition site**.

Sinonim od recognition site.

recognition site A nucleotide sequence, typically 4–8bp long and often palindromic, that is recognized by, and at which a **restriction endonuclease** binds to the **DNA**. For some restriction endonucleases, the presence of a methylated **residue** within the recognition site abolishes recognition. *Synonym*: **recognition sequence**; **restriction site**.

Sekvenca nukleotida, tipično 4–8 bp duga i često palindromična, koja se prepoznaje i pri kojoj se restrikciona en-

donukleaza vezuje za DNK. Za neke restrikcione endonukleaze, prisustvo metilirane rezidue u okviru mesta prepoznavanja uništava prepoznavanje. *Sinonim*: recognition sequence; restriction site.

recombinant A term used in both classical and molecular genetics. 1. In classical genetics: An organism or cell that is the result of meiotic **recombination**. 2. In molecular genetics: A **hybrid** molecule made up of **DNA** obtained from different organisms. Typically used as an adjective, e.g. **recombinant DNA**.

Izraz korišćen, kako u klasičnoj, tako i molekularnoj genetici. 1. U klasičnoj genetici: organizam ili ćelija koja je rezultat mejotičke rekombinacije. 2. U molekularnoj genetici: hibridni molekul koji se sastoji od DNK različitih organizama. Obično korišćen kao pridev, na pr. recombinantna DNK.

recombinant DNA The result of combining **DNA** fragments from different sources.

Rezultat kombinovanja fragmenata DNK iz različitih izvora.

recombinant DNA technology A set of techniques for manipulating **DNA**, including: the identification and **cloning** of genes; the study of the expression of cloned genes; and the production of large quantities of **gene** product.

Skup tehnika za manipulisanje DNK, uključujući: identifikaciju i kloniranje gena; proučavanje ispoljavanja kloniranih gena; i proizvodnja velikih količina produkata gena.

recombinant human (Abbreviation rh). A prefix denoting molecules made through the use of recombinant **DNA** technology.

(Skráćenica: rh) Prefiks označavajući molekule načinjene putem korišćenja tehnologije rekombinantne DNK.

recombinant protein A **protein** encoded by a cloned gene. *Synonym*: **heterologous protein**.

Protein enkodiran putem kloniranog gena. *Sinonim*: heterologous protein.

recombinant RNA RNA molecules joined *in vitro* by T4 RNA ligase.

RNK molekuli, spojeni *in vitro* putem T4 RNK ligaze.

recombinant toxin A single multifunctional toxic **protein** encoded by a recombinant gene.

Jedan višefunkcionalni toksični protein enkodiran putem rekombinantnog gena.

recombinant vaccine A **vaccine** produced from a cloned gene.

Vakcina proizvedena od kloniranog gena.

recombinase A class of enzymes that are able to alter the arrangement of **DNA** sequences in a **site-specific** way.

Klasa enzima koji su u stanju da menjaju postavljanje DNK sekvenci na način specifičnog-mesta.

recombination The production of a **DNA** molecule with segments derived from more than one parent **DNA** molecule. In **eukaryotes**, this is achieved by the reciprocal exchange of **DNA** between non-sister chromatids within an **homologous** pair of chromosomes during **prophase** of the first meiotic division.

Proizvodnja DNK molekula sa segmentima koji se sastoje od više nego jedne roditeljske DNK molekule. U eukariota, to se postiže recipročnom razmenom DNK između nesestrinskih hromatida, u okviru homolog-

nog para hromozoma za vreme profaze prve mejotičke deobe.

recombination fraction The proportion of **recombinant** (with respect to two loci) gametes arising from meiosis. **Linkage maps** are based on estimates of recombination fraction between all pair-wise combinations of loci. *See*: **map distance**. *Synonyms*: **recombination frequency**, **crossing-over unit**.

Proporcija rekombinantnih (u odnosu na dva lokusa) gameta nastalih kao rezultat mejoze. Mape vezanih gena su zasnovana na izračunavanjima frakcije rekombinacije između svih parnih kombinacija lokusa. *Vidi*: map distance. *Sinonim*: recombination frequency, crossing-over unit.

recombination frequency *Synonym*: **recombination fraction**

Sinonim: recombination fraction.

recombinational hot spot A chromosomal region where recombination appears to occur more frequently than expected.

Region hromozoma gde se rekombinacija dešava češće od očekivane.

reconstructed cell A viable transformed cell resulting from genetic engineering.

Vitalna transformisana ćelija nastala genetičkim inženjeringom.

reduction division The first division of **meiosis** in which the **chromosome** number is reduced from the somatic to the gametic number.

Prva mejotička deoba u kojoj se hromozomski broj smanjuje sa somatskog na gametni broj.

refugium (pl.: refugia) An area set aside to provide protection/escape from ecological consequences occurring elsewhere.

Oblast postavljena po strani da obezbedi zaštitu / izbegavanje od ekoloških posledica koje se dešavaju na drugom mestu.

regeneration The growth of new tissues or organs to replace those injured or lost. In plant **tissue culture**, regeneration refers to the **development** of organs or **plantlets** from an **explant**. *See: conversion; micropropagation; organogenesis.*

Rast novih tkiva ili organa, da zamene one koji su povređeni ili izgubljeni. U kulturi biljnog tkiva, regeneracija se odnosi na razviće organa ili biljčica od eksplantata. *Vidi: conversion; micropropagation; organogenesis.*

regulator Substance regulating growth and **development** of cells, organs, etc.

Supstanca koja reguliše rast i razviće ćelija, organa, itd.

regulatory gene A gene with the primary function of controlling the rate of synthesis of the products of one or several other genes or pathways.

Gen sa primarnom funkcijom kontrole stepena sinteze produkata jednog ili nekoliko drugih gena ili putanja.

regulatory sequence A **DNA** sequence involved in regulating the expression of a gene, e.g. a **promoter** or **operator** region (in the **DNA** molecule).

DNK sekvenca uključena u regulisanje ispoljavanja gena, na pr. promoter ili operatorski region (u DNK molekulu).

rejuvenation 1. Reversion from adult to juvenile stage. 2. The process of regular reproduction of **seed** stocks or collections in **gene banks**, in order to ensure continued viability.

1. Povratak od odraslog u juvenilni stadijum. 2. Proces redovne reprodukcije stokova semena ili kolekcija u ban-

kama gena, da bi se osigurala stalna životna sposobnost.

relaxed circle *See: nicked circle.*

Vidi: nicked circle.

relaxed circle plasmid *See: plasmid.*

Vidi: plasmid.

relaxed plasmid A **plasmid** that replicates independently of the bacterial **chromosome** and is present in 10-500 copies per cell.

Plazmid koji se replicira nezavisno od bakterijskog hromozoma, a prisutan je u 10-500 kopija po ćeliji.

release factor 1. A soluble **protein** that recognizes **termination codons** in **mRNAs** and terminates **translation** in response to these codons. 2. A hormone, produced by the hypothalamus, which stimulates the release of a **hormone** from the anterior pituitary **gland** into the bloodstream.

1. Rastvorljivi protein koji prepoznaje terminalne kodone u mRNK i završava sintezu u regovanju na te kodone. 2. Hormon, koji proizvodi hipotalamus, on stimuliše otpuštanje hormona iz prednjeg režnja hipofize u krvotok.

remediation The cleanup or **containment** of a hazardous waste disposal site to the satisfaction of the applicable regulatory agency. This can sometimes be accomplished with naturally occurring or engineered **microorganisms** or plants. *See: bioremediation.*

Čišćenje ili obuzdavanje opasnog mesta odlaganja otpadaka na zadovoljstvo primenljive uređivačke agencije. To se nekad može obaviti sa prirodnim ili biotehnoški stvorenim organizmima ili biljkama. *Vidi: bioremediation.*

renaturation Of **DNA**, the reforming of two complementary molecules into a

double-stranded structure, following heat or chemical induction of dissociation (denaturation). Of **protein**, the resumption of three-dimensional conformation, allowing the molecule to function normally. Denaturation of many **proteins** is irreversible, but denatured **DNA** molecules will renature readily under appropriate chemical and physical conditions.

Reformisanje dva komplementarna molekula u strukturu sa dva lanca, sledeći toplotu ili hemijsko uvođenje disocijacije (denaturacije). Od proteina, povratak trodimenzionalne konformacije, omogućavajući molekulu da normalno funkcioniše. Denaturacija mnogih proteina je ireverzibilna, ali denaturisani DNK molekul će se obnoviti lako pod odgovarajućim hemijskim i fizičkim uslovima.

rennin An enzyme, secreted by cells lining the stomach in mammals, responsible for the clotting of milk. Used in the manufacture of certain dairy products.

Enzim, lučen od ćelija koje oblažu stomak u sisara, odgovoran za zgrušavanje mleka. Korišćen u proizvodnji nekih mlečnih proizvoda.

repeat unit A sequence of **nucleotides** that occurs repeatedly, often in a head-to-tail arrangement (tandemly). Sekvenca nukleotida koja je ponovljiva, često u rasporedu od glave-do-repa (tandemski).

repetitive DNA DNA sequences that are present in a **genome** in many copies, some of it originating from retrotransposon activity. A substantial proportion of all eukaryotic genomes is composed of this class of **DNA**, whose biological function is uncertain. Sometimes referred to as 'junk DNA'.

Sekvence DNK koje su prisutne u genomu u mnogo kopija, neke od njih potičući od aktivnosti retrotranspozona. Značajna proporcija svih eukariotskih genoma je sastavljena od te klase DNK, čija je biološka funkcija neizvesna. Ponekad se spominje kao 'junk DNK'.

replacement The addition of a cloned corrected copy of a defective gene. *See: homogenotization.*

Dodavanje klonirane korigovane kopije defektnog gena. *Vidi: homogenotizacija.*

replacement therapy The administration of metabolites, co-factors or hormones that are deficient as the result of a genetic disease.

Primena metabolita, ko-faktora ili hormona, koji su deficitarni, kao rezultat genetičke bolesti.

replica plating Duplicating a **population** of bacterial colonies growing on **agar** medium in one Petri **plate** to agar medium in another Petri plate.

Udvostručavanje populacije bakterijskih kolonija koje rastu na medijumu agara u jednoj Petrijevoj posudi, do agarovog medijuma u drugoj Petrijevoj posudi.

replicase A viral enzyme necessary for the **replication** of the **virus** in the **host** cell.

Virusni enzim, potreban za umnožavanje virusa u ćeliji domaćinu.

replication The *in vivo* synthesis of double-stranded **DNA** by copying from a single-stranded template.

In vivo sinteza DNK sa dva lanca, kopiranjem od modela sa jednim lancem.

replication fork Y shaped structure associated with **DNA replication**. It represents the point at which the strands of **double-stranded DNA**

are separated so that replication can proceed.

Replikaciona viljuška-Y oblikovana struktura, povezana sa ponavljanjem. Ona predstavlja tačku u kojoj se dvostruki lanci DNK razdvajaju, tako da se replikacija može nastaviti.

replicative form (Abbreviation: RF).

The molecular configuration of viral **nucleic acid** that is the **template** for replication in the host cell.

(Skrtaćenica: RF) Molekularna konfiguracija virusne nukleinske kiseline, koja je kalup za ponavljanje u ćeliji domaćinu.

replicon The portion of a **DNA** molecule which can be replicated from a single **origin of replication**. Plasmids and the chromosomes of bacteria, phages and other viruses usually have a single origin of replication so that their entire genome constitutes a single replicon. Eukaryotic chromosomes have multiple origins of replication, so comprise several replicons. Also used to describe a **DNA** molecule capable of independent replication.

Deo molekula DNK koji se može ponoviti od jednog izvora ponavljanja. Plazmidi i hromozomi bakterija, faga i drugih virusa, obično imaju jedan izvor replikacije, tako da njihov ceo genom sadrži jedan replikon. Eukariotski hromozomi imaju višestruke izvore ponavljanja, tako da uključuju nekoliko replikona. Takođe korišćen da opiše DNK molekul, sposoban za nezavisnu replikaciju.

replicosome The complete replication apparatus, present at a **replication fork**, that carries out the replication of **DNA**.

Kompletan aparat ponavljanja, prisutan na replikacionoj viljušci, koja sprovođi ponavljanje DNK.

reporter gene A gene that encodes a product that can be readily assayed. Used as a **marker** to confirm the incorporation of a **transgene** into a **cell, organ** or **tissue**, and as a means of testing the efficiency of specific **promoters**.

Gen koji enkodira proizvod koji se lako može ispitati. Korišćen kao marker da potvrdi uključenje transgena u ćeliju, organ ili tkivo, i kao sredstvo za testiranje efikasnosti specifičnih promotera.

repressible enzyme An enzyme whose activity can be diminished by the presence of a regulatory molecule.

Enzim čija aktivnost može da se smanji putem prisustva regulatornog molekula.

repressible gene A gene whose expression can be diminished or extinguished by the presence of a regulatory molecule.

Gen čije ispoljavanje može da se smanji ili ugasi prisustvom regulatornog molekula.

repression Inhibition of **transcription** by preventing **RNA polymerase** from **binding** to the **transcription** initiation site.

Inhibicija transkripcije sprečavanjem RNK polimeraze da se veže na mesto početka transkripcije.

repressor A **protein** which binds to a specific **DNA** sequence **upstream** from the **transcription** initiation site of a gene and prevents **RNA polymerase** from commencing **mRNA** synthesis.

Protein koji se vezuje na specifičnu sekvencu DNK nagore od početnog mesta transkripcije gena, i sprečava

RNK polimerazu da započne sintezu mRNK.

reproduction 1. Sexual reproduction: the regular alteration of **meiosis** and **fertilization** which provides for the production of **offspring**. The main biological significance of **sexual** reproduction lies in the phenomenon of **recombination**. 2. **Asexual** or agamic reproduction: the development of a new individual from a single cell or group of cells in the absence of meiosis. *See: apomixis*.

1. Seksualna reprodukcija: redovna promena mejoze i oplodjenja koje obezbeđuje proizvodnju potomstva. Glavni biološki značaj seksualne reprodukcije leži u fenomenu rekombinacije. 2. Aseksualna ili agamična reprodukcija: razvije nove individue od jedne ćelije ili grupe ćelija, u odsustvu mejoze. *Vidi: apomixis*.

repulsion A double **heterozygote** in which the **dominant** (or wild-type) allele at one locus and the **recessive** (or mutant) allele at a second linked locus occur on the same **chromosome** (genetic constitution *Ab/aB*). *Synonym: trans* configuration. *Opposite: coupling, cis* configuration.

Dvostruki heterozigot u kojem dominantan (ili divljeg tipa) alel na jednom lokusu i recesivan alel (ili mutant) na drugom vezanom lokusu nastaju na istom hromozomu (genetička konstitucija *Ab/aB*). *Sinonim: trans* konfiguracija. *Suprotno: coupling, cis* konfiguracija.

residue 1. *See: polymer*. 2. Materials remaining after degradation and/or attempted removal, e.g. **pesticide** residues in food.

1. *Vidi: polymer*. 2. Jedinjenja koja ostaju posle degradacije i/ili pokušaja

odstranjenja, na pr. rezidua pesticida u hrani.

resistance The ability to withstand **abiotic** (high temperature, drought etc.) or biotic (disease) **stress**, or a toxic substance. Often in the context of genetic **determination** of resistance.

Sposobnost da se odupre abiotičkom (visoka temperatura, suša, itd.) ili biotičkom (bolest) stresu ili toksičnoj supstanci. Često u kontekstu genetičke determinacije otpornosti.

resistance factor A plasmid that confers **antibiotic** resistance to a bacterium. Plasmid koji prenosi antibiotičku rezistentnost na bakteriju.

rest period A physiological condition of **viable seeds**, buds or bulbs that prevents growth even in the presence of otherwise favourable environmental conditions. *Synonym: dormancy*.

Fiziološko stanje živog semena, pupoljaka ili lukovica koje sprečava rast, čak i u prisustvu inače povoljnih uslova spoljne sredine. *Sinonim: dormancy*.

restitution nucleus A single nucleus arising from a failure of nuclear division, either during **meiosis**, in which a **gamete** is formed with the unreduced **chromosome** number; or at **mitosis** to give a **cell** with a doubled chromosome number.

Nukleus koji nastaje iz neuspjeha u nuklearnoj deobi, bilo tokom mejoze, u kojoj se gameta formira sa neredukovanim brojem hromozoma; ili u mitozu, kada nastaju ćelije sa podvostručenim brojem hromozoma.

restriction endonuclease A class of enzymes that cut **DNA** after recognizing a specific **sequence**. The three types of restriction endonuclease are: I. Where the cut occurs within a ran-

dom sequence at sites >1kbp from the **recognition sequence**, and has both **restriction** and **methylation** activities. II: Cuts within, or near a short, usually palindromic recognition sequence. A separate enzyme methylates the same recognition sequence. III: Cuts 24–26bp **downstream** from a short, asymmetrical recognition sequence, requires **ATP** and has both restriction and methylation activities. Type II **enzymes** are the class used for most molecular biology applications.

Grupa enzima koja seče DNK posle prepoznavanja specifične sekvence. Tri tipa restrikcione endonukleaze su: I. Gde se sečenje dešava u okviru slučajne sekvence na mestima >1kbp od sekvence prepoznavanja, i ima obe, restrikcione i metilacione aktivnosti. II. Sečenje u okviru, ili blizu kratke, obično palindromičke sekvence prepoznavanja. Poseban enzim metilira istu sekvencu prepoznavanja. III. Odsečki 24–26 bp nadole od kratke, asimetrične sekvence prepoznavanja, zahteva ATP i ima obe restrikcione i metilacione aktivnosti. Tip II enzimi se koriste većinom za primenu u molekularnoj biologiji.

restriction enzyme Synonym of **restriction endonuclease**.

Sinonim od restriction endonuclease.

restriction exonuclease A class of enzymes that degrade **DNA** or **RNA**, starting from either the 5' – or the 3' – end.

Enzimi koji degradiraju DNK ili RNK, počevši od 5' – ili 3' – kraja.

restriction fragment A shortened **DNA** molecule generated by the cleavage of a larger molecule by one or more **restriction endonucleases**.

Skraćeni DNK molekul, poreklom od cepanja većeg molekula sa jednom, ili sa više restrikcionih endonukleaza.

restriction fragment length polymorphism (Abbreviation: **RFLP**). A class of **genetic marker** based on the detection of variation in the length of **restriction fragments** generated when **DNA** is treated with **restriction endonucleases**. Differences in fragment lengths arise due to **genetic variation** with respect to the presence or absence of specific **recognition site(s)**. RFLPs were initially detected by **Southern hybridization** but are now detected by **electrophoresis** of digested **PCR** product.

(Skraćenica: RFLP) Grupa genetičkih markera, zasnovana na otkrivanju varijacije u dužini restrikcionih fragmenata, stvorenih kada je DNK tretirana restrikcionim endonukleazama. Razlike u dužini fragmenata nastaju usled genetičke varijacije u odnosu na prisustvo ili odsustvo specifičnih mesta prepoznavanja. RFLP-ovi su u početku otkriveni putem southern hibridizacije, ali su sada otkriveni i putem elektroforeze razloženog PCR produkta.

restriction map The linear arrangement of restriction **endonuclease recognition sites** along a **DNA** molecule.

Linerani raspored restrikcionih mesta prepoznavanja endonukleaze duž molekule DNK.

restriction site Synonym of **recognition site**.

Sinonim od recognition site.

reticulocyte A slightly immature red blood cell.

Nezrela crvena krvna ćelija.

retro-element Any of the integrated **retroviruses** or the **transposable elements** that resemble them.

Bilo koji od integrisanih retrovirusa, ili transposabilni element koji ih čini sličnim.

retroposon A **transposable element** that moves via **reverse transcription** but lacks the **long terminal repeat** sequences necessary for autonomous transposition. Much of the **repetitive DNA** that makes up a large proportion of eukaryotic genomes consists of silenced (i.e. inactive) retroposons. *Synonym*: retro-transposon.

Razmeštajući element koji se kreće preko reverzne transkripcije, ali nema duge krajnje ponovljive sekvence, potrebne za autonomno premeštanje. Mnoge od ponovljive DNK koja čini veliki deo eukariotskih genoma, sastoji se od neaktivnih (t.j. nektivnih) retropozona. *Sinonim*: retro-transposon.

retroviral vectors Gene transfer systems based on viruses that have **RNA** as their genetic material.

Sistemi transfera gena zasnovani na virusima, koji imaju RNK kao svoj genetički materijal.

retrovirus A class of eukaryotic **RNA** viruses that, by using **reverse transcription**, can form **double-stranded DNA** copies of their genomes, which can integrate into the chromosomes of an infected cell. Pathogenic retroviruses include HIV and the causative agents of many vertebrate animal cancers.

Klasa eukariotskih RNK virusa, koji, korišćenjem reverzne transkripcije, mogu da formiraju kopije DNK sa dva lanca od njihovih genoma, koji se mogu integrisati u hromosome inficirane ćelije. Patogeni retrovirusi uključuju HIV i uzročnici su mnogih vrsta rakova kičmenjaka.

reversal transfer Transfer of a culture from a callus-supporting medium to a shoot-inducing medium.

Prenos kulture od medijuma podržanog kalusom do medijuma koji izaziva rast izdanka.

reverse genetics *See*: **positional cloning**.

Vidi: positional cloning.

reverse mutation *See*: **reversion**.

Vidi: reversion.

reverse transcriptase An enzyme that uses an **RNA** molecule as a **template** for the synthesis of a **complementary DNA** strand. *Synonym*: **RNA-dependent DNA** polymerase.

Enzim koji koristi RNK molekul kao kalup za sintezu komplementarnog lanca DNK. *Sinonim*: RNK - zavisna DNK polimeraza.

reverse transcription The synthesis of **DNA** from a **template** of **RNA**, accomplished by **reverse transcriptase**.

Sinteza DNK od kalupa RNK, postignuta putem obrnute transkriptaze.

reversion Restitution of a **mutant** gene to the wild-type condition, or at least to a form that gives the wild-type phenotype; more generally, the appearance of a **trait** expressed by a remote ancestor. *Synonym*: reverse mutation.

Restitucija mutantnog gena u divlji tip, ili bar do oblika koji daje fenotip divljeg tipa; više uopšteno, pojava osobine ispoljene od udaljenog pretka. *Sinonim*: reverse mutation.

RF Abbreviation for **replicative form**.

Skraćenica za replicative form.

RFLP Abbreviation for **restriction fragment length polymorphism**.

Skraćenica za restriction fragment length polymorphism.

rh Abbreviation for **recombinant human**.

Skraćenica za recombinant human.

rhizobacterium A micro-organism whose natural habitat is near, on, or in, plant roots.

Mikroorganizam čije je prirodno stanište blizu, na ili u korenu biljaka.

Rhizobium (pl.: *Rhizobia*) Prokaryotic species which are able to establish a symbiotic relationship with leguminous plants, as a result of which elemental nitrogen is fixed or converted to ammonia. *See: nitrogen fixation.*

Prokariotske vrste koje su u stanju da uspostave simbiotski odnos između leguminoznih biljaka, kao rezultat fiksira se elementarni azot ili se pretvara u amonijak. *Vidi: nitrogen fixation.*

rhizosphere The soil region in the immediate vicinity of growing plant roots.

Zemljišni region u neposredoj blizini porasta korena biljke.

Ri plasmid A class of large conjugative plasmids found in the soil bacterium *Agrobacterium rhizogenes*, which can infect certain plants and cause hairy root disease. Like **Ti plasmids**, Ri plasmids include sequences that are transferred to plant cells and inserted into the plant's DNA as part of the infection process.

Grupa velikih sjedinjavajućih plazmida nađenih u zemljišnoj bakteriji *Agrobacterium rhizogenes*, koja može da inficira neke biljke i da izazove bolest dlakavog korena. Kao Ti plazmidi, Ri plazmidi uključuju sekvence koje su prenete u biljne ćelije i ubačene u biljnu DNK kao deo procesa infekcije.

RIA Abbreviation for radioimmunoassay.

Skraćenica za radioimmunoassay.

ribonuclease (Abbreviation: **RNAse**). Any enzyme that catalyses the hydrolysis of RNA.

(Skraćenica: RNKse) Bilo koji enzim koji katalizuje hidrolizu RNK.

ribonucleic acid (Abbreviation: **RNA**). An organic acid polymer composed of adenosine, guanosine, cytidine and uridine ribonucleotides. The genetic material of some viruses, but more generally is the molecule, derived from DNA by transcription, that either carries information (messenger RNA), provides sub-cellular structure (ribosomal RNA), transports amino acids (transfer RNA), or facilitates the biochemical modification of itself or other RNA molecules.

(Skraćenica: RNK) Polimer organske kiseline sastavljen od adenozin, guanozin, citidin i uridin ribonukleotida. Genetički materijal nekih virusa, ali opštije je molekul, dobijen od DNK transkripcijom, koji bilo da nosi informaciju (mesendžer RNK), obezbeđuje podćelijsku strukturu (ribozomna RNK), ili olakšava svoju biohemijsku modifikaciju ili drugih molekula RNK.

ribonucleoside *See: nucleoside.*

Vidi: nucleoside.

ribonucleotide *See: nucleotide.*

Vidi: nucleotide.

ribose A monosaccharide found in all ribonucleosides, ribonucleotides and RNA. Its close analogue, 2-deoxyribose, is similarly found in all deoxyribonucleosides, deoxyribonucleotides and DNA.

Monosaharid nađen u svim ribonukleozidima, ribonukleotidima i RNK. Njegov bliski analog, 2-deoksiriboza, je nađen u svim deoksiribonukle-

ozidima, deoksiribonukleotidima i DNK.

ribosomal binding site A sequence of nucleotides near the 5' end of a bacterial **mRNA** molecule that facilitates the binding of the **mRNA** to the small ribosomal sub-unit. Also called the **Shine-Delgarno sequence**.

Sekvanca nukleotida blizu 5' kraja bakterijskog mRNK molekula, koja olakšava vezivanje mRNK na malu podjedinicu ribozoma. Takođe se naziva Shine-Delgarno sekvenca.

ribosomal DNA The coding locus for **ribosomal RNA**. This is generally a large and complex locus, typically composed of a large number of repeat units, separated from one another by the **intergenic spacer**. A **repeat unit** comprises a gene copy for each individual ribosomal **RNA** component, separated from one another by the **internal transcribed spacer**.

Kodirajući lokus za ribozomnu RNK. To je uopšte veliki i kompleksni lokus, obično sastavljen od velikog broja ponovljivih jedinica, odvojenih jedne od druge intergenskim spacer-om. Ponovljena jedinica sadrži kopiju gena za svaku komponentu ribozomne RNK, odvojenu jedna od druge internim transkribovanim spacer-om.

ribosomal RNA (Abbreviation: rRNA). The **RNA** molecules that are essential structural and functional components of **ribosomes**, where **protein** synthesis occurs. Different classes of **rRNA** molecule are identified by their sedimentation (S) values. *E. coli* ribosomes contain one 16S rRNA molecule (1541 **nucleotides** long) in one (small) ribosomal sub-unit, and a 23S rRNA (2904 nucleotides) and a 5S rRNA (120 nucleotides) in the ot-

her (large) sub-unit. These three rRNA molecules are synthesized as part of a large precursor molecule which also contains the sequences of a number of **tRNAs**. Special processing enzymes **cleave** this large precursor to generate the functional molecules. Constitutes about 80% of total cellular RNA.

(Skraćenica: rRNK) Molekule RNK koje su bitne strukturne i funkcionalne komponente ribozoma, gde se odvija sinteza proteina. Različite klase rRNK se identifikuju njihovim sedimentacionim (S) vrednostima. *E. Coli* ribozomi sadrže jednu molekulu 16S rRNK (dugu 1541 nukleotida) u jednoj (maloj) ribozomnoj podjedinici, i jednu 23S rRNK (2904 nukleotida) i jednu 5S rRNK (120 nukleotida) u drugoj (velikoj) podjedinici. Ove tri rRNK molekule se sintetišu kao deo molekula prekursora koji takođe sadrži sekvence jednog broja tRNK. Specijalni enzimi cepaju ovaj veliki prekursor da bi dali funkcionalne molekule. Predstavljaju oko 80% ukupne ćelijske RNK.

ribosome The sub-cellular structure that contains both **RNA** and **protein** molecules and is the site for the **translation** of **mRNA** into **protein**. Ribosomes comprise large and small sub-units.

Subćelijska struktura koja sadrži RNK i proteinske molekule, i to je mesto za translaciju mRNK u protein. Ribozomi uključuju velike i male podjediniće.

ribosome-inactivating protein (Abbreviation: RIP). A class of plant **proteins** that inhibit normal **ribosome** function, and are thus highly toxic. Type 1 RIPs consist of single **poly-**

peptide chain proteins; type 2 (e.g. ricin) consist of two **proteins** linked by a **disulphide bridge**, one the **toxin** and the other a **lectin** that attaches to recognition sites on a **target cell**.

(Skraćenica: RIP) Grupa biljnih proteina koji inhibiraju funkciju ribozoma, i visoko su toksični. Tip 1 RIP-ova sastoji se od pojedinih polipeptidnih lančanih proteina; tip 2 (na pr. ricin) sastoji se od dva proteina vezana disulfidnim mostom, jednog toksina i drugog lektina, koji se priljubljuju na mesta prepoznavanja ciljne ćelije.

ribozyme An RNA molecule that can catalyse chemical cleavage of itself or of other RNAs. *Synonyms*: **catalytic RNA**, **gene shears**.

RNK molekul koji može da katalizuje hemijsko cepanje istog ili drugih RNK. *Sinonimi*: catalytic RNK, gene shears.

ribulose A keto-pentose sugar (C₅H₁₁O₅) involved in the carbon dioxide fixation pathway of **photosynthesis**.

Keto-pentozni šećer (C₅H₁₁O₅), uključen u putanju fotosintezne fiksacije ugljen dioksida.

ribulose biphosphate (Abbreviation: RuBP). A five-carbon sugar combined with carbon dioxide to form a six-carbon intermediate in the first stage of the dark reaction of photosynthesis.

(Skraćenica: RuBP) Šećer sa pet ugljenika, kombinovan sa ugljen dioksidom, da bi formirao intermedijarni član sa 6 ugljenika u prvom stadijumu tamne reakcije fotosinteze.

rinderpest Cattle plague; a viral **infection** of cattle, sheep and goats.

Goveda kuga; virusna infekcija goveda, ovaca i koza.

RIP Abbreviation for **ribosome-inactivating protein**.

Skraćenica za ribosome-inactivating protein.

risk analysis A process consisting of three components: **risk assessment**, **risk management** and **risk communication** performed to understand the nature of unwanted, negative consequences to human and animal health, or the environment.

Proces koji se sastoji od tri komponente: ocena rizika, menadžment rizikom i komunikacija rizika, sprovedena da se razume priroda neželjenih, negativnih posledica za ljudsko i životinjsko zdravlje, ili spoljnu sredinu.

risk assessment a scientifically based process consisting of the following steps: i) hazard identification; ii) hazard characterization; iii) exposure assessment; and iv) risk characterization.

Naučno zasnovan proces koji se sastoji od sledećih koraka: i) identifikacija slučaja; ii) karakterizacija slučaja; iii) ocena izlaganja i iv) karakterizacija rizika.

risk communication The interactive exchange of information and opinions throughout the risk analysis process concerning hazards and risks, risk-related factors and risk perceptions, among risk assessors, risk managers, consumers, industry, the academic community and other interested parties, including the explanation of risk assessment findings and the basis of risk management decisions.

Međusobna razmena informacija i mišljenja tokom celokupnog procesa analize rizika koji se odnose na opasnosti, i rizike, faktore povezane sa

rizikom i sagledavanja, među ocenjivačima rizika, menadžerima rizika, potrošačima, industrije, akademske zajednice i drugih zainteresovanih partija, uključujući objašnjenje o nalazima ocene rizika i osnovu za odluke menadžmenta rizika.

risk management The process, distinct from **risk assessment**, of weighing policy alternatives, in consultation with all interested parties, considering risk assessment and other factors relevant for the health protection of consumers and for the promotion of fair trade practices, and, if needed, selecting appropriate prevention and control options.

Proces, odvojen od ocene rizika, alternativa politike odmeravanja, u konsultaciji sa svim zainteresovanim partijama, razmatrajući ocenu rizika i drugih faktora relevantnih za zaštitu zdravlja potrošača i za podsticaj fer trgovačkih praksi, i, ako je potrebno, odabiranje odgovarajućih opcija predohrane i kontrole.

R-loops Single-stranded DNA regions in RNA-DNA hybrids formed *in vitro* under conditions where RNA-DNA duplexes are more stable than DNA-DNA duplexes.

Regioni jednolancane DNK u RNK-DNK hibrida formiranih *in vitro* u uslovima gde su RNK-DNK dupleksi stabilniji nego DNK-DNK dupleksi.

RNA Abbreviation for **ribonucleic acid**.

Skraćenica za ribonukleinsku kiselinu.

RNA editing Post-transcriptional processes that alter the information encoded in RNAs.

Post-transkripcioni procesi koji menjaju informaciju enkodiranu u RNK (ribonukleinskim kiselinama).

RNA polymerase A polymerase enzyme that catalyses the synthesis of RNA from a DNA template.

Polimerazni enzim koji katalizuje sintezu RNK prema kalupu DNK.

RNAase Abbreviation for **ribonuclease**.

Skraćenica za ribonukleazu.

RNA-dependent DNA polymerase See: **reverse transcriptase**.

Vidi: reverse transcriptase.

RNase Abbreviation for **ribonuclease**.

Skraćenica za ribonukleazu.

rol genes A family of genes, present on the **Ri plasmid** of *Agrobacterium rhizogenes*, that when transferred to a plant upon **infection** by the bacterium, induce the formation of roots. Used as a means of **root induction** on different species and cultivars of micropropagated fruit trees.

Grupa gena, prisutnih na Ri plazmidu *Agrobacterium rhizogenes*-a, koja kada su preneti na biljke posle infekcije bakterijom, izazivaju formiranje korenova. Korišćeni kao sredstvo za indukciju različitih vrsta i sojeva voćaka koje nastaju mikropropagacijom.

root The descending axis of a plant, normally below ground, which serves to anchor the plant and to absorb and conduct water and mineral nutrients.

Opadajuća osa biljke, normalno ispod zemlje, koja služi da veže biljku i da apsorbuje i sprovodi vodu i mineralne hranljive materije.

root apex The apical **meristem** of a root; very similar to the shoot apical meristem in that it forms the three meristematic areas: the **protoderm** (develops into the epidermis); the **procambium** (the stele); and the growth meristem (the cortex).

Vršni meristem korena; vrlo sličan meristemu vrha izdanka, u kojem on formira tri meristemske oblasti: protoderm (razvija se u epidermu); prokambijum (vaskularni cilindar); i meristem rasta (korteks).

root cap A mass of reinforced cells covering and protecting the apical **meristem** of a root.

Masa ojačanih ćelija koje pokrivaju i štite vršni meristem korena.

root culture The culture of isolated apical or lateral root tips to produce *in vitro* root systems with indeterminate growth habits. Used to study mycorrhizal, symbiotic and plant-parasitic relationships.

Kultura izolovanih vršnih ili bočnih vrhova korena, da se proizvedu *in vitro* korenovi sistemi sa neodređenim načinima rasta. Korišćena za proučavanje mikroriznih, simbiotskih i biljnoparazitskih odnosa.

root cutting Cutting made from sections of roots alone.

Deo izdanka, sastavljen od delova korena.

root hairs Outgrowths from epidermal **cell walls** of the **root**, specialized for water and nutrient absorption.

Izdanci epidermalnih ćelijskih zidova korena, specijalizovani za apsorpciju vode i hranljivih materija.

root nodule A small round mass of cells attached to the roots of leguminous plants, containing symbiotic nitrogen-fixing bacteroids, particularly *Rhizobium* spp.

Mala, okrugla masa ćelija priljubljenih na kore leguminoznog bilja, koje sadrže simbiotske bakterioide koji fiksiraju azot, posebno *Rhizobium* spp.

root tuber Thickened **root** that stores carbohydrates.

Zadebljali koren koji skladišti ugljene hidrate.

root zone The volume of soil or growing medium containing the roots of a plant. In soil science, the depth of the soil profile in which roots are normally found.

Masa zemljišta ili medijuma rasta koji sadrže korenove biljke. U pedologiji, dubina zemljišnog profila u kojoj sa koren normalno nalazi.

rootstock The trunk or **root** material to which buds or **scions** are inserted in grafting. *See: stock*.

Trup korenskog materijala na koji se ubacuju pupoljci ili kalemi pri kalemljenju. *Vidi: stock*.

rotary shaker Rotating apparatus with a platform on which liquid **media** or cultures can be continuously shaken.

Rotacioni aparat sa platformom na kojoj tečni medijumi ili kulture mogu stalno da se tresu.

Roundup-ready Describing **transgenic** crop varieties that carry the bacterial gene which detoxifies the **herbicide glyphosate**, thereby making them resistant to its application.

Opisivanje transgene biljne vrste koja nosi bakterijski gen koji detoksifikuje herbicid glifosat, time ih čineći rezistentnim na njihovu primenu.

rRNA Abbreviation for **ribosomal RNA**.

Skraćenica za ribosomal RNK.

RuBP Abbreviation for **ribulose biphosphate**.

Skraćenica za ribulose biophosphate.

ruminant Animal having a rumen – a large digestive sac in which fibrous plant material is fermented by commensal microbes, prior to its digestion in a „true“ stomach (the *abomasum*). Common farm ruminants are cattle and sheep.

Životinja koja ima burag-veliku digestivnu vreću u kojoj se fibrozni biljni materijal fermentiše od strane komensalnih mikroba, pre njihovog varenja u „stvarnom“ stomaku (*abomazumu*). Uobičajeni preživari su goveda i ovce.

runner A lateral **stem** that grows horizontally along the ground surface and gives rise to new plants either from axillary or terminal buds. *Synonym*: stolon.

Bočno stablo koje raste horizontalno duž površine tla i omogućava rast novim biljkama, bilo od pupoljka

stabla, ili vršnih pupoljaka. *Sinonim*: stolon.

rust A generic descriptor for various serious fungal plant pathogens, which infect the leaves and stems of crops. The appearance of spores is reminiscent of metallic rust, although the colour varies, according to species, from yellow to reddish-brown.

Opšti deskriptor različite ozbiljne gljivične biljne patogene, koji inficiraju listove i stabla useva. Izgled spora podseća na rđu metala, iako boja varira prema vrsti, od žute do crvenkastomrke.

S

S phase The phase in the **cell cycle** during which **DNA** synthesis occurs.

Faza u ćelijskom ciklusu tokom koje se odvija sinteza DNK.

S₁ mapping A method to characterise **post-transcriptional modifications** in **RNA** (removal of **introns** etc.) by hybridizing **RNA** with **single-stranded DNA** and treating with **S₁ nuclease**.

Metod za karakterisanje post-transkripcionih modifikacija u RNK (odstranjenje introna, itd.) putem hibridizacije RNK sa jednolančanom DNK i tretiranjem sa S₁ nukleazom.

S₁ nuclease An enzyme obtained from the filamentous fungus *Aspergillus oryzae* which specifically degrades **RNA** or **single-stranded DNA** into its constituent mononucleotides, and cleaves nicked **double-stranded DNA** at the **nick**.

Enzim, dobijen od filamentozne gljivice *Aspergillus oryzae* koja specifično razlaže RNK ili jednolančane DNK na njene sastavne mononukleotide i cepa podudarnu DNK sa dva lanca na mestu podudarnosti.

saccharifaction Following liquefaction, the **hydrolysis** of **polysaccharides** by glucoamylase to maltose and glucose.

Sledeći pretvaranje u tečnost, hidroliza polisaharida putem glukoamilaze do maltoze i glukoze.

saline resistance Synonym for **salt tolerance**.

Sinonim za tolerantnost na soli.

Salmonella A genus of rod-shaped, Gram-negative bacteria that are a common cause of food poisoning.

Rod štapićastih, Gram-negativnih bakterija koje su obično uzrok trovanja hranom.

salt tolerance The ability of a plant in soil or in culture to withstand a concentration of common salt (sodium chloride) which is damaging or lethal to most other plants. Breeding and selection for increased tolerance and **resistance** in crop plants is of great current interest. *Synonym*: saline resistance. An organism with extreme salt tolerance is a **halophyte**.

Sposobnost biljke u zemljištu ili u kulturi da izdrži koncentraciju kuhinjske soli (natrijum hlorida) koja je štetna ili letalna za većinu drugih biljaka. Gajenje i selekcija za pojačanu tolerantnost i rezistentnost useva je od velikog interesa. *Sinonim*: saline resistance. Organizam se ekstremnom tolerantnošću na soli je halofit.

sap Fluid content of the **xylem** and **phloem cells** of plants. Fluid content of the **vacuole** generally referred to as cell sap.

Tečni sadržaj ksilemskih i floemskih ćelija biljaka. Tečni sadržaj vakuole, opšte nazvan kao ćelijski sok.

saprophyte An organism (generally a fungus) that depends on dead plant or animal **tissue** for its source of nutrition and metabolic energy.

Organizam (opšte uzev gljiva) koji zavisi od mrtvog tkiva biljke ili životinje kao izvor ishrane i metaboličke energije.

satellite DNA Highly **repetitive DNA** in plant and animal genomes, consisting of millions of copies of sequences typically in the range 5-500 bp long. Thousands of copies occur tandemly (head-to-tail) at each of many sites. It can be isolated from the rest of the genomic **DNA** by density gradient centrifugation.

Visoko ponovljiva DNK u biljnim i životinjskim genomima, koja sadrži milione kopija sekvenci, tipično u rasponu dužine 5-5000 bp. Hiljade kopija nastaju tandemski (glava-do-repa) na svakom od mnogih mesta. Može biti izolovana od ostatka genomske DNK putem gradijenta gustine centrifugiranja.

satellite RNA A small, self-splicing **RNA** molecule that accompanies several plant viruses, including tobacco ringspot virus. *Synonym*: viroid.

Mali, uvijen RNK molekul koji prati nekoliko biljnih virusa, uključujući mozaik virus duvana. *Sinonim*: viroid.

SC Abbreviation for **synaptonemal complex**.

Skraćenica za synaptonemal complex.

SCA Abbreviation for **specific combining ability**.

Skraćenica za specific combining ability.

scaffold The central **proteinaceous** core structure of condensed eukaryotic chromosomes. The scaffold is com-

posed of non-**histone** chromosomal **proteins**.

Centralna proteinozna struktura jezgra kondenzovanih eukariotskih hromozoma. Sastavljena od ne-histonskih hromozomskih proteina.

scale up Conversion of a process, such as **fermentation** of a **micro-organism**, from a small laboratory scale to a larger industrial scale.

Konverzija procesa, kao što je fermentacija mikroorganizama, od malog laboratorijskog obima do većeg, industrijskog obima.

scanning electron microscope (Abbreviation: SEM). An electron-beam-based microscope used to examine, in a three dimensional screen image, the surface structure of prepared specimens.

(Skraćenica: SEM) Mikroskop, zasnovan na elektronskom zraku korišćen da ispita, na trodimenzionalnom prikazu na ekranu, površinsku strukturu pripremljenih uzoraka.

SCAR Abbreviation for **sequence characterized amplified region**.

Skraćenica za sequence characterized amplified region.

scarification The chemical or physical treatment given to certain **seeds** having hard, impermeable seed coats in order to puncture or weaken the seed coat sufficiently to permit water uptake and germination.

Hemijski ili fizički tretman nekog semena koje ima čvrste, nepropusne semenjače, da bi ih probili ili oslabili tako da mogu upiti vodu i omogućiti klijanje.

SCE Abbreviation for **sister chromatid exchange**.

Skraćenica za razmenu sestrinskih hromatida.

scion A twig or **bud** used for **grafting** onto another plant or **rootstock**.

Izdanak, ili pupoljak, korišćen za kalemljenje na drugu biljku ili koren.

scion-stock interaction The effect of a **rootstock** on a **scion** (and *vice versa*) in which a particular scion grafted onto a specific **s** performs differently than it would either on its own roots or on a different rootstock.

Uticaj korena na izdanak (i vice-versa) u kojem se pojedini izdanak kalemljen na specifičan **s** ponaša različito, nego kada bi bio na sopstvenom ili na različitom korenu.

sclerenchyma A strengthening **tissue** in plants, composed of cells with heavily lignified **cell walls**.

Ojačavajuće tkivo u biljaka, sastavljeno od ćelija sa jako lignificiranim ćelijskim zidovima.

SCP Abbreviation for **single-cell protein**.

Skraćenica za single-cell protein.

scrapie A spongiform encephalopathy disease of sheep. *See*: **proteinaceous infectious particle**.

Bolest spongiformne encefalopatije u ovaca. *Vidi*: priteinaceous infectious particle.

screen Preliminary characterization of a sample collection on the basis of a set of simple established criteria (biochemical, anatomical, physiological, etc.). Often applied to the process of **selection** for specific purposes, such as for **disease resistance** or for improved agronomic performance in crop plants.

Preliminarna karakterizacija kolekcije uzoraka na bazi niza jednostavno ustanovljenih kriterijuma (biohemijskih, anatomskih, fizioloških, itd.). Često primenjena na proces selekcije

za specifične namene kao za rezistentnost na bolesti ili za poboljšanu agronomsku performansu kod biljaka.

SDS Abbreviation for **sodium dodecyl sulphate**.

Skraćenica za sodium dodecyl sulphate.

SDS-PAGE Abbreviation for **sodium dodecyl sulphate polyacrylamide gel electrophoresis**.

Skraćenica za sodiumdodecyl sulphate polyacrylamide gel electrophoresis.

secondary antibody In an **ELISA** or other immunological **assay** system, the antibody designed to bind to the **primary antibody**, and to which a **label** is generally attached.

U ELISA, ili drugom imunološkom sistemu, antitelo stvoreno da vezuje primarno antitelo, i kojem je oznaka dodata.

secondary cell wall The innermost layer of cell wall, giving rigidity to the cells. Characterized by its highly organized microfibrillar structure, and only formed in certain cells after cell elongation has ceased.

Unutrašnji sloj ćelijskog zida koji daje čvrstoću ćelijama. Karakteriše se visokom miofibrilarnom strukturom i formira se u ćelijama pošto je izduženje ćelija prestalo.

secondary growth Type of growth characterized by an increase in the thickness of **stem** and root, and resulting from the formation of secondary **vascular tissues** by the vascular **cambium**.

Tip rasta koji se karakteriše povećanjem debljine stabla i korena, nastale od formiranja sekundarnih vaskularnih tkiva od strane vaskularnog kambijuma.

secondary immune response The rapid immune response that occurs during

the second (and subsequent) encounters of the immune system of a mammal with a specific **antigen**. *See: primary immune response.*

Brzo imunoreagovanje, koje nastaje za vreme drugog (i potonjeg) reagovanja imunog sistema sisara sa specifičnim antigenom. *Vidi: primary immune response.*

secondary messenger A chemical compound within a **cell** that is responsible for initiating the response to a signal from a chemical messenger (such as a hormone) that cannot enter the **target** cell itself.

Hemijsko jedinjenje u ćeliji, koje je odgovorno za započinjanje reagovanja na signal iz hemijskog mesendžera (kao što je hormon) koji ne može da uđe u samu ciljnu ćeliju.

secondary metabolism The production by living organisms of substances not essential for **primary** metabolic functions or physiology. Their role is associated with interaction with the environment, for example for defence, as **elicitors** or as attractants. Some of these have useful pharmacological or nutritional properties, while others are toxic.

Proizvodnja supstanci živih organizama koje nisu bitne za primarne metaboličke funkcije ili fiziologiju. Njihova uloga je povezana sa interakcijom sa spoljnom sredinom, na primer za odbranu, kao mamci ili atraktanti. Neki od njih imaju korisna farmakološka ili ishrambena svojstva, dok su drugi toksični.

secondary metabolite Product of **secondary metabolism**.

Produkt sekundarnog metabolizma.

secondary oocyte *See: oocyte.*

Vidi: oocyte.

secondary phloem Phloem tissue formed by the **vascular cambium** during secondary growth in a vascular plant.

Tkivo floema koje formira vaskularni kambijum tokom sekundarnog rasta kod vaskularne biljke.

secondary plant product *See: secondary metabolite.*

Vidi: secondary metabolite.

secondary root A branch or lateral root. Granati ili bočni koren.

secondary spermatocyte *See: spermatocyte.*

Vidi: spermatocyte.

secondary structure Localized three dimensional **conformations** adopted by **macromolecules**, in particular nucleic acids and polypeptides. These arise as a result of the action of non-covalent forces generated by interactions between **residues** which are brought into close contact with one another. Examples are alpha-helix regions and beta-pleated sheets in **proteins**, and hairpin loops in nucleic acids. *See: primary structure, tertiary structure, quaternary structure.*

Lokalizovane trodimenzionalne konformacije prihvaćene od makromolekula, posebno od nukleinskih kiselina i polipeptida. One nastaju kao rezultat delovanja ne-kovalentnih sila, nastalih putem interakcija između rezidua koje su dovedene u bliski kontakt jedna sa drugom. Primeri su regioni alfa-heliksa i beta-nabrani listovi u proteina, i otvori polinukleotida u nukleinskim kiselinama. *Vidi: primary structure, tertiary structure, quaternary structure.*

secondary thickening Deposition of secondary **cell wall** materials which result in an increase in thickness in stems and roots.

Deponovanje sekundarnih materijala ćelijskog zida, što dovodi do povećanja debljine stabljika i korenova.

secondary vascular tissue Vascular tissue (**xylem** and **phloem**) formed by the vascular cambium during secondary growth in a vascular plant.

Vaskularno tkivo (**xylem** i **floem**) koje formira vaskularni kod kambijum tokom sekundarnog rasta u vaskularnih biljaka.

secondary xylem See: **secondary vascular tissue**.

Vidi: secondary vascular tissue.

secretion The transport of a **molecule** from the inside of a **cell** through the cell membrane.

Transport molekula od unutrašnjosti ćelija kroz ćelijsku membranu.

seed Botanically, the matured **ovule** without accessory parts. Colloquially, anything which may be sown; i.e. seed potatoes (which are vegetative tubers); seed of wheat (karyopses) etc.

Botanički, zrela neoplođena jajna ćelija bez dodatnih delova. Neknjiževno, bilo šta što se može posejati, na pr. semenski krompir (vegetativne krtole), seme pšenice (kariopsisi), itd.

seed storage proteins Proteins accumulated in large amounts in **protein** bodies within **seeds**. They act as a source of **amino acids** during germination. Of interest in biotechnology: 1. As a major source of human and animal nutritional protein. 2. As a model expression system. Since they are produced in large amounts relative to other proteins, and are stored in stable, compact bodies in the plant seed, it may be possible to engineer **transgenes** which are expressed in the same way as seed storage proteins - i.e. in large amounts and in a convenient form.

Proteini nagomilani u velikim količinama u proteinskim telima u semenu. Oni su izvor aminokiselina tokom klijanja. Od interesa u biotehnologiji: 1. Kao glavni izvor humanog i životinjskog ishranbenog proteina. 2. Kao model sistem izražavanja. Pošto su proizvedeni u velikim količinama relativno prema drugim proteinima i skladišteni u stabilnim, kompaktnim telima biljnog semena, mogu se proizvesti transgeni, koji se ispoljavaju na isti način kao proteini skladišteni u semenu, t.j. u velikim količinama i u pogodnom obliku.

segment-polarity gene A gene that functions to define the anterior and posterior components of body segments in *Drosophila*.

Gen koji funkcioniše da odredi prednje i zadnje komponente telesnih segmenata u *Drosophila*-i.

segregant An individual derived from a **cross** between two unlike parents.

Individua nastala iz ukrštanja dva različita roditelja.

segregation For genes, the separation of allele pairs from one another and their resulting assortment into different cells at **meiosis**. For chromosomes, the separation and re-assortment of the two **homologues** in **anaphase** of the first meiotic division. For individuals, the occurrence of different genotypes and/or phenotypes among offspring, resulting from **chromosome** or **allele** separation in their **heterozygous** parents.

Za gene, razdvajanje alelnih parova i njihov raspored u različite ćelije u mejozi. Za hromosome, razdvajanje i ponovni raspored dva homologa u anafazi prve mejotičke deobe. Za individue, pojava različitih genotipova

i/ili fenotipova među potomstvom, nastalim od razdvajanja hromozoma ili alela njihovih heterozigotnih roditelja.

selectable Having a gene product that, when present, enables the identification and preferential **propagation** of a particular **genotype**. *See:* **reporter gene**.

Produkt gena, koji, kad je prisutan, omogućava identifikaciju i preferencijalno umnožavanje posebnog genotipa. *Vidi:* reporter gene.

selectable marker A gene whose expression allows the identification of a specific **trait** or **gene** in an organism.

Gen čije ispoljavanje omogućava identifikaciju specifične osobine ili gena u organizmu.

selection 1. Differential survival and reproduction of **phenotypes**. 2. A system for either isolating or identifying specific **genotypes** in a mixed population.

1. Različito preživljavanje i reprodukcija fenotipova. 2. Sistem bilo za izolaciju ili identifikaciju specifičnih genotipova u mešanoj populaciji.

selection coefficient A measure of the intensity of selection at a locus, commonly abbreviated as *s*. It represents the proportionate reduction in the gametic contribution of a particular **genotype**, compared with the (generally most favoured) standard genotype.

Mera intenziteta selekcije na lokusu, obično skraćena kao *s*. Isti predstavlja proporcijalno smanjenje gametnog doprinosa pojedinog genotipa, u poređenju sa (uopšte najpoželjnijim) standardnim genotipom.

selection culture A selection based on difference(s) in environmental con-

ditions or in **culture medium** composition, such that preferred **variant** cells or **cell lines** (presumptive or putative **mutants**) are favoured over other variants or the **wild type**.

Selekcija zasnovana na razlikama u uslovima spoljne sredine ili u sastavu medijuma kulture, tako da poželjne varijante ćelije ili ćelijskih linija (verovatni ili nabeđeni mutanti) su favorizovani nad ostalim varijantama dvičnog tipa.

selection differential The difference between the **mean** of the individuals selected to be parents and the mean of the overall **population**; it represents the average superiority of the selected parents; commonly abbreviated as *S*.

Razlika između proseka individua selekcionih da budu roditelji, i proseka cele populacije; ona predstavlja prosečnu superiornost izabranih roditelja; uobičajeno skraćena kao *S*.

selection pressure The intensity of selection acting on a population of organisms or on cells in culture. Its effectiveness is measured in terms of differential survival and reproduction, and consequently in changes in **allele frequency** in a population.

Intenzitet selekcije, koja deluje na populaciju organizama ili na ćelije u kulturi. Njegova efikasnost se meri izrazom diferencijalnog preživljavanja i reprodukcije, i konzekventno, utice na promene frekvencije alela u populaciji.

selection response The difference between the mean of the individuals selected to be parents and the mean of their offspring. Predicted response is calculated as the product of **narrow-sense heritability** and **selection differential**.

Razlika između proseka individua, odbačenih da budu roditelji, i proseka njihovog potomstva. Predviđeno reagovanje se izračunava kao produkt heritabilnosti u uzem smislu i selekcijskog diferencijala.

self-incompatibility In plants, the inability of the **pollen** to fertilize ovules (female gametes) of the same plant.

U biljaka, nesposobnost polena da oplode jajne ćelije (ženske gamete) iste biljke.

self-replicating elements Extrachromosomal **DNA** elements that have origins of **replication** for the **initiation** of their own **DNA** synthesis.

Ekstrahromozomalni elementi DNK koji imaju sposobnost replikacije za početak njihovih sinteza DNK.

self-sterility Synonym of **self-incompatibility**.

Sinonim od self-incompatibility.

SEM Abbreviation for **scanning electron microscope**.

Skraćenica od scanning electron microscope.

semen sexing Synonym of **sperm sexing**.

Sinonim od sperm sexing.

semi-conservative replication During **DNA** duplication, each strand of a parent **DNA** molecule acts as a **template** for the synthesis of a new **complementary** strand. Thus, one half of a pre-existing **DNA** molecule is conserved during each round of replication.

Tokom udvostručavanja DNK, svaki lanac roditeljske molekule DNK deluje kao kalup za sintezu novog komplementarnog lanca. Tako je jedna polovina predhodno postojećeg molekula DNK konzervisana tokom replikacije.

semi-continuous culture Cells in an actively dividing state which are main-

tained in culture by periodically draining off the medium and replenishing it with fresh **medium**.

Ćelije u jednom aktivnom stanju delbe koje se održava u kulturi putem periodičnog dreniranja medijuma i zamene istog svežim medijumom.

semi-permeable membrane A natural or synthetic material which selectively allows the **passage** of certain ions or molecules.

Prirodan, ili sintetički materijal, koji selektivno omogućuje prolaz nekih jona ili molekula.

semi-sterility The condition of partial fertility. Often associated with chromosomal aberrations or the result of **mutagenesis**.

Stanje parcijalne plodnosti. Često povezano sa hromozomskim aberacijama, ili je rezultat mutageneze.

senescence A late stage in the **development** of multicellular organisms, during which irreversible loss of function and degradation of biological components occur. The physiological ageing process in which cells and tissues deteriorate and finally die.

Poslednji stadijum u razviću višćelijskih organizama, tokom kojeg se dešava nepovratni gubitak funkcije i degradacija bioloških komponenata. Fiziološki proces starenja u kojem ćelije i tkiva degenerisu i konačno umiru.

sense RNA The **RNA** transcript of the **coding strand DNA** (often represented as the (+)-strand). *Opposite*: **antisense RNA**. When both sense and antisense **transcripts** of a gene are present simultaneously, **gene silencing** is often the result.

RNK transkript kodirajućeg lanca DNK (često predstavljenim kao (+) lanac).

Suprotno: antisense RNK. Kada su oba sense i antisense transkripta gena prisutna, rezultat je često mirovanje gena.

sensitivity In diagnostic tests, the smallest amount of the **target** molecule that the **assay** can detect.

U dijagnostičkim testovima, najmanja količina ciljnog molekula koju ogleđ može da otkrije.

sepsis Destruction of **tissue** by pathogenic micro-organisms or their toxins, especially through **infection** of a wound.

Uništavanje tkiva putem patogenih mikroorganizama ili njihovih toksina, naročito putem infekcije rane.

septate (adj.) *See*: **septum**.

Vidi: septum.

septum A dividing wall or partition, which splits a structure into separate cells or compartments.

Deleći zid ili pregrada koja razdvaja strukturu na posebne ćelije ili odeljke.

sequence The linear order of **nucleotides** along a **DNA** or **RNA** molecule, and the process of obtaining this. **Genome** sequencing aims to generate the linear order of all nucleotides present in the nuclear DNA of an organism.

Linearni raspored nukleotida duž DNK ili RNK molekula, i proces dobijanja istih. Sekvenciranje genoma teži da stvori lineran redosled svih nukleotida koji su prisutni u nuklearnoj DNK nekog organizma.

sequence characterized amplified region (Abbreviation: SCAR). A molecular **marker** obtained by the **conversion** to a **sequence-tagged site** of a single **random amplified polymorphic DNA** product.

(Skraćenica: SCAR) Molekularni marker, dobijen putem konverzije u se-

kvencom obeleženo mesto slučajno umnoženog produkta polimorfne DNK.

sequence divergence The percent difference in the **nucleotide** sequence between related **nucleic acid** sequences, or in the **amino acid** sequence in a comparison between related **proteins**.

Procentna razlika u sekvenci nukleotida između srodnih sekvenci nukleinske kiseline, ili u sekvenci aminokiseline, u poređenju sa srodnim proteinima.

sequence hypothesis The concept that **genetic information** exists as a linear **DNA** code, and that **DNA** and gene product sequence are collinear.

Koncept prema kom informacija postoji kao linerani kod, i da su DNK i genski proizvod kolinerani.

sequence tandem repeat (Abbreviation: STR). *See*: **tandem repeat**.

(Skraćenica: STR) *Vidi*: tandem repeat.

sequence-tagged site (Abbreviation: STS). Short unique **DNA** sequence (200–500 bp long) that can be amplified by **PCR** and is thus tagged to the site on the **chromosome** from which it was amplified.

(Skraćenica: STS) Kratka jedinstvena sekvenca DNK (200–500 bp dugačka) koja može da bude umnožena putem PCR, i tako spojena sa mestom na hromozomu od kojeg je razmnožena.

serial division Splitting of excised shoot-tip material growing *in vitro*, in order to induce the development of greater numbers of **plantlets**.

Razdvajanje isečenog materijala vrha izdanka koji raste *in vitro*, da bi izazvalo razviće većeg broja biljčica.

serial float culture A technique whereby immature anthers are floated on

a liquid medium, and continue their **development** through to the release of **pollen**.

Tehnika kojom nezrele antere plove na tečnom medijumu, i nastavljaju svoje razviće kroz ispuštanje polena.

serology The study of **serum** reactions between an **antigen** and its **antibody**. Mainly used to identify and distinguish between antigens, such as those specific to particular microorganisms or viruses.

Ispitivanje reakcije seruma između antigena i njegovog antitela. Uglavnom korišćena da identifikuje i napravi razliku između antigena, specifičnih za posebne mikroorganizme i viruse.

serum Blood **plasma** that has had its clotting factor removed.

Krvna plazma kod koje je faktor zgrušavanja odstranjen.

serum albumin A globular **protein** obtained from blood and body fluids. Bovine and human serum albumins are abbreviated **BSA** and **HSA** respectively.

Globularni protein dobijen od krvi i telesnih tečnosti. Bovini i ljudski serum albumini imaju skraćenice BSA, odnosno HSA.

sewage treatment A widespread biotechnological processes in developed economies. Methods vary widely, but all are designed for the biological break-down of human and animal waste in order to allow safe discharge into the environment.

Široko rasprostranjeni biotehnoški procesi u razvijenim ekonomijama. Metodi široko variraju, ali su svi projektovani za biološko razlaganje ljudskih i životinjskih otpadnih materijala, da bi omogućili sigurno izbacivanje u spoljnu sredinu.

sex chromosome Differentiated chromosome which is responsible for the **determination** of sex of the individual. For all mammals, a small number of flowering plants and many insects, female individuals carry a pair of X chromosomes, and males carry one X and one Y. For birds, reptiles and most amphibians, male individuals carry a pair of W chromosomes, and females carry one W and one Z. In some insects there is only one sex chromosome, X, and sex is determined by the number of these present. *Synonym*: allosome. *Opposite*: autosome.

Različiti hromozom koji je odgovoran za određivanje pola neke individue. Kod svih sisara, malog broja biljaka cvetnica, i mnogih insekata, ženske individue nose par X hromozoma, a muški nose jedan X i jedan Y. Kod ptica, reptila i većine vodozemaca, muške individue nose par W hromozoma, a ženke nose jedan W i jedan Z. U nekih insekata ima samo jedan polni hromozom, X, a pol se određuje brojem tih prisutnih. *Sinonim*: allosome. *Suprotno*: autosome.

sex determination Any method by which the distinction between males and females is established in a species, particularly at an early stage of foetal development.

Bilo koji metod kojim se ustanovljava razlika između mužjaka i ženki u pojedinim vrstama, posebno u ranom stadijumu fetalnog razvića.

sex duction The incorporation of bacterial genes into **F factors** and their subsequent transfer, by **conjugation**, to a recipient cell.

Uključenje bakterijskih gena u F faktore, i njihov potonji prenos, putem spajanja, u ćeliju recipijenta,

sex factor A bacterial **episome** (e.g. the F **plasmid** in *E. coli*) that enables the cell to be a donor of genetic material. The sex factor may be propagated in the **cytoplasm**, or it may be integrated into the bacterial **chromosome**.

Bakterijski epizom (t.j. F plazmid u *E. coli*), koji omogućava ćeliji da bude donor genetičkog materijala. Polni faktor može se razmnožavati u citoplazmi, ili može da bude integrisan u bakterijski hromozom.

sex hormones Steroid hormones that control sexual **development** in animals.

Steroidni hormoni koji kontrolišu polno razviće u životinja.

sex linkage Referring to genes present on one of the sex chromosomes, thus genetically linked to the sex of the individual.

Odnosi se na gene koji su prisutni u jednom od polnih hromozoma, genetički su vezane za pol individue.

sex mosaic Synonym of **gynandromorph**.

Sinonim od gynandromorph.

sexed embryos Embryos separated according to sex.

Embrioni, razdvojeni prema polu.

sex-influenced dominance The tendency for gene action to vary between the sexes within a species. For example, the presence of horns in some breeds of sheep appears to be **dominant** in males but **recessive** in females.

Delovanje gena koje varira između polova u okviru vrsta. Na primer, prisustvo rogova u nekih rasa ovaca izgleda da je dominantno u mužjaka, a recesivno u ženki.

sex-limited Expression of a **trait** in only one sex; e.g. milk production in mammals; **egg** production in chickens.

Ispoljavanje osobine kod samo jednog pola; na pr. proizvodnja mleka u sisara; proizvodnja jaja u živine.

sexual reproduction The process whereby two **gametes** fuse to form one fertilized **cell (zygote)**.

Proces u kojem se dve gamete spajaju da obrazuju jedno oplodeno jaje (zigot).

shake culture An agitated suspension in culture providing adequate aeration for cells in the liquid medium. Usually achieved using platform **shakers**, or by constant stirring with a magnetic stirrer.

Trešenje suspenzije u kulturi obezbeđujući adekvatno provetravanje za ćelije u tečnom medijumu. Obično se postize korišćenjem platformske tresilice, ili stalnim mešanjem magnetском mešalicom.

shaker A platform, with set or variable speed control, used to agitate vessels containing liquid cell cultures. Also described as a platform shaker.

Platforma, sa nizom kontrola različite brzine, korišćena da tresе (meša) posude koje sadrže tečne ćelijske kulture. Takođe opisana kao platformska tresilica.

shear Literally the sliding of one layer across another, with deformation and fracturing in the direction parallel to the movement. In the present context, used to describe 1. the forces that cells are subjected to in a bioreactor or a mechanical device used for cell breakage. 2. the intentional or unintentional fragmentation of large **DNA** molecules, achieved commonly by passing a concentrated **DNA** solution through a hypodermic needle. This treatment generates random breaks in the **DNA**, and the average size of fragments can be manipulated by varying the bore of the needle.

Doslovno, klizanje jednog sloja preko drugog, sa deformacijom i prelamanjem u smeru paralelnom sa kretanjem. U sadašnjem kontekstu, korišćeno da opiše 1. Sile kojima se ćelije podvrgavaju u biorektoru, ili mehanički uređaj korišćen za razbijanje ćelija. 2. Namerna ili nenamerna fragmentacija velikih molekula DNK, postignuta obično propuštanjem koncentrovanog rastvora DNK kroz potkožnu iglu. Taj tretman stvara slučajne prekide u DNK, a prosečna veličina fragmenata može da bude manipulisana variranjem rupe na igli.

Shine-Dalgarno sequence A conserved sequence of prokaryotic **mRNAs** that is **complementary** to a sequence near the 5' terminus of the 16S ribosomal **RNA** and is involved in the **initiation** of **translation**. *See: ribosomal binding site.*

Konzervisana sekvenca prokariotske mRNK (a) koja je komplementarna sekvenci blizu 5' kraja 16S ribozomne DNK i uključena je u početak sinteze. *Vidi: ribosomal binding site.*

shoot apex *See: shoot tip.*

Vidi: shoot tip.

shoot differentiation The development of growing points, leaf primordia and finally shoots from a shoot tip, axial bud, or callus surface.

Razviče tačaka rasta, lisnih primordija i krajnjih izdanaka iz vrha izdanaka, aksijalnog pupoljka, ili površine kalusa.

shoot tip The terminal **bud** (0.1–1.0 mm) of a plant, which consists of the **apical meristem** (0.05–0.1 mm) and the immediately surrounding leaf primordia and developing leaves, and adjacent stem tissue. *Synonym: shoot apex.*

Vršni pupoljak (0,1–1,0 mm) biljke, koji se sastoji od vršnog meristema (0,05–0,1 mm) i neposredno okružujućih lisnih primordija i listova u razvoju, i susjednog tkiva stabljike. *Sinonim: shoot apex.*

shoot-tip graft A **shoot tip** or **meristem tip** grafted onto a prepared seedling or micropropagated **rootstock** in culture. Meristem tip **grafting** is mainly used for *in vitro* **virus** elimination from *Citrus* spp. and other plants. *Synonym: micrograft.*

Vršni pupoljak, ili meristemski pupoljak, nakalemljen na pripremljeni izdanak ili mikrorazmnoženi potporni koren u kulturi. Meristemski tip kalemljenja se uglavnom koristi za *in vitro* eliminaciju virusa iz vrsta *Citrusa* i drugih biljaka. *Sinonim: micrograft.*

short interspersed nuclear element (Abbreviation: **SINE**). Families of short (150–300 bp), moderately **repetitive DNA** elements of eukaryotic genomes. They appear to be **DNA** copies of certain **tRNA** molecules, created presumably by the unintended action of **reverse transcriptase** during retroviral infection.

(Skraćenica: SINE) Familije kratkih (150–300 bp), umereno ponovljivih DNK elemenata eukariotskih genoma. Izgleda da su kopije izvesnih tRNK molekula, verovatno stvorene nenamernim delovanjem reverzne transkriptaze tokom retrovirusne infekcije.

short-day plant A plant which will not flower until triggered to do so by exposure to one or a number of dark periods equal to or longer than its critical period. Other plant species are long-day and some are daylength neutral. **Genetic variation** for daylength

sensitivity is present in many crop species.

Biljka koja neće cvetati sve dok nije podstaknuta da to čini izlaganjem jednom, ili brojnim periodima mraka, jednakim, ili dužim nego što je njen kritičan period. Druge biljne vrste su dugog dana, a neke su neutralne u odnosu na dužinu dana. Genetička varijacija za osetljivost na dnevnu svetlost je prisutna u mnogih biljaka.

shotgun genome sequencing A strategy for sequencing a whole **genome**, in which the genomic **DNA** is initially fragmented into pieces small enough to be sequenced. Specialized computer software is then used to piece together the individual sequences to create long contiguous tracts of sequenced **DNA**.

Strategija za sekvenciranje celog genoma, u kojoj je genomska DNK početno fragmentirana u deliće koji su dovoljno mali da budu sekvencirani. Specijalizovani kompjuterski softver se zatim koristi da spoji individualne sekvence kako bi formirale sekvenci-
oni DNK.

shuttle vector A **plasmid** capable of replicating in two different **host** organisms because it carries two different origins of **replication** and can therefore be used to transfer genes from one to the other. *Synonym*: **bifunctional vector**.

Plazmid, sposoban za replikaciju u dva različita organizma domaćina, pošto ima dve replikacije različitog porekla i zbog toga može da bude korišćen da prenosi gene od jednog do drugog. *Sinonim*: bifunkcionalni vektor.

sib-mating The deliberate crossing of siblings. Generally done where **self-**

incompatibility prevents the production of self-fertilized progeny.

Ciljno ukrštanje srodnika. Opšte uzev, primenjuje se kada samo-inkompatibilnost sprečava stvaranje smooplo-
dnog potomstva.

siderophore A low molecular weight entity that binds very tightly to iron. Siderophores are synthesized by a variety of soil micro-organisms to ensure that the **organism** is able to obtain sufficient amounts of iron from the environment.

Entitet niske molekularne težine, koji se vrlo blisko vezuje za gvožđe. Sidero-
fore se sintetišu od niza zemljišnih mikroorganizama, da se osigura da je organizam u stanju da dobije dovoljne količine gvožđa iz sredine.

sieve cell A long and slender **sieve element** in **vascular** plants, characterized by relatively unspecialized sieve areas and tapering end walls that lack **sieve plates**.

Dug i tanak sitasti element u vaskularnih biljaka, karakterise sa sa relativno nespecijalizovanim sitastim oblastima i zašiljenim krajnjim zidovima koji nemaju sitaste ploče.

sieve element The **phloem** cell concerned with longitudinal conduction of food materials.

Floemska ćelija koja se tiče longitudinalnog sprovođenja hranljivih materija.

sieve plate Perforated wall area in a **sieve tube** element, through which strands connecting sieve tube protoplasts can pass.

Izbušena oblast u elementu sitaste cevi, kroz koju mogu da prođu vlakna, povezujući protoplaste sitaste cevi.

sieve tube A tube within the **phloem** tissue of a plant, composed of joined **sieve elements**.

Cevčica u okviru tkiva floema biljke, sastavljena od spojenih elemenata sita.

sigma factor The sub-unit of prokaryotic **RNA polymerases** responsible for the **initiation** of **transcription** at specific initiation **sequences**.

Podjedinica prokariotskih RNK polimeraza, odgovornih za početak transkripcije specifičnih inicijalnih sekvenci.

signal peptide *See: signal sequence.*

Vidi: signal sequence.

signal sequence A stretch of 15–30 amino acid residues at the N terminus of a **protein**, which is thought to enable the **protein** to be secreted (pass through a cell membrane). The signal sequence is removed as the **protein** is secreted. *Synonyms: signal peptide, leader peptide.*

Raspon od 15–30 rezidua aminokiselina na N terminusu proteina, za koji se smatra da omogućava da se protein luči (prođe kroz ćelijsku membranu). Signalna sekvenca je odstranjena kada je protein izlučen. *Sinonim: signal peptide, leader peptide.*

signal transduction The biochemical events that conduct the signal of a **hormone** or **growth factor** from the cell exterior, through the cell membrane, and into the cytoplasm. This involves a number of molecules, including receptors, ligands and messengers.

Biohemijski proces koji vodi signal hormona ili faktora rasta od spoljašnjosti ćelije, kroz ćelijsku membranu do citoplazme. To uključuje jedan broj molekula, uključujući receptore, ligande i mesenzere.

signal-to-noise ratio A specifically produced response (signal) compared to the response level (noise) when no

specific stimulus (activity) is present.

Specifično proizvedeno reagovanje (signal) upoređeno sa nivoom reagovanja (šumom) ukoliko nije prisutan specifičan stimulus (aktivnost).

silencing Loss of **gene expression** either through an alteration in the **DNA sequence** of a structural gene, or its regulatory region; or because of interactions between its **transcript** and other **mRNAs** present in the cell (*see: antisense RNA*).

Gubitak ekspresije gena, bilo kroz izmenu u sekvenci DNK strukturnog gena, ili njegovog regulacionog regiona; ili zbog interakcija između njegovog transkripta i drugih mRNK(a) prisutnih u ćeliji. (*Vidi: antisense RNK*).

silent mutation *See: mutation.*

Vidi: mutation.

simple sequence repeat (Abbreviation: **SSR**). *See: microsatellite.*

(Skraćenica: SSR). *Vidi: microsatellite.*

SINE Abbreviation for **short interspersed nuclear element**.

Skraćenica za short interspersed nuclear element.

single-cell line *See: cell strain.*

Vidi: cell strain.

single-cell protein (Abbreviation: **SCP**). **Protein** produced by microorganisms, particularly yeast. Used as either a feed or a food additive.

(Skraćenica: SCP) Protein, proizveden od mikroorganizama, posebno kvasca. Korišćen kao hrana ili dodatak hrani.

single copy A gene or **DNA** sequence which occurs only once per (**haploid**) genome. Many structural genes are single copy.

Gen, ili sekvenca DNK, koja se pojavljuje samo jednom po (haploidnom)

genomu. Mnogi strukturalni geni su jedna kopija.

single domain antibody *See: dAb.*

Vidi: dAb.

single node culture Culture of separate lateral **buds**, each carrying a piece of **stem** tissue.

Kultura od posebnih bočnih pupoljaka, svaki nosi deo tkiva stabla.

single nucleotide polymorphism (Abbreviation: SNP). A genetic **marker** resulting from **variation in sequence** at a particular position within a **DNA** sequence. SNPs are commonly the result of **transition** changes (A for G, T for C), but also transversions (G or A for T or C) and single base deletions. Such variation is extensive throughout all genomes, and offers the particular advantage of being detectable without the need for **gel electrophoresis**.

(Skraćenica: SNP) Genetički marker koji nastaje usled varijacije u sekvenci na posebnom položaju u okviru DNK sekvence. SNP (i) su uglavnom rezultat tranzicija (A za G, T za C), ali takođe transverzija (G ili A za T ili C), i delecija pojedinih baza. Takva varijacija je obimna u svim genomima, i nudi posebnu prednost da se može otkriti bez primene gel elektrofореze.

single primer amplification reaction (Abbreviation: SPAR). A PCR-based genotyping technique in which genomic template is amplified with a single **primer**.

(Skraćenica: SPAR) Tehnika genotipovanja zasnovana na PCR-u u kojoj je genomski osnov umnožen sa jednim primerom.

single-strand conformational polymorphism (Abbreviation: SSCP). A

technique for detection of mutations in a defined **DNA** sequence. Single-stranded polynucleotides are electrophoretically separated on non-denaturing gels. Intrachain base pairing results in a limited number of conformers stabilized by intrachain loops, and mutated **DNA** shows on **electrophoresis** an altered **assortment** of such conformers.

(Skraćenica: SSCP) Tehnika za otkrivanje mutacija u definisanoj sekvenci DNK. Polinukleotidi sa jednim lancem su razdvojeni elektroforezom na ne-denaturišuće gele. Međulančano parenje baza dovodi do ograničenog broja konformera stabilizovanih putem međulančanih petlji, a mutirana DNK pokazuje na elektroforezi izmenjeno razvrstavanje takvih konformera.

single-strand DNA binding protein A protein that coats **single-stranded DNA**, preventing **renaturation** and so maintaining the **DNA** in an extended state.

Protein koji oblaže jednolancani DNK, sprečavajući renaturaciju tako održava DNK u produženom stanju.

single-stranded DNA (Abbreviation: ssDNA). **DNA** molecules separated from their **complementary** strand, either by its absence or following denaturation.

(Skraćenica: ssDNK) Molekuli DNK izdvojeni iz komplementarnog lanca, bilo njegovim odsustvom ili denaturacijom.

single-stranded nucleic acid Nucleic acid molecules consisting of only one **polynucleotide** chain. The genomes of many viruses are **single-stranded DNA** molecules, as are most biologically effective RNAs. Many **RNA**

molecules do include double-stranded regions formed by the intra-strand base-pairing of self-complementary sequences, and these determine the 3-dimensional shape (**conformation**) that they adopt *in vivo*.

Molekuli nukleinske kiseline koji se sastoje od samo jednog polinukleotidnog lanca. Genomi mnogih virusa su jednolančane DNK molekule, kao što su većina biološki efikasni RNK (a). Mnoge molekule RNK uključuju regione sa dva lanca, formirana putem parenja baza unutar lanca samokomplementarnih sekvenci, a ove određuju trodimenzionalni oblik (komformaciju) koji one prihvataju *in vivo*.

sire Male animal chosen for breeding.

Mužjak, izabran za priplod.

sister chromatid exchange (Abbreviation: SCE). Reciprocal interchanges of the two **chromatid** arms within a single **chromosome**.

(Skracénica: SCE) Recipročne izmene dva kraka hromatida u okviru jednog hromozoma.

site-specific A term used to describe any process or **enzyme** which acts at a defined sequence within a **DNA** or **RNA** molecule.

Izraz, korišćen da opiše bilo koji proces ili enzim koji deluje na definisanoj sekvenci u okviru molekula DNK ili RNK.

site-specific mutagenesis The induction of **mutations**, by molecular biology techniques, in one or more specific **nucleotides** within a defined **coding sequence** in order to create altered forms of the **gene** product. Used to define the **active sites** of **proteins** and for **protein engineering**.

Induciranje mutacija tehnikama molekularne biologije, na jednom ili više

specifičnih nukleotida u okviru definisane sekvence kodiranja, da bi se stvorili izmenjeni oblici produkta gena. Korišćeno da definiše aktivna mesta proteina i za proteinski inženjering.

sitosterol *See: phytosterol*.

Vidi: phytosterol.

six-base cutter Type II **restriction endonucleases** whose **recognition site** and cleavage site consist of a characteristic sequence of six **nucleotide** pairs. *See: four-base cutter*.

Tip II restrikcioni endonukleaza čije se mesto prepoznavanja i mesto cepanja sastoji od karakteristične sekvence od 6 parova nukleotida. *Vidi: four-base cutter*.

small nuclear ribonucleoprotein (Abbreviation: snRNP). A complex of **small nuclear RNA** and nuclear **protein**, heavily involved in the post-transcriptional processing of **mRNA**, especially the removal of **introns**. snRNPs are a major component of **spliceosomes**.

(Skracénica: snRNP) Kompleks malih nuklearnih RNK i nuklearnog proteina, aktivno uključenih u post-transkripcionu obradu mRNK, posebno odstranjenje introna. snRNP (i) su glavna komponenta spliceozoma.

small nuclear RNA (Abbreviation: snRNA). RNA transcripts of 100-300 bp that associate with **proteins** to form **small nuclear ribonucleoprotein** particles. Most snRNAs are components of the **spliceosomes**.

Mala nuklearna RNK (Skracénica: snRNK). Transkripti od 100 do 300 bp koji se udružuju sa proteinima da formiraju male nuklearne ribonukleoproteinske deliće. Većina snRNK su komponente spliceozoma.

SNP Abbreviation for **single nucleotide polymorphism**.

Skraćenica za single nucleotide polymorphism.

snRNA Abbreviation for **small nuclear RNA**.

Skraćenica za small nuclear RNK.

snRNP Abbreviation for **small nuclear ribonucleoprotein**.

Skraćenica za small nuclear ribonucleoprotein.

sodium dodecyl sulphate (Abbreviation: SDS). A detergent used to solubilize **protein** and **DNA** from biological materials. Specific use in **sodium dodecyl sulphate polyacrylamide gel electrophoresis**.

(Skraćenica: SDS) Deterđzent, korišćen da rastvori protein i DNK bioloških materijala. Specifično korišćenje u natrijum dodecil sulfatnoj poliakrilamidnoj gel elektroforezi .

sodium dodecyl sulphate polyacrylamide gel electrophoresis (Abbreviation: SDS-PAGE). A widely employed electrophoretic method for the separation of **proteins** from biological samples. The **sodium dodecyl sulphate** gives a uniform charge density to the surface of **proteins** or nucleic acids, so that their rate of migration through the gel is determined largely by their molecular weight.

(Skraćenica: SDS-PAGE) Široko primenjeni metod elektroforeze za izdvajanje proteina iz bioloških uzoraka. Natrijum dodecil sulfat daje ujednačenu gustinu šarži na površini proteina ili nukleinskih koselina, tako da je njihov stepen kretanja kroz gel uveliko određen njihovim molekularnim težinama.

soil amelioration The improvement of poor soils. Includes the fungal and

bacterial break down of plant organic matter, to form humus; the release of minerals - such as phosphates - to the soil, making them available to plants; the fixation of nitrogen. Can sometimes include an element of **bioremediation**.

Poboljšanje loših zemljišta. Uključuje gljivično i bakterijsko razlaganje biljne organske materije, da obrazuje humus; otpuštanje minerala - kao što su fosfati - u zemljište, čineći ih raspoloživim za biljke; fiksiranje azota. Može nekada da uključuje element (bioremedijacije).

soil-less culture Growing plants in nutrient solution without soil. *Synonym: hydroponics*.

Gajenje biljaka u hranljivom rastvoru bez zemlje. *Sinonim: hydroponics*.

solid medium Nutrient medium solidified by the addition of a gelling agent, commonly agar.

Hranljivi medijum, očvršćen dodavanjem sredstva za želiranje, obično agara.

somaclonal variation Epigenetic or genetic changes induced during the callus phase of plant cells cultured *in vitro*. Sometimes visible as changed **phenotype** in plants regenerated from culture.

Epigenetičke ili genetičke promene, izazvane tokom kalusne faze biljnih ćelija kultivisanih *in vitro*. Ponekad vidljive kao izmenjeni fenotip u biljaka regenerisanih iz kulture.

somatic Referring to cell types, structures and processes other than those associated with the **germ line**.

Koji se odnosi na ćelijske tipove, strukture i procese, sem onih koji su povezani sa klicinom linijom.

somatic cell Cells not involved in sexual reproduction, i.e. not **germ** cells.

Ćelije koje nisu uključene u polnu reprodukciju te- ne klicine ćelije.

somatic cell embryogenesis The process of **differentiation** of **somatic embryos** either from **explant** cells (direct embryogenesis), or from callus generated from explants (indirect embryogenesis). *Synonym*: **asexual embryogenesis**.

Proces diferencijacije somatskih embriona, iz ćelija eksplanta (direktna embriogeneza), ili od kalusa, nastalog od eksplanta (indirektna embriogeneza). *Sinonim*: asexual embryogenesis.

somatic cell gene therapy The delivery of a **transgene(s)** to a **somatic tissue** in order to correct a physiological defect.

Dodavanje transgena somatskom tkivu da bi se korigovao fiziološki defekt.

somatic cell hybrid panel A panel of cells created by **cell fusion**, typically involving a reference species (e.g. hamster) and the species of interest (e.g. sheep) with each member of the panel containing a different mixture of chromosomes from the two species. By relating the presence or absence of cloned fragments (via ***in situ* hybridization**) or **PCR** products to the presence or absence of particular chromosomes from the species of interest, such panels can be used for **physical mapping**.

Grupa ćelija stvorena fuzijom ćelija, uključujući referentnu vrstu (na pr. hrčka) i vrste od interesa (na pr. ovca), sa svakim članom grupe koja se sastoji od različite smeše hromozoma dve vrste. Povezujući prisustvo ili odsustvo kloniranih fragmenata (preko *in situ* hibridizacije) ili PCR produkata na prisustvo posebnih hro-

mozoma onih vrsta koje su od interesa, takve grupe mogu da se koriste za fizičko mapiranje.

somatic cell variant A somatic cell with unique characters not present in the other cells, and which could be selected for by an appropriate screen.

Somatska ćelija, sa jedinstvenim osobinama koje nisu prisutne u drugim ćelijama i koje bi mogle da budu odabrane odgovarajućim sitom.

somatic embryo An organized **embryo-like** structure. Although morphologically similar to a zygotic embryo it is initiated from somatic plant cells. Under *in vitro* conditions, somatic embryos go through developmental processes similar to embryos of zygotic origin. Each somatic embryo is potentially capable of developing into a normal **plantlet**.

Organizovana struktura slična embrionu. Iako morfološki slična zigotnom embrionu, ona je inicirana somatskim biljnim ćelijama. U *in vitro* uslovima, somatski embrioni idu kroz razvojne procese slične embrionima zigotnog porekla. Svaki somatski embrion je potencijalno sposoban da se razvije u normalnu biljčicu.

somatic hybridization Naturally occurring or induced fusion of somatic **protoplasts** or cells of two genetically different parents. The difference may be as wide as interspecific. Wide synthetic hybrids formed in this way (i.e. not via gametic fusion) are known as **cybrids**. Not all cybrids contain the full **genetic information** (nuclear and non-nuclear) of both parents.

Spontana ili inducirana fuzija somatskih protoplasta ili ćelija dva genetički različita roditelja. Razlika može da

bude toliko velika, kao međuvrsna. Sintetički hibridi formirani na takav način (t.j. ne putem gametske fuzije) su poznati kao cibridi. Svi cibridi ne sadrže punu genetičku informaciju (nuklearnu i nenuklearnu) od oba roditelja.

somatic hypermutation The high frequency of **mutation** that occurs in the **gene** segments encoding the variable regions of **immunoglobulins** during the **differentiation** of **B lymphocytes** into **antibody producing plasma** cells.

Visoka frekvencija mutacije, koja se dešava u genskim segmentima enkodirajući varijabilne regione imunoglobulina tokom diferencijacije B limfocita u ćelije plazme koje proizvode antitelo.

somatic reduction Halving of the chromosomal number of **somatic** cells; a possible method of producing „haploids“ from somatic cells and calli by artificial means.

Prepolovljavanje broja hromozoma somatskih ćelija; mogući metod proizvodnje „haploida“ od somatskih ćelija i kalusa veštačkim sredstvima.

somatocinin Growth hormone-releasing hormone. *See: growth hormone.* Hormon rasta - otpuštajući hormon. *Vidi: growth hormone.*

somatostatin Growth hormone-inhibiting hormone. *See: growth hormone.*

Hormon rasta - inhibirajući hormon. *Vidi: growth hormone.*

somatotropin *See: growth hormone.* *Vidi: growth hormone.*

sonication Disruption of cells or **DNA** molecules by high frequency sound waves.

Uništenje ćelija ili molekula DNK visokofrekventnim zvučnim talasima.

SOS response The synthesis of a whole set of **DNA repair, recombination and replication proteins** in bacteria suffering severe **DNA damage** (e.g. following exposure to UV light).

Sinteza niza popravki DNK, rekombinacija i reprodukcija proteina u bakterijama čija je DNK jako oštećena (na pr. posle izlaganja UV svetlu).

source DNA The **DNA** from an organism that contains a **target** gene, and used as the starting material in a **cloning** experiment.

DNK nekog organizma koja sadrži ciljni gen i korišćena je kao početni materijal u eksperimentu kloniranja.

source organism A bacterium, plant or animal from which **DNA** is purified and used in a **cloning** experiment.

Bakterija, biljka ili životinja, od koje se DNK prečišćava i koristi u eksperimentu kloniranja.

Southern blot A **nitrocellulose** or nylon membrane to which **DNA** fragments previously separated by gel **electrophoresis**, have been transferred by capillary action. *See: blot.*

Nitroceluloza ili najlonska membrana, na kojoj su DNK fragmenti, prethodno razdvojeni gel elektroforezom, transformisani putem kapilarnog delovanja. *Vidi: blot*

Southern hybridization A procedure in which a cloned, labelled segment of **DNA** is hybridized to **DNA** restriction fragments on a **Southern blot**.

Postupak u kojem je kloniran, obeležen segment DNK, hibridizovan sa DNK restrikcionim fragmentima na Southern blot-u.

spacer sequence A **DNA** sequence separating neighbouring genes; spacer sequences are not usually transcribed.

Razdvajanje sekvence susednih gena; spacer sekvence razdvajači obično nisu transkribovane.

SPAR Abbreviation for **single primer amplification reaction**.

Skraćenica za single primer amplification reaction.

sparger A device that introduces, into a bioreactor, air in the form of fine bubbles.

Uređaj koji uvodi vazduh u biorektor u obliku finih mehura.

spatial autocorrelation statistics A set of statistical parameters aimed to depict the spatial (geographical) pattern of **genetic diversity** in a population.

Niz statističkih parametara, sa ciljem da opišu prostorni (geografski) tip genetičkog diverziteta u populaciji.

speciation The evolutionary differentiation of a pre-existing species into one or more distinct species.

Evoluciona diferencijacija predhodno postojećih vrsta u jednu ili više određenih vrsta.

species A class of individuals capable of interbreeding, but which is reproductively isolated from other such groups having many characteristics in common. A somewhat arbitrary and sometimes blurred classification; but still quite useful in many situations.

Grupa individua sposobnih za međusobno ukrštanje, ali koja je reproduktivno izolovana od drugih takvih grupa koje imaju niz zajedničkih karakteristika. Proizvoljna i ponekad nejasna klasifikacija; ali još uvek sasvim korisna u mnogim situacijama.

specific combining ability (Abbreviation: SCA). A component of genetic **variance** calculable where a number of genotypes are intercrossed in all possible combinations. The SCA me-

asures the **deviation** of the performance of a particular **cross** from the average general combining ability of its two parents.

(Skraćenica PCS) Komponenta genetičke varijanse koja se može izračunati kada se određen broj genotipova ukršta u svim mogućim kombinacijama. PKS meri odstupanje performanse određenog hibrida od prosečne vrednosti opštih kombinirajućih sposobnosti njegovih roditelja.

specificity For diagnostic tests, the ability of a **probe** to react precisely and uniquely with its **target** molecule.

Za dijagnostičke testove, sposobnost probe da regulje precizno i jedinstveno sa svojim ciljnim molekulom.

spent medium After sub-culture, medium which is discarded because it has been depleted of nutrients, dehydrated, or accumulated toxic metabolic products.

Posle podkulture, medijum koji je odbačen pošto su hranljive materije iskorišćene, dehidriran, ili sa nakupljenim toksičnim metaboličkim produktima.

sperm Abbreviation for **spermatozoon**. Skraćenica od spermatozoon.

sperm competition Competition between different **spermatozoa** to fertilize the **egg cell** of a single female.

Kompeticija između različitih spermatozoida da oplode jajnu ćeliju jedne ženke.

sperm sexing The separation of mammalian **sperm** into those bearing an **X chromosome** and those bearing a Y chromosome, in order to be able to produce, via **artificial insemination** or **in vitro fertilization**, animals of a specified sex. Methods for achieving this include the inactivation of X-be-

aring or Y-bearing sperm by antibodies recognizing sex-specific sperm surface peptides, and **fluorescence-activated cell sorting**.

Odvajanje sperme sisara na onu koja nose jedan X hromozom i koja nosi Y hromozom, da bi bili u stanju da daju, putem veštačkog osemenjavanja ili *in vitro* oplodjenja, životinje specifičanog pola. Metode da se to postigne uključuju inaktivaciju X-noseće ili Y-noseće sperme sa antitelima koja prepoznaju polno-specifične površinske peptide sperme, i sortiranje ćelija aktiviranih fluorescentnošću.

spermatid Immature **spermatozoon**. One of the four cells formed at the end of the second meiotic division in **spermatogenesis**.

Nezreli spermatozoid. Jedna od četiri ćelije oblikovane na kraju druge mejotičke podele u spermatogenezi.

spermatoocyte The premeiotic parental cell of the **spermatids**; the **primary** spermatoocyte before the initiation of the first meiotic division; the **secondary** spermatoocyte after completion of the first meiotic division, but before the initiation of the second division. *Synonym*: **sperm** mother cell.

Premejotička roditeljska ćelija spermataida; *primarna* spermatoocita pre početka prve mejotičke deobe; *sekundarni* spermatoocit posle završetka prve mejotičke podele, ali pre početka druge deobe. *Sinonim*: sperm mother cell.

spermatogenesis The series of cell divisions in the testis as a result of which the formation and the **maturation** of the male **gametes** (i.e. sperm) are achieved.

Serijski ćelijski deoba u testisu kao rezultat kojih se postiže formiranje i sazrevanje muških gameta (t.j. sperme).

spermatogonium (pl.: spermatogonia) Primordial male **germ cell**. These can either divide by **mitosis** to produce daughter cells, or enter a **growth phase** and differentiate into a primary **spermatoocyte**.

Primordijalna muška ćelija. One mogu da se dele mitozom da proizvedu majke ćelije, ili da uđu u fazu rasta i da se diferenciraju u primarne spermatoocite.

spermatozoon (Abbreviation: sperm). (pl.: spermatozoa) The mature, mobile gametic cell of male animals, produced in the testis.

(Skraceniica: sperm.)(pl.: spermatozoa) Zrela, mobilna gametna ćelija muzjaka, proizvedena u testisu.

spharoblast Nodule of wood which can give rise to **adventitious** shoots with **juvenile** characteristics.

Kvržica drveta, koja može dati adventivne izdanke sa juvenilnim karakteristikama.

spheroplast (AlteRNAive spelling: sphaeroplast). A microbial or plant cell from which most of the cell wall has been removed, usually by enzymatic treatment. Strictly, in a spheroplast, some of the cell wall remains, while in a **protoplast** the cell wall has been completely removed. In practice, the two words are often used interchangeably.

(Alternativna ortografija: sphaeroplast) Mikrobnna ili biljna ćelija, od koje je većina ćelijskog zida odstranjena, obično enzimatskim tretmanom. Striktno u sferoplastu, neke od ćelija će ostati, dok je u protoplastu ćelijski zid potpuno odstranjen. U praksi, dve reči se često koriste naizmenično.

spike 1. An **inflorescence** in which the main axis is elongated and the flo-

wers are sessile. 2. The deliberate addition of a known quantity of a known substance to an analytical sample, used to validate the analytical technique.

1. Cvast, u kojoj je glavna osa izdužena, a cvetovi su pričvršćeni direktno na stablo. 2. Promišljeno dodavanje poznate količine poznate supstance analitičkom uzorku, korišćenom za vrednovanje analitičke tehnike.

spikelet The unit of **inflorescence** in grasses, made up of a small group of florets.

Jedinica cvetanja u trava, formirana od male grupe cvetića.

spindle An intracellular fibrous structure, involved in the control of **chromosome** movement in **mitosis** and **meiosis**.

Intraćelijska fibrozna struktura, uključena u kontrolu kretanja hromozoma u mitozu i mejozi.

spliceosome A complex of **small nuclear ribonucleoproteins** and other **proteins** that assemble on an immature **mRNA** and catalyse the excision of an **intron**. *See: splicing*.

Kompleks malih nuklearnih ribonukleoproteina i drugih proteina koji se skupljaju na nezreloj mRNK i katalizuju odsecanje introna. *Vidi: splicing*.

splicing 1. During the maturation of eukaryotic **mRNA**, the process that removes **intron** sequences and covalently joins **exon** sequences. *Synonym: editing*. 2. In **recombinant DNA** technology, the term refers to the **ligation** of two fragments of **DNA** together.

1. Tokom sazrevanja eukariotske mRNK, proces koji odstranjuje sekvence introna i kovalentno spaja sekvence

egzoma. *Sinonim: editing*. 2. U tehnologiji rekombinantne DNK, izraz se odnosi na ligaciju dva fragmenta DNK.

splicing junction The **DNA** sequence immediately surrounding the boundary between an **exon** and an **intron**. There is a degree of sequence conservation in these regions, allowing the identification of introns in newly sequenced genes.

DNK sekvenca, neposredno okružavajući granicu između egzona i introna. Postoji stepen konzervacije sekvence u tim regionima, koji omogućavaju identifikaciju introna u novo sekvenciranih gena.

split gene In eukaryotes, the encoding **DNA** of many structural genes is made up of **exons** and **introns**. This commonly found pattern of interruption in the **coding sequence** is referred to as a 'split gene'.

U eukariota, enkodiranje DNK mnogih strukturalnih gena se sastoji od egzona i introna. Ovaj zajednički nađen tip prekidanja u kodirajuće sekvence zove se „razdvojeni gen“.

spontaneous mutation A mutation occurring in the absence of any known **mutagen**.

Mutacija koja nastaje u odsustvu bilo kojeg poznatog mutagena.

sporangium (pl.: sporangia) A reproductive structure in plants that produces spores. A megasporangium produces megaspores, which give rise to the female gametophyte; in seed plants it is represented by the **ovule**. A microsporangium produces microspores, which give rise to the male gametophyte; it is represented in **seed** plants by the **pollen sac**.

Reproduktivna struktura biljaka koje proizvode spore. Megasporangium

proizvodi megaspore, koje omogućavaju rast ženskim gametofitama; u biljaka koje formiraju seme predstavljena je neoplođenom jajnom ćelijom. Mikrosporangium proizvodi mikrospore, koje omogućuju pojavu muškom gametofitu; u biljaka koje formiraju seme to je predstavljeno polenovom kesom.

spore 1. A reproductive **cell** that develops into an individual without union with other cells; some spores such as meiospores are the product of the **germ** line, but others are **asexual** in nature. 2. A small, protected resting body, often synthesized by microorganisms when nutrient levels are low.

1. Reproaktivna ćelija koja se razvija u individuu bez sjedinjavanja sa drugim ćelijama; neke spore kao što su mejospore su produkt klice ali su druge po prirodi aseksualne.
2. Malo, zaštićeno mirujuće telašce, koje sintetišu mikroorganizmi, kada su nivoi hranljivih materija niski.

spore mother cell Synonym of **sporocyte**.

Sinonim od sporocyte.

sporocyte A **diploid** germ line cell that is the parent of the four **haploid** spores generated by meiosis.

Diploidna ćelija klice koja stvara četiri haploidne spore, dobijene mejozom.

sporophyll A leaf that bears **sporangia**.

List koji nosi sporangije.

sporophyte The **diploid** generation in the life cycle of a plant, and that produces haploid **spores** by meiosis.

Diploidna generacija u životnom ciklusu biljke; i koja proizvodi haploidne spore putem mejoze.

sport An individual plant, or portion thereof, showing a recognizably dif-

ferent **phenotype** from the parent, presumably as a result of spontaneous mutation. Novel traits displayed by some sports can become of great agricultural worth, but generally they are disadvantageous.

Individualna biljka, ili njen deo koja pokazuje prepoznatljivo različit fenotip od roditelja, verovatno kao rezultat spontane mutacije. Nove osobine, nastale kao rezultat mutacija mogu imati veliku poljoprivrednu vrednost, ali su opšte uzev štetne.

ssDNA Abbreviation for **single-stranded DNA**.

Skraćenica za single-stranded DNA.

SSR Abbreviation for **simple sequence repeat**. *See*: **microsatellite**.

Skraćenica za simple sequence repeat. *Vidi*: microsatellite.

stacked genes Refers to the insertion of two or more genes into the genome of an organism. An example would be a plant carrying a ***Bt* transgene** giving insect **resistance**, and a ***bar* transgene** giving resistance to a specific herbicide.

Odnosi se na ubacivanje dva ili više gena u genom nekog organizma. Primer bi bila biljka koja nosi *Bt* transgen, dajući otpornost na insekte, i *bar* transgen, dajući otpornost na specifične herbicide.

stages of culture (I-IV) *See*: **micropropagation**.

Vidi: micropropagation.

staggered cuts Symmetrically cleaved phosphodiester bonds that lie on both strands of double-stranded **DNA**, but are not opposite one another.

Simetrično cepane fosfodiesterske veze, koje se nalaze na oba lanca dvostruke DNK, ali nisu suprotne jedna drugoj.

stamen Floral structure made up of an **anther** and a filament. The stamen is the male **organ** of a flower.

Struktura cveta koja se sastoji od antere i filamenta. Stamen je muški organ cveta.

standard deviation A statistical measure of variability in a **population** of individuals or in a set of data.

Statistička mera varijabilnosti u populaciji individua ili u nizu podataka.

standard error A statistical measure that indicates the predictive accuracy over all individuals of a **mean** value derived from a sample population.

Statistička mera koja pokazuje predskazujuću tačnost, srednje vrednosti svih individua, izvedene iz populacije uzorka.

starch The major plant **carbohydrate** storage substance, particularly but not exclusively found in seeds, and used both as food and feed source and for various industrial processes. A large water-insoluble heterogenous group of **polysaccharides**, consisting of various proportions of the two glucose **polymers**, **amylose** and **amylopectin**. Starch is broken down into simple metabolisable sugars *in vivo* by the action of **amylases**.

Glavna rezervna supstanca ugljenog hidrata biljaka, posebno ali nađena ne samo u semenima, i korišćena kao izvor hrane i hraniva i za različite industrijske procese. Velika, u vodi nerastvorljiva heterogena grupa polisaharida, koja se sastoji od različitih odnosa dva glukozna polimera, amiloze i amilopektina. Skrob se razlaže na proste šećere, koji se mogu metabolisati *in vivo* pod dejstvom amilaza.

start codon The codon which specifies the first **amino acid** of a **polypepti-**

de chain and at which the **ribosome** starts the process of **translation**. In bacteria, this is either AUG (translated as *n*-formyl methionine) or, rarely, GUG (valine). In eukaryotes, it is always AUG and is translated as methionine. The start codon sets the **reading frame** for translation. *Synonym: initiation codon.*

Kodon koji specifikuje prvu aminokiselinu u polipeptidnom lancu, i na koji ribozom počinje proces sinteze. U bakterija, to je AUG (sintetizovan kao *n*-formil metionin, ili retko, GUG (valin)). U eukariota, to je uvek AUG, i sintetizovan je kao metionin. Startni kodon postavlja čitajući okvir za sintezu. *Sinonim: initiation codon.*

starter culture **Micro-organisms** that are deliberately added to foods to alter flavour, colour, texture, smell, or taste.

Mikroorganizmi koji su namerno dodati hrani da menjaju, miris, boju, teksturu ili ukus.

stationary culture A culture maintained without agitation.

Kultura, održavana bez mešanja (trešenja).

stationary phase The plateau of the growth curve, during which **cell number** remains relatively constant, following the **logarithmic phase**. *See: growth phases.*

Prikaz krive rasta, tokom koje broj ćelija ostaje relativno konstantan, sledeći logaritamsku fazu. *Vidi: growth phases.*

steady state In a **continuous fermentation** process, the condition under which the number of cells removed with the **outflow** is exactly balanced by the number of newly synthesized cells.

U procesu kontinuirane fermentacije, stanje pri kojem se broj ćelija odstranjuje putem odliva i tačno je balansirano brojem novo sintetizovanih ćelija.

stele The central **vascular** cylinder, inside the cortex, of roots and stems of higher plants.

Centralni vaskularni cilindar, unutar korteksa, korena i stabla viših biljaka.

stem The main body of the above-ground portion of a tree, shrub, herb or other plant; the ascending axis, whether above or below ground, of a plant.

Glavni deo nadzemnog dela drveta, žbuna, lekovitih ili drugih biljaka; osa porasta biljke bilo iznad, ili ispod tla.

stem cell An undifferentiated **somatic cell** that is capable of either division to give rise to daughter stem cells, or differentiating into any specialized cell type given the appropriate signals. Cultured stem cells are critical to the concept of **therapeutic cloning**.

Matična ćelija. Nediferencirana somatska ćelija koja je sposobna za deobu kako bi omogućilo rast ćerkinih ćelija stabla, ili za diferenciranje u bilo koji specijalizovani ćelijski tip koji je dobio odgovarajuće signale. Kultivisane matične ćelije su kritične u konceptu terapijskog kloniranja.

sterile 1. Medium or object free of **viable** micro-organisms (*see*: disinfect).

2. Incapable of producing viable gametes.

1. Medijum ili objekt bez živih mikroorganizama (*vidi*: disinfect).

2. Nesposoban za proizvodnju vitalnih gameta.

sterile room Dedicated space for the carrying out of activities that require

sterile conditions. Can usually be achieved more economically with a **laminar air-flow cabinet**.

Prostor namenjen za sprovođenje aktivnosti koje zahtevaju sterilne uslove. Obično se može ekonomičnije postići sa laminarom koji ima vazdušni ventilator.

sterility Complete or partial failure of an individual to produce functional gametes or **viable** zygotes under a given set of environmental conditions.

Kompletna ili parcijalna nesposobnost neke individue, da proizvede funkcionalne gamete ili vitalne zigote pod datim uslovima spoljne sredine.

sterilize 1. The elimination of micro-organisms, using heat, irradiation, **filtration** or chemicals. 2. The operation of making an animal incapable of producing offspring.

1. Eliminacija mikroorganizama, korišćenjem toplote, zračenja, filtracije ili hemikalija. 2. Operacija životinje koja će biti nesposobna za proizvodnju potomstva.

Steward bottle Flask developed for the growth of cells and tissues in a liquid medium, in which they can be periodically submerged during rotation.

Flaša, napravljena za rast ćelija i tkiva u tečnom medijumu, u kojem one mogu periodično da se potapaju tokom okretanja.

sticky end *See*: **extension**.

Vidi: **extension**.

stigma Receptive portion of the **style**, to which **pollen** adheres.

Primajući deo žiga, na koji se prilepljuje polen.

stirred-tank fermenter A growth vessel in which cells or micro-organisms are mixed by mechanically-driven impellers.

Posuda za rast u kojoj se ćelije ili mikroorganizmi mešaju pokretačima na mehanički pogon.

stock The lower portion of a graft. *See: rootstock.*

Donji deo kalema. *Vidi: rootstock.*

stock plant The source plant from which cuttings or **explants** are obtained. Stock plants should be well maintained to optimize **explant** and cutting quality.

Izvorna biljka od koje se dobijaju eksplanti ili kalemi. Te biljke bi trebalo dobro održavati da se optimizuje eksplant i kvalitet odrezaka.

stock solution Pre-prepared solution of commonly used reagents.

Prethodno pripremljeni rastvor uobičajeno korišćenih reagenasa.

stolon A lateral **stem** that grows horizontally along the ground surface. Used by some plant species as a mechanism for dispersal, since stolon nodes can differentiate into normal stems and roots, giving rise to a daughter plant removed from the parent.

Bočno stablo koje raste horizontalno duž površine tla. Neke biljne vrste ga koriste kao mehanizam za širenje, pošto se nodusi stolona mogu diferencirati u normalna stabla i korene, omogućavajući rast biljki ćerki odstranjenoj od roditelja.

stoma (pl.: stomata) 1. Any of various small openings or pores in an animal body, especially an opening resembling a mouth in various invertebrates. 2. A pore in the **epidermis** of the leaf or **stem** of a plant, which allows the exchange of gases, including water vapour, to and from the intercellular spaces. Sometimes used loosely to refer to the pore along with its associ-

ated pair of guard cells. *Synonym: stomate. See: stomatal complex.*

1. Bilo koji od različitih malih otvora ili pora u životinjskom telu, naročito otvor koji podseća na usta u različitim beskičmenjaka. 2. Pora u epidermisu lista ili stabla biljke, koja omogućuje razmenu gasova, uključujući vodenu paru, u, i iz međućelijskih prostora. Ponekad korišćen slobodno, odnosi se na poru zajedno sa povezanim parom ćelija koje formiraju stomu. *Sinonim: stomate. Vidi: stomatal complex.*

stomatal complex Includes the **stoma**, together with its guard cells and, when present, any related subsidiary cells.

Uključuje stomu, zajedno sa ćelijama koje je formiraju, i kada su prisutne bilo koje srodne pomoćne ćelije.

stomatal index A measurement of the surface density of **stomata**. This **parameter** has been found useful in comparing leaves of different sizes. Relative humidity and light intensity during leaf development affect the value of stomatal index.

Merenje površinske gustine stoma. Taj parametar je koristan pri poređenju listova različite veličine. Relativna vlažnost i intenzitet svetlosti tokom razvika lista utiču na vrednost stomatalnog indeksa.

stop codon A set of three **nucleotides** for which there is no corresponding tRNA molecule to insert an **amino acid** into the **polypeptide** chain. **Protein** synthesis is hence terminated and the completed polypeptide released from the **ribosome**. Three stop codons are known: UAA (ochre), UAG (amber) and UGA (opal). *Synonyms: chain terminator; nonsense codon, termination codon.*

Tri nukleotida za kojeg nema odgovarajućeg tRNK molekula da ubaci aminokiselinu u polipeptidni lanac. Sinteza proteina je tada završena i kompletan polipeptid se otpušta iz ribozoma. Tri stop kodona su poznata: UAA (žuti), UAG (čilibarni) i UGA (opalni). *Sinonimi*: chain terminator, nonsense codon, termination codon.

STR Abbreviation for **sequence tandem repeat**. *See*: **tandem repeat**.

Skraćenica za sequence tandem repeat. *Vidi*: tandem repeat.

strain A group of individuals derived by descent from a single individual within a species.

Grupa individua nastala poreklom od jedne individue u okviru vrste.

stratification Subjection of moist seeds to a period of low temperature (+2 to +4 °C) to break **dormancy**.

Podvrgavanje vlažnih semena periodu niske temperature (+2 do +4°C) da bi se prekinulo mirovanje.

streptavidin A microbial **protein** with a high affinity for the B complex **vitamin biotin**. The specific interaction of these two molecules has been exploited in **labelling** technology and in applications where a specific molecule needs to be captured or purified.

Mikrobiološki protein sa visokim afinitetom za B kompleks vitamin biotin. Specifična interakcija dva molekula je korišćena u tehnologiji obeležavanja, i primenjuje se tamo gde specifičan molekul treba da se zauzme ili prečisti.

stress Non-optimal conditions for growth. Stresses may be imposed by biotic (pathogens, pests) or **abiotic** (environment, such as heat, drought etc.) factors.

Neoptimalna stanja za rast. Stresovi mogu da budu izazvani biotičkim (patogeni, štetočine) ili abiotičkim faktorima (sredina, kao što je toplota, suša, itd.).

stress protein *See*: **heat shock protein**. *Vidi*: heat shock protein.

stringency Reaction conditions (notably temperature, salt concentration and pH) that affect the annealing process of **single-stranded DNA** or **RNA** to make **double-stranded DNA** or **RNA**, or **DNA/RNA** hybrids. At high stringency, duplexes form only between strands with perfect **complementarity**; lower stringency allows the annealing of strands with some degree of **mismatch**.

Uslovi reagovanja (najviše temperatura, koncentracija soli i pH) koji utiču na proces ojačavanja jednoničane DNK ili RNK da se stvore dvolančane DNK i RNK, ili hibridi DNK / RNK. Pri visokom očvršćavanju duplesi se obrazuju samo između lanaca sa perfektnom komplementarnošću; niža stringentnost omogućava ojačavanje lanaca sa izvesnim stepenom nesaglasnosti.

stringent plasmid A **plasmid** that can only replicate at the same time as does the main bacterial chromosome, and is present as a single or, at most, several copies per cell.

Plazmid koji se može replicirati u isto vreme kao što čini glavni bakterijski hromozom, i prisutan je kao jedna, ili najviše nekoliko kopija po ćeliji.

stroma The supporting connective **tissue** of an **organ** or **plastid**.

Podržavajuće vezivno tkivo nekog organa ili plastida.

structural gene A gene that encodes a polypeptide, with either enzymatic or

structural functions, and that is required for the normal **metabolism** and growth of a cell or organism.

Gen koji enkodira polipeptid, bilo sa enzimatskim ili strukturnim funkcijama, i koji je potreban za normalan metabolizam i rast ćelije ili organizma.

structure-functionalism The scientific tradition that stresses the relationship between a physical structure and its function, e.g. the related disciplines of anatomy and physiology.

Naučna tradicija koja naglašava odnos između fizičke strukture i njenih funkcija, na pr. srodne discipline anatomije i fiziologije.

STS Abbreviation for **sequence-tagged site**.

Skraćenica za sequence-tagged site.

style Slender column of tissue that arises from the top of the **ovary** and terminates in the **stigma**, and through which the **pollen** tube must grow to achieve fertilization.

Tanak stub tkiva koji se diže od vrha ovarijuma i završava u tučku, kroz koju mora rasti polenova cev da bi došlo do oplodnje.

sub-clone A procedure in which a large cloned **DNA** molecule is divided into smaller fragments, each one of which is then separately cloned.

Postupak u kojem se velika klonirana molekula DNK deli na manje fragmente, od kojih je svaki posebno kloniran.

sub-culture Division and transfer of a portion of a culture to fresh medium. Sometimes used to denote the adding of fresh liquid to a suspension culture. *Synonym*: passage.

Podela i transfer dela kulture u svež medijum. Ponekad korišćena da označi

dodavanje sveže tečnosti suspenziji u kulturi. *Sinonim*: passage.

sub-culture interval The time between consecutive sub-cultures of cells.

Vreme između uzastopnih podkultura ćelija.

sub-culture number The number of times cells, etc., have been sub-cultured..

Broj puta ćelija, itd. koje su bile podkultivisane.

subgenomic promoter A **promoter** added to a **virus** for a specific **heterologous** gene, resulting in the formation of **mRNA** for that **gene** alone.

Promoter dodat virusu za specifičan heterologni gen, što dovodi do stvaranja mRNK za samo taj gen.

subspecies Population(s) of organisms sharing certain characteristics that are not present in other populations of the same species.

Populacija(e) organizama koji dele izvesne karakteristike koje nisu prisutne u drugim populacijama iste vrste.

sub-strain Derived from a **strain** by the isolation of an individual or group of individuals having properties or markers not shared by the strain as a whole.

Postalo od soja, izolacijom individue ili grupe individua koje imaju svojstva ili markere koji nisu isti sa sojem kao celinom.

substrate 1. A compound that is altered by an enzyme. 2. Food source for growing cells or micro-organisms. 3. Material on which a sedentary organism lives and grows.

1. Jedinjenje koje je izmenjeno od strane enzima. 2. Izvor hrane za rast ćelija ili mikroorganizama. 3. Materijal na kojem nastanjeni organizam živi i raste.

sub-unit vaccine One or more immunogenic **proteins**, either purified from the **pathogen** itself or produced from a cloned pathogen gene. A **vaccine** composed of a purified **antigenic** determinant that is separated from the virulent organism.

Jedan ili više imunogenih proteina, bilo pročišćenih od samog patogena ili proizvedenih od kloniranog gena patogena. Vakcina, sastavljena od pročišćene antigenske determinante koja je razdvojena od virulentnog organizma.

sucker A shoot that arises from an underground **root** or **stem**. Of particular significance to grafted plants, since the sucker will be genotypically **rootstock**, rather than **scion**.

Izdanak koji nastaje od podzemnog korena ili stabla. Od posebnog značaja za kalemljene biljke, pošto će izdanak biti genotipski potporni koren, pre nego kalem.

suckering Type of vegetative **propagation** where lateral buds grow out to produce an individual that is a **clone** of the parent.

Tip vegetativnog razmnožavanja, gde bočni pupoljci izrastaju da proizvedu individuu koja je klon roditelja.

sucrose density gradient centrifugation A procedure used to fractionate nucleic acids on the basis of their size. Postupak, korišćen za fracionisanje nukleinskih kiselina na bazi njihove veličine.

superbug Jargon for a particular engineered **strain** of *Pseudomonas*, in which various hydrocarbon-degrading genes, derived from different plasmids, were combined into one genotype. This provided the basis for the precedent-setting legal decision

that declared that genetically engineered organisms were patentable. *See:*

Chakrabarty decision

Žargon za posebno stvorenu vrstu *Pseudomonas*-a, u kojoj su razni geni koji dovode do razgradnje ugljovodoni-ka, koji vode poreklo od različitih plazmida, kombinovani u jedan genotip. To je obezbedilo osnovu za ranije postavljanje pravne odluke koja je objavila da su organizmi dobijeni genetičkim inženjeringom bili sposobni za patentiranje. *Vidi:* Chakrabarty decision.

supercoil The conformation of a **double-stranded DNA** molecule placed under torsional **stress** as a result of interactions with **proteins**. The stress is accommodated by a twist imposed on the duplex. A left-handed supercoil favours unwinding of the **double helix**; a right-handed supercoil favours tighter winding.

Konformacija dvolančanog DNK molekula, postavljenog pod torzioni stres, kao rezultat interakcije sa proteinima. Stres je podešen putem stavljanja spiralizacije na dupleks. Uvrtanje spirale na levo utiče na odvijanje dvostrukog heliksa; uvijanje spirale na desno utiče na jaču spiralizaciju.

supercoiled plasmid The predominant *in vivo* form of most **plasmids**, in which the **DNA** is coiled around **histone-like proteins**. When supporting **proteins** are stripped away during **DNA** extraction from the bacterial cell, the plasmid molecule also tends to supercoil around itself *in vitro*.

Predominantan *in vivo* oblik većine plazmida, u kojima je DNK obavijena oko proteina sličnih histonu. Kada se podržavajući proteini odstrane tokom ekstrakcije DNK iz bakterijske ćelije,

molekul plazmida takođe ima tendenciju da se uvija oko sebe *in vitro*.

supergene A group of tightly linked genes that are co-inherited, and may be functionally related.

Grupa usko vezanih gena koji su ko-nasledni, i mogu da budu funkcionalno povezani.

supernatant The liquid phase remaining after insoluble materials are pelleted by **centrifugation** or precipitation.

Tečna faza koja ostaje pošto su nerastvorljive materije peletirani centrifugiranjem ili taloženjem.

suppressor mutation A mutation that reverses the effect of an earlier mutation, e.g. a mutation in a **gene** for a **tRNA** that permits it to read and override an amber mutation.

Mutacija koja obrće efekt ranije mutacije, na pr. mutacija u genu za jednu tRNK koja dopušta istoj da čita i poništi ćilibarnu mutaciju.

suppressor-sensitive mutant An organism that can grow in the presence, but not in the absence of a second genetic factor (the suppressor).

Organizam, koji može da raste u prisustvu, ali ne u odsustvu drugog genetičkog faktora (supresora).

susceptible Inability to withstand injury due to biotic or **abiotic stress**. *Opposite*: **resistance**, **tolerance**.

Nesposobnost da se izdrži oštećenje usled biotičkog ili abiotičkog stresa. *Suprotno*: otpornost, tolerancija.

suspension culture A type of culture in which cells and/or clumps of cells grow and multiply while suspended in a liquid medium.

Tip kulture u kojem ćelije i/ili gomile ćelija rastu i umnožavaju se kada su potopljene u tečni medijum.

symbiont An organism living in **symbiosis** with another, dissimilar organism.

Organizam koji živi u simbiozi sa drugim, različitim organizmom.

symbiosis The close association of two different kinds of living organisms where there is benefit to both or where both receive an advantage from the association. A prominent example is the colonization of **Rhizobium** spp. inside the roots of leguminous plants.

Uska povezanost dve različite vrste živih organizama gde je korist obostrana, ili oba imaju korist od te povezanosti. Istaknuti primer je kolonizacija *Rhizobium*-a unutar korena leguminoznih biljaka.

sympatric speciation The evolution of new **species** by **populations** that inhabit the same or overlapping geographic regions.

Evolucija novih vrsta putem populacije koje naseljavaju iste, ili preovlađujuće geografske regione.

sympodial A type of plant development in which the **terminal bud** of the **stem** stops growing due either to its abortion, or to its differentiation into a floral **meristem**. Frequently, the uppermost **lateral bud** then takes over the further axial growth of the stem.

Tip razvića biljke u kojem vršni pupoljak stabla prestaje da raste usled, bilo svog zakržljanja, ili diferencijacije u cvetni meristem. Često, najviši lateralni pupoljak tada preuzima dalji vršni rast stabla.

synapsis Synonym of chromosome pairing.

Sinonim za parenje hromozoma.

synaptonemal complex (Abbreviation: SC). A ribbon-like **proteinaceous**

structure formed between paired **homologous chromosomes** at the end of the first meiotic **prophase**. The SC binds the **chromatids** along their length, and facilitates **crossing over**.
 (Skracénica: SC) Trakasta proteinadna struktura koja se formira između homolognih hromozoma na kraju profaze prve mejotičke deobe. SC vezuje hromatide po dužini, i omogućava pojavu krosing-over-a.

synchronous culture A culture in which the **cell cycle** is synchronized for the majority of the cells present. Synchrony can be induced by the addition of drugs which arrest the cell cycle at specific stages.
 Kultura u kojoj je ćelijski ciklus sinhronizovan za većinu prisutnih ćelija. Sinhronija može biti izazvana dodavanjem lekova koji usporavaju ćelijski ciklus u specifičnim stadijumima.

syncytium A group of cells in which cytoplasmic continuity is maintained; the effect is of a multinucleate cell.
 Grupa ćelija u kojoj se održava citoplazmatski kontinuitet; efekat je višenukleatna ćelija.

syndrome A group of specific characters that occur together, and are characteristic of a particular disease or genetic condition (e.g. Down's syndrome).
 Grupa specifičnih osobina koje se ispoljavaju zajedno i karakteristični su za određenu bolest ili genetičko stanje (na pr. Down-ov sindrom).

synergid One of the two **haploid** nuclei at the micropylar end of the **embryo sac** of higher plants. The third **nucleus** is the **egg**.

Jedan od dva haploidna nukleusa na mikropilarnom kraju embrionalne kese u viših biljaka. Treći nukleus je jajna ćelija.

synergism An interaction between two organisms (e.g. *Rhizobium* and legumes) in which the growth of one is helped by the other. *Opposite*: **antagonism**.

Interakcija između dva organizma (na pr. *Rhizobium* i leguminoze) u kojoj je rast jednog pomognut drugim. *Suprotno*: antagonizam.

syngamy Synonym of **fertilization**.

Sinonim za oplodjenje.

synkaryon The initial **hybrid nucleus** of the **zygote**, formed by the fusion of the gametic nuclei upon fertilization. A hybrid nucleus formed by the fusion of two different somatic cells during **somatic cell hybridization** is called a **heterokaryon**.

Početni hibridni nukleus zigota, obrazovan putem spajanja nukleusa gameta posle oplodavanja. Hibridni nukleus, formiran fuzijom dve različite somatske ćelije tokom hibridizacije somatskih ćelija, zove se heterokarion.

synteny The occurrence of two or more loci on the same **chromosome**, without regard to their genetic linkage. Increasingly used to describe the **conservation** of **gene** order between related **species**.

Pojam dva ili više lokusa na istom hromozomu, bez obzira na njihovu genetičku vezanost. Koriste se za opisivanje konzervacije rasporeda gena među srodnim vrstama.

T

T Abbreviation for **thymine**.

Skraćenica za timin.

T cell Lymphocytes which pass through the thymus **gland** during maturation. Different kinds of T cells play important roles in the **immune response**. *Synonym:* T lymphocyte. *See:* **T-cell-mediated (cellular) immune response**.

Limfociti koji prolaze kroz timusnu žlezdu tokom sazrevanja. Različite vrste T ćelija igraju važnu ulogu u imunoreagovanju. *Sinonim:* T lymphocyte. *Vidi:* T-cell-mediated (cellular) immune response.

T cell receptor An **antigen-binding protein**, located on the surface of mammalian killer T cells, which mediates the cellular immune response. **T cell antigen** encoding genes are assembled from gene segments by **somatic recombination** processes that occur during **lymphocyte** differentiation.

Protein vezan antigenom vezujući protein, lociran na površini T ćelija ubica sisara, koje posreduju ćelijskom imunoreagovanju. T ćelijski antigen enkodirajući geni su sastavljeni od genskih segmenata procesom somatske rekombinacije, koji nastaju tokom diferencijacije limfocita.

T lymphocyte *See:* **T cell**.

Vidi: T cell.

T₀, T₁ and T₂ Successive generations of plants following a **transformation** event. The parent transformed

plant is T₀, its immediate **progeny** is T₁, and the progeny of the T₁ are T₂ plants etc. Of particular interest is the stability of **transgene** expression from T₀ to T₂, and beyond.

Sukcesivne generacije biljaka, sledeći transformaciju. Roditeljska transformisana biljka je T₀, njeno neposredno potomstvo je T₁, a potomstvo od T₁ su T₂ biljke itd. Od posebnog interesa je stabilnost transgenog ispoljavanja od T₀ do T₂ i nadalje.

T4 DNA ligase An enzyme, present in bacteria infected with **bacteriophage** T4, which catalyses the joining (**ligation**) of, and repairs nicks in, **duplex DNA** molecules. Ligation activity requires that one **DNA** molecule has a 5'-phosphate group, and that the other has a free 3'-hydroxyl group.

Enzim, prisutan u bakterijama inficiranim bakteriofagom T4, koji katalizuje sjedinjavanje (ligaciju) od, i popravlja podesnost u molekulima dupleksa DNK. Aktivnost ligacije zahteva da jedan molekul DNK ima 5'-fosfatnu grupu, a drugi da ima slobodnu 3'-hidroksilnu grupu.

tag *See:* **label**.

Vidi: label.

tailing The *in vitro* addition, to the 3'-hydroxyl ends of a **double-stranded DNA** molecule, of multiple copies of a single **nucleotide** by the enzyme **terminal transferase**. *Synonym:* **homopolymeric tailing**.

In vitro dodavanje, na 3'-hidroksilne krajeve dvolančane DNK molekule, višestrukih kopija jednog nukleotida putem enzima terminalne transferaze. *Sinonim*: homopolymetric tailing.

tandem array *See*: **tandem repeat**.

Vidi: tandem repeat.

tandem repeat Two (or more) contiguous identical **DNA** sequences. The orientation can be either head-to-tail, or head-to-head. *Synonyms*: tandem array, sequence tandem repeat.

Dve (ili više) dodirne identične sekvence DNK. Orijentacija može biti bilo glava-do-repa, ili glava-do-glave. *Sinonimi*: tandem array, sequence tandem repeat.

tank bioreactor A fermentation vessel designed to grow large scale quantities of a **micro-organism** (bacteria, yeast or fungi). Most tank **bioreactors** are designed to be stirred mechanically, since this allows effective distribution throughout the culture of gas and nutrients. Alternative bioreactors use fibre or membrane surfaces to immobilize the cultured cells.

Fermentacioni sud, konstruisan tako da se mogu uzgajati velike količine mikroorganizama (bakterija, kvasca ili gljivica). Većina tank bioreaktora je konstruisana da bude mehanički mešana, pošto to omogućava efikasnu distribuciju kroz kulturu gasa i hranjivih materija. Alternativni bioreaktori koriste vlaknaste ili membranske površine da imobiliziraju kultivisane ćelije.

tap root Root system in which the **primary** root has a much larger diameter than any lateral roots (e.g. carrot). *Opposite*: **fibrous root**.

Korenov sistem kod kojeg primarni koren ima mnogo veći prečnik nego bilo koji bočni korenovi (na pr. mrkva). *Suprotno*: fibrous root.

Taq polymerase A heat-stable **DNA polymerase** isolated from the thermophilic bacterium *Thermus aquaticus*, widely used in **PCR**.

Termo stabilna DNK polimeraza, izolovana iz termofilne bakterije *Thermus aquaticus*, široko korišćene u PCR.

target In diagnostic tests, the molecule or **nucleic acid** sequence assayed in a sample. In **mutagenesis**, the **gene sequence** that needs to be altered to generate the desired change in **phenotype**.

U dijagnostičkim testovima, molekul ili sekvenca nukleinske kiseline ispitana u uzorku. U mutagenezi, sekvenca gena koja treba da se zameni da bi stvorila željenu promenu u fenotipu.

target site duplication A short sequence of **DNA** duplicated when a **transposable element** inserts at a new locus; usually found at each end of the insertion.

Kratka sekvenca DNK, udvostručena kada se transpozabilni element ubacuje na novi lokus; obično se nalazi na svakom kraju ubacivanja.

targeted drug delivery A method of delivering the activated form of a **drug** molecule to the site in the body where it is needed, rather than allowing it reach the target by uncontrolled diffusion.

Metod isporuke aktiviranog oblika molekula leka na mesto u telu gde je to potrebno, pre nego dopuštajući da on dostigne cilj putem nekontrolisane difuzije.

targeting vector A cloning **vector** carrying a **DNA** sequence capable of participating in a recombinational event at a specified chromosomal location in the **host** cell.

Klonirajući vektor koji nosi DNK sekvencu, sposobnu da učestvuje u re-

kombinaciji na specifičnoj hromozomskoj lokaciji u ćeliji domaćinu.

TATA box A widely conserved adenine- and thymine-rich **DNA** sequence found 25–30 bp **upstream** of the **transcription** initiation point of many eukaryotic genes. The TATA box is implicated in the promotion of gene **transcription** as it acts as a binding site for **RNA polymerase**. Analogous to the **Pribnow box** in prokaryotic promoters. *Synonym*: Hogness box.

Široko konzervisana sekvenca DNK bogata adeninom – i timinom – nađena 25–30 bp nagore od tačke početka transkripcije mnogih eukariotskih gena. TATA box je umešan u podsticaj transkripcije gena, pošto deluje kao mesto vezivanja za RNK polimerazu. Analogno Pribnow boks u prokariotskim promoterima. *Sinonim*: Hogness box.

tautomeric shift The transfer of a hydrogen atom from one position in an organic molecule to another position. Tautomers can have widely different biological activities, as the shift can induce a significant change in the **conformation** of the **molecule**.

Transfer atoma vodonika sa jednog položaja u organskom molekulu na drugi položaj. Tautomeri mogu da imaju vrlo široke različite biološke aktivnosti, pošto pomeranje može da izazove signifikantnu promenu u konformaciji molekula.

tautomerism A type of isomerism in which the two isomers arising from a **tautomeric shift** are in equilibrium.

Tip izomerizma u kojem su dva izomera, nastala od tautomernog pomeranja, u ekvilibrijumu.

T-cell-mediated (cellular) immune response The synthesis of antigen-spe-

cific **T cell** receptors and the development of killer T cells in response to an encounter of immune system cells with an unrecognized immunogenic molecule.

Sinteza antigen-specifičnih T-ćelijskih receptora i razviće kiler T ćelija u reagovanju na sukob ćelija imunog sistema sa neprepoznatljivim imunogenetičkim molekulom.

T-DNA The **DNA** segment of the **Ti plasmid**, present in pathogenic *Agrobacterium tumefaciens*, that is transferred to plant cells and inserted into the plant's **DNA** as part of the **infection** process. **Wild type T-DNA** encodes enzymes that induce the plant to synthesize specific **opines** that are required for bacterial growth. In engineered T-DNAs, these genes are replaced by a **transgene(s)**.

Segment DNK od Ti plazmida, prisutan u patogenoj *Agrobacterium tumefaciens*, koja je preneti na biljne ćelije i ubačena u DNK biljke kao deo procesa infekcije. Divlji tip T-DNK enkodira enzime koji utiču da biljka sintetizuje specifična stanja koja su potrebna za rast bakterija. U T-DNK, ti geni su zamenjeni transgenima.

telomerase An enzyme that maintains the structure of the **telomere** by adding the required repetitive sequences to the ends of eukaryotic chromosomes.

Enzim koji održava strukturu telomere dodavanjem potrebnih ponovljivih sekvenci na krajeve eukariotskih hromozoma.

telomere The structure found at the end of eukaryotic chromosomes containing specialized repetitive (and widely conserved across species) **DNA** sequences, which are necessary to

assure the completion of a cycle of **DNA** replication.

Struktura, nađena na kraju eukariotskih hromozoma koja sadrži specijalizovane ponovljive (i široko konzervisane u vrstama) DNK sekvence, koje su potrebne da osiguraju završavanje ciklusa replikacije DNK.

telophase The last stage in each mitotic or meiotic division, in which the chromosomes coalesce at each pole of the dividing cell.

Poslednji stadijum u svakoj mitotskoj ili mejotičkoj deobi, u kojoj se hromozomi nalaze na svakom polu ćelije koja se razdvaja.

temperate phage A phage (**virus**) that invades but does not normally destroy (lyse) the host bacterial cell. Under specific circumstances, the **lytic cycle** is induced, resulting in the release of infective phage particles.

Fag (virus) koja napada, ali normalno ne razara bakterijske ćelije domaćina. Pod specifičnom okolnostima, litički ciklus je induciran, dovodeći do otpuštanja delića infektivnog faga.

temperature-sensitive mutant An organism that can grow at one temperature but not at another.

Organizam koji može da raste na jednoj ali ne na drugoj temperaturi.

temperature-sensitive protein A **protein** that is functional at one temperature but loses function at another (usually higher) temperature.

Protein koji je funkcionalan na jednoj temperaturi ali gubi funkciju na drugoj (obično višoj temperaturi).

template An **RNA** or **single-stranded DNA** molecule, used by **polymerases** to generate a **complementary nucleotide** strand.

Molekul RNK, ili jednolančane DNK, korišćen od polimeraza da stvori komplemetarni lanac nukleotida.

template strand *See:* **anticoding strand**.

Vidi: anticoding strand.

terminal bud A branch tip, an undeveloped shoot containing rudimentary floral buds or leaves, enclosed within protective bud scales.

Vrh grane, nerazvijeni izdanak koji sadrži rudimentarne cvetne pupoljke ili listove, zatvorene u zaštitne ljuspaste listove.

terminal transferase An enzyme that catalyses the addition of **nucleotides** to the 3' end of a **DNA** molecule.

Enzim koji katalizuje dodavanje nukleotida na 3' kraj DNK molekula.

terminalization Repelling movement of the centromeres of bivalents in the **diplotene** stage of the meiotic prophase, that appears to move visible chiasmata toward the ends of the bivalents.

Odbijajuće kretanje centromera bivalenta u stadijumu diplotena u profazi mejoze koje izgleda da pokreće vidljive hiazme prema krajevima bivalenta.

termination codon *See:* **stop codon**.

Vidi: stop codon.

termination signal In **transcription**, a **nucleotide** sequence that specifies **RNA** chain termination.

U transkripciji, sekvenca nukleotida koja specificira završetak terminaciju lanca RNK.

terminator 1. A **DNA** sequence just **downstream** of the **coding** segment of a gene, which is recognized by **RNA polymerase** as a signal to stop synthesizing **mRNA**. 2. A term used in **GMO** technology for a **transge-**

nic method which genetically sterilizes the progeny of the planted **seed**, thereby preventing the use of farm-saved seed.

1. Sekvenca DNK tek nadole od kodirajućeg segmenta gena, koju prepoznaje RNK polimeraze kao signal da se prekine sinteza mRNK. 2. Izraz, korišćen u GMO tehnologiji za transgeni metod koji genetički sterilizuje potomstvo zasejanog semena i time sprečavaju korišćenje sačuvanog semena na farmi.

terminator codon *See: stop codon.*

Vidi: stop codon.

terminator gene A specific variety-level **genetic use restriction technology**. A patented technique.

Specifično, na nivou sorte, genetičko korišćenje restriktione tehnologije. Patentirana tehnika.

terminator region A DNA sequence that signals the end of **transcription**. Sekvenca DNK koja označava kraj transkripcije.

tertiary structure The three-dimensional **conformation** taken up by complete macromolecules as a result of intramolecular interactions, such as hydrogen-bonding. *See: primary structure, secondary structure, quaternary structure.*

Trodimenzionalna konformacija, uzeta od kompletnih makromolekula kao rezultat intramolekularnih interakcija, kao što je vodoničko-vezivanje. *Vidi: primary structure secondary structure, quaternary structure.*

testcross A cross between a genetically unknown individual and a **recessive** tester to determine whether the individual in question is **heterozygous** or **homozygous** for a certain **allele**. It can also used as a method to test for

linkage, i.e. to estimate **recombination** fraction.

Ukrštanje između genetički nepoznate individue i recesivnog testera, da se odredi da li je individua o kojoj se radi heterozigotna ili homozigotna za neki alel. Može se takođe koristiti kao metod za testiranje na vezanost t.j. za izračunavanje frakcije rekombinacije.

testis (pl.: testes) Male sex **organ** where **spermatozoa** mature and are stored. Muški polni organ, gde spermatozoidi sazrevaju, i gde se skladište.

testosterone Male hormone, synthesized in the **testis** of mammals; used to induce sex reversal in fish.

Muški hormon, sintetizovan u testisu sisara, korišćen da izazove promenu pola u riba.

test-tube fertilization *See: in vitro fertilization.*

Vidi: *in vitro* fertilization.

tetracycline An **antibiotic** that interferes with **protein synthesis** in prokaryotes. A **gene** encoding **resistance** to tetracycline has been widely used as a **marker** to distinguish between transformed and non-transformed cells in the production of **transgenic** plants.

Antibiotik, koji posreduje u sintezi proteina u prokariota. Gen koji enkodira rezistentnost na tetraciklin je široko korišćen kao marker, da bi napravio razliku između transformisanih i nestransformisanih ćelija u proizvodnji transgenih biljaka.

tetrad The four **haploid** cells formed after the second meiotic division in plants (pollen tetrads) or fungi (ascospores).

Četiri haploidne ćelije, formirane posle druge mejotičke deobe u biljaka (polena tetrade) ili gljivice (askospore).

tetraploid An organism, or a tissue whose cells contain four **haploid** sets of **chromosomes**.

Organizam ili tkivo, čije ćelije sadrže četiri haploidna seta hromozoma.

tetrasomic (*Noun*: tetrasome). Pertaining to a nucleus or an organism with four members of one of its chromosomes, whereas the remainder of its **chromosome** complement is diploid. Chromosome formula: $2n + 2$.

(*Ime*: tetrasome) U vezi sa nukleusom, ili organizmom sa četiri člana jednog od njegovih hromozoma, dok je ostatak komplementa hromozoma diploidan. Hromozomska formula: $2n + 2$.

tetratype In fungi, a **tetrad** of spores that contains four different types; e.g. *AB*, *aB*, *Ab* and *ab*.

U gljiva, tetrada spora, koja sadrži četiri različita tipa; na pr. *AB*, *aB*, *Ab* i *ab*.

TGGE Abbreviation for **thermal gel gradient electrophoresis**.

Skraćenica za thermal gel gradient electrophoresis.

thallus Plant body without true roots, stems, or leaves.

Telo biljke bez stvarnih korenova, stabala ili listova.

therapeutic agent A compound used for the treatment of a disease or for improving the well-being of an organism. *Synonyms*: pharmaceutical agent, **drug**.

Jedinjenje, korišćeno za lečenje bolesti ili za poboljšanje dobrobiti organizma.

Sinonimi: pharmaceutical agent, drug.

therapeutic cloning The potential use of **stem cells** to grow, *in vitro*, tissue or organs for use in transplantation. Because these cells would be obtained from, and would therefore be genetically identical to the patient's own cells, problems of transplant re-

jection would be overcome. The technique would also remove the difficulty of identifying an organ donor.

Potencijalno korišćenje matičnih ćelija da rastu *in vitro*, tkiva ili organa za korišćenje u transplataciji. Pošto bi te ćelije dobile od, i time bile genetički identične ćelijama pacijenta, problem odbacivanja transplantata bio bi prevaziđen. Ova tehnika bi takođe odstranila teškoću identifikacije donora organa.

thermal gel gradient electrophoresis (Abbreviation: TGGE). A method for separating **DNA** fragments according to their mobility under increasingly denaturing conditions imposed by heat.

(Skraćenica: TGGE) Metod za razdvajanje fragmenata DNK prema njihovoj mobilnosti pod pojačanim uslovima denaturisanja izazvanog toplotom.

thermal shock Exposure to reduced or increased temperature for a significant period.

Izlaganje snizenoj ili povišenoj temperaturi tokom signifikantnog perioda,

thermolabile Not resistant to heat, often in the context of a molecule which is unstable upon heating. *Opposite*: thermostable.

Neotporan na toplotu, često u kontekstu molekula, koji je nestabilan na zagrevanje. *Suprotno*: thermostable.

thermophile An organism which is adapted to high temperatures, such as in hot springs and geysers, smoker vents on the sea floor, and domestic hot water pipes. A wide range of bacteria, fungi and simple plants and animals can grow at temperature up to 50 °C; thermophiles grow and reproduce at above 50 °C. They can be classified, according to their optimal

growth temperature, into simple thermophiles (50–65 °C); thermophiles (65–85 °C), and extreme thermophiles (>85 °C). *See: mesophile, psychrophile.*

Organizam koji je adaptiran na visoke temperature, takve kao što su u toplim izvorima i gejzirima, i cevima sa toplom vodom u domaćinstvu. Široki raspon bakterija, gljiva i jednostavnih biljaka i životinja može da raste na temperaturi do 50°C; termofili rastu i reprodukuju se na iznad 50°C. Oni mogu da budu klasifikovani, prema optimalnoj temperaturi za rast, u jednostavne termofile (50–65°C); termofile (65–85°C), i ekstremne termofile (>85°C). *Vidi: mesophile, psychrophile.*

thermosensitivity Loss of biological activity of a **molecule** at high temperature.

Gubitak biološke aktivnosti molekula na visokoj temperaturi.

thermostable A molecule which retains its biological activity at some specified higher temperature. *Opposite: thermolabile.*

Molekul koji zadržava svoju biološku aktivnost na nekoj specificiranoj višoj temperaturi. *Suprotno: thermolabile.*

thermotherapy Exposure to elevated temperatures, a technique mainly used for **virus** or mycoplasma elimination, taking advantage of the higher thermostability of the **host** over its **pathogen**. *Synonym: heat therapy.*

Izlaganje povećanim temperaturama, tehnika uglavnom korišćena za eliminaciju virusa ili mikoplazme, prihvatajući prednost veće termostabilnosti domaćina nad njegovim patogenom. *Sinonim: heat therapy.*

thinning 1. Removal of older stems to promote new growth. 2. Removal of excess fruits to improve the size and quality of the remaining fruits. 3. Removal of seedlings spaced too closely for optimum growth.

1. Odstranjenje starijih stabala da se iza zove nov rast. 2. Odstranjenje suvišnih plodova da se poboljša veličina i kvalitet preostalih plodova. 3. Odstranjenje sejanaca raspoređenih suviše gusto za optimalan rast.

thymidine The deoxyribonucleoside resulting from the combination of the **base thymine** (T) and the sugar 2-deoxy-D-ribose. *See: TTP.*

Deoksiribonukleozid, nastao kombinacijom baze timina (T) i šećera 2-deoksi-D-riboze. *Vidi: TTP.*

thymidine kinase (Abbreviation: tk). An enzyme that allows a cell to utilize an alternate metabolic pathway for incorporating **thymidine** into **DNA**. Used as a **selectable marker** to identify transfected eukaryotic cells.

(Skraćenica: tk) Enzim koji omogućava ćeliji da koristi alternativnu metaboličku putanju za uključivanje thymidina u DNK. Korišćena kao selektabilni marker za identifikaciju transfektiranih eukariotskih ćelija.

thymidine triphosphate Abbreviation: TTP; dTTP is strictly correct but rarely used.

Skraćenica: TTP; dTTP je striktno korektna, ali se retko koristi.

thymidylic acid (Abbreviation: TMP or dTMP). *Synonym for thymidine 5'-monophosphate, a deoxyribonucleotide containing the nucleoside thymidine.*

(Skraćenica: TMP ili dTMP) *Sinonim za thymidine 5'-monophosphate, deoxyribonucleotide koji sadrži nukleozid thymidine.*

thymine (Abbreviation: T). One the **bases** found in **DNA**. *See: thymidine*.

(Skracénica: T) Jedna od baza koja se nalazi DNK. *Vidi: thymidine*.

Ti plasmid Tumour-inducing **plasmid**. A large plasmid present in pathogenic *Agrobacterium tumefaciens*, responsible for the **induction** of tumours in plant with **crown gall disease**. Engineered forms of this **plasmid** are central to the production of **transgenics** in many crop species. *See: T-DNA*.

Plazmid izazivač tumora. Veliki plazmid prisutan u patogenom *Agrobacterium tumefaciens*-u, odgovornom za indukciju tumora u biljaka koje imaju rak. Proizvedeni oblici tog plazmida su glavni za proizvodnju transgenika u mnogim prilikama. *Vidi: T-DNK*.

tissue A group of cells of similar structure which sometimes performs a special function.

Grupa ćelija slične strukture koje nekad obavljaju specijalnu funkciju.

tissue culture The *in vitro* culture of **cells**, **tissues** or **organs** in a nutrient **medium** under **sterile** conditions.

In vitro kultura ćelija, tkiva ili organa u hranljivom medijumu pod sterilnim uslovima.

titre 1. The concentration of infectious **virus** particles present in a suspension. 2. A measure of **antibody** concentration, given by the highest dilution of the sample that results either in a useable **immunoassay**, or in the formation of visible precipitate when challenged by the appropriate antigen.

1. Koncentracija infektivnih delića virusa, prisutnih u suspenziji. 2. Mera koncentracije antitela, data najvećim razređenjem uzorka, koja dovodi do korisne imunodijagnostike, ili formi-

ranja vidljivog taloga kada je izazvan odgovarajućim antigenom.

tk Abbreviation for **thymidine kinase**.

Skracénica za thymidine kinase.

TMP Abbreviation for the deoxyribonucleotide **thymidine 5'-monophosphate**. *See: thymidylic acid*.

Skracénica za deoksiribonukleotid thymidine 5'-monophosphate. *Vidi: thymidylic acid*.

tolerance Incomplete **resistance** to a given biotic or **abiotic stress**. Tolerant genotypes are less inhibited by the stress, but are not immune.

Nepotpuna rezistentnost na dati biotički ili abiotički stres. Tolerantni genotipovi su manje inhibirani stresom, ali nisu imuni.

tonoplast The cytoplasmic membrane bordering the **vacuole** of plant cells. It plays a prominent role in regulating the **osmotic** pressure exerted by the cell sap.

Citoplazmička membrana koja obavlja vakuole ili biljne ćelije. Igra važnu ulogu u regulisanju osmotskog pritiska ćelijskog soka.

topo-isomerase *See: DNA topo-isomerase*.

Vidi: DNK topo-isomerase.

totipotency The ability of a **cell** or **tissue** to be induced to regenerate into a complete **organism**.

Sposobnost ćelije ili tkiva da se regenerišu u kompletan organizam.

totipotent (adj.) *See: totipotency*.

Vidi: totipotency.

toxicity The extent to which a toxic compound negatively affects a given trait.

Obim do kojeg toksično jedinjenje negativno utiče na datu osobinu.

toxin A compound produced by one **organism**, which is deleterious to the

growth and/or survival of another organism of the same or different species.

Jedinjenje, proizvedeno od nekog organizma, koje je štetno za rast i/ili preživljavanje drugog organizma iste ili različite vrste.

tracer A substance (typically a radioactive **isotope** or a fluorescent dye) that can be detected by physical means, and which is used to analyse the progress of a chemical reaction or a biological process.

Supstanca (tipično radioaktivni izotop ili fluorescentna boja) koja može da bude otkriveni fizičkim sredstvima, i koji se koriste za analizu hemijske reakcije ili biološkog procesa.

tracheid An elongated, tapering **xylem** cell, with lignified pitted walls, adapted for solute conduction and physical support. Found in conifers, ferns and related plants.

Izdružena, konična ćelija ksilema, sa lignificiranim rupičasim zidovima, adaptirana za stanje rastvora i fizičku podršku. Nađena u konifera, paprati i srodnim biljkama.

trait One of the many characteristics that define an organism. The **phenotype** is a description of one or more traits. *Synonym:* character.

Jedno od mnogih koja definišu organizam. Fenotip je opis jedne ili više svojstava. *Sinonim:* svojstava.

trans configuration *See:* **repulsion**.

Vidi: repulsion.

trans heterozygote A double **heterozygote** that contains two mutations arranged in the *trans* configuration.

Dvostruki heterozigot koji sadrži dve mutacije postavljene u *trans* konfiguraciji.

trans test *See:* **complementation test**.

Vidi: test dopune.

trans-acting 1. A term describing substances that are diffusible and that can affect spatially separated entities within cells. 2. A genetic element (e.g. a **promoter** sequence) that is effective only when present in the *trans* configuration.

1. Izraz koji opisuje supstance koje su difuzabilne i koje mogu da deluju na prostorno razdvojene entitete u okviru ćelija. 2. Genetički element (na pr. sekvenca promotera) koji je efikasan samo kada je prisutan u *trans* konfiguraciji.

trans-acting factor Any of the multiple ancillary **DNA-binding proteins** that interact with the *cis*-regulatory **DNA** sequences to control gene expression.

Bilo koji od višestrukih pomoćnih DNK-vezujućih proteina koji su u interakciji sa *cis*-regulatornim DNK sekvencama da kontrolišu ispoljavanje gena.

transcapsidation The partial or full coating of the **nucleic acid** of a **virus** particle with the **coat protein** of a different virus.

Parcijalno ili potpuno pokrivanje nukleinske kiseline virusnog delića sa pokrovnim proteinom različitog virusa.

transcript An **RNA** molecule that has been synthesized from a specific **DNA template**. In eukaryotes, the **primary** transcript produced by **RNA polymerase** is often processed or modified in order to form functional **mRNA**, **rRNA** or **tRNA**. *See:* **splicing**.

RNK molekul koji je sintetizovan od specifičnog kalupa DNK. U eukariota, primarni transkript proizveden putem RNK polimeraze je često obrađen ili modifikovan da bi formirao

funkcionalnu mRNK, rRNK ili tRNK. *Vidi*: splicing.

transcription Synthesis of RNA from a DNA template via RNA polymerase.

Sinteza RNK od kalupa DNK preko RNK polimeraze.

transcription factor A protein that regulates the transcription of genes.

Protein koji reguliše transkripciju gena.

transcription unit A segment of DNA that contains signals for the initiation and termination of transcription, and is transcribed into one RNA molecule.

Segment DNK koji sadrži signale za početak i završetak transkripcije, i transkribovan je u jedan RNK molekul.

Transcriptional anti-terminator A protein that prevents RNA polymerase from terminating transcription at specific transcription termination sequences.

Protein koji sprečava RNK polimerazu da završa transkripciju na specifičnim transkripcionim sekvencama.

Transcriptional roadblock A DNA-binding protein which affects the rate at which RNA polymerases transcribe genes. The protein/DNA complex interferes with the passage of the elongation complex. In some cases these obstacles are readily bypassed, but in others a significant level of pausing or termination occurs, and this can then act as a control point for gene expression.

DNK vezujući protein koji utiče na brzinu pri kojoj RNK polimeraze transkribuju gene. Proteinsko / DNK kompleks meša se sa putem kompleksa izduženja. U nekom slučajevima te smetnje se lako zaobiđu, ali u drugim nastaje signifikantan nivo prekida ili završetka, i tada to može

delovati kao kontrolna tačka za ekspresiju gena.

transducing phage *See*: transduction. *Vidi*: transduction.

transduction 1. Genetic: the transfer by means of a viral vector of a DNA sequence from one cell to another. 2. Signal: any process that helps to produce biological responses to events in the environment (e.g. transduction of hormone binding into cellular events by hormone receptors).

1. Genetički: transfer putem virusnog vektora sekvence DNK od jedne ćelije do druge. 2. Signalni: bilo koji proces koji pomaže da se proizvedu biološki odgovori na događaje u spoljnoj sredini (na pr. transdukcija u vezivanju hormona u ćelijskim događajima putem hormonskih receptora).

transfection The infection of a cell with isolated viral DNA (or RNA), resulting in the production of intact viral particles.

Infekcija ćelije izolovanom virusnom DNK (ili RNK), nastalom u proizvodnji intaktnih virusnih delića.

transfer RNA *See*: tRNA.

Vidi: tRNK.

transferase A class of enzymes that catalyses the transfer of a group of atoms from one molecule to another. Grupa enzima koji katalizuje prenos grupe atoma od jedne molekule do druge.

transformant A cell or organism that has been genetically altered through the integration of a transgene(s). Primary: the first generation following the transformation event. Secondary: progeny of the primary transformant.

Ćelija ili organizam, koji je bio genetički izmenjen kroz integraciju transgena. Primarno: prva generacija posle

dogadaja transformacije. Sekundarno: potomstvo primarnog transformanta.

transformation 1. The uptake and integration of **DNA** in a cell, in which the introduced **DNA** is intended to change the **phenotype** of the recipient **organism** in a predictable manner. 2. The conversion, by various means, of cultured animal cells from controlled to uncontrolled cell growth, typically through **infection** with a **tumour virus** or **transfection** with an **oncogene**.

1. Usvajanje i integracija DNK u ćeliji, u kojoj je uvedena DNK namenjena da menja fenotip organizma recipijenta na predvidljiv način. 2. Konverzija, različitim načinima, kultivisanih životinjskih ćelija od kontrolisanog do nekontrolisanog rasta ćelija, obično kroz infekciju sa virusom tumora ili transfekcijom sa onkogenom.

transformation efficiency or frequency The fraction of a cell population that takes up and integrates the introduced **transgene**; expressed as the number of transformed cells recovered divided by the total number of cells in a **population**.

Frakcija populacije ćelija koja usvaja i integriše uvedene transgene; izražena kao broj transformisanih ćelija koji je oporavljen, podeljen sa ukupnim brojem ćelija u populaciji.

transforming oncogene A gene that, upon **transfection**, converts a previously immortalized **cell** to the malignant **phenotype**.

Gen koji, posle transfekcije, pretvara prethodno obesmrcenu ćeliju do malignog fenotipa.

transgene An isolated **gene sequence** used to transform an **organism**. Of-

ten, but not always, the transgene has been derived from a different species than that of the recipient.

Izolovana sekvenca gena korišćena da transformiše organizam. Često, ali ne uvek, transgen je poreklom od različitih vrsta u odnosu na recipijenta.

transgenesis The introduction of a **gene** or genes into animal or plant cells, which leads to the transmission of the input gene (**transgene**) to successive generations.

Unošenje gena ili više gena u životinjske ili biljne ćelije, što vodi prenošenju input gena (transgena) na sledeće generacije.

transgenic An individual in which a **transgene** has been integrated into its **genome**. In transgenic eukaryotes, the transgene must be transmitted through **meiosis** to allow its **inheritance** by the **offspring**.

Individua u kojoj je transgen integrisan u njen genom. U transgenih eukariota transgen mora biti prenet putem mejoze kako bi se omogućilo njegovo nasleđivanje od strane potomstva.

transgressive variation The appearance, in a segregating generation, of individuals showing expression of a **trait** outside the extremes defined by the parent of the **cross** that was used to generate the **population**.

Pojava u generaciji razdvajanja od individua koje pokazuju ispoljavanje osobine izvan ekstrema definisanih od roditelja hibrida, koji je korišćen za stvaranje populacije.

transient expression Short-term activity of a **transgene** following its introduction into **target tissue**. Transient expression usually implies non-integration of the transgene into the **host genome**.

Kratkotrajna aktivnost transgena posle uvođenja u ciljno tkivo. Kratkotrajno ispoljavanje obično obuhvata neintegraciju transgena u genom domaćina.

transition The substitution in **DNA** or **RNA** of one purine by another **purine**, or of one **pyrimidine** by another pyrimidine. *See:* **transversion, base substitution.**

Substitucije jednog purina drugim purinom, ili jednog pirimidina drugim pirimidinom u DNK ili RNK. *Vidi:* transversion, base substitution.

transition stage The period between juvenile and reproductive stages of growth.

Period između juvenilnih i reproduktivnih stadijuma rasta.

transition-state intermediate In a chemical reaction, an unstable and high-energy configuration assumed by reactants on the way to making products. **Enzymes** are thought to bind and stabilize the transition state, thus lowering the energy of activation needed to drive the reaction to completion.

U hemijskoj reakciji, nestabilna i visoko-energetska konfiguracija, uzeta od reaktanata na putu stvaranja produkata. Enzimi, smatra se da vezuju i stabilizuju pralazno stanje, tako snižavajući energiju aktivacije, potrebnu da se reakcija dovede do kraja.

translation The process of **polypeptide** synthesis in which the **amino acid sequence** is determined by **mRNA**, mediated by **tRNA** molecules, and carried out on **ribosomes**.

Proces sinteze polipeptida u kojem je sekvencija aminokiselina određena sa mRNK, posredovanjem tRNK molekula i odvija se ribozomima.

translational initiation signal *See:* **initiation codon.**

Vidi: initiation codon.

translational start codon *See:* **initiation codon.**

Vidi: initiation codon.

translational stop signal *See:* **termination codon.**

Vidi: termination codon.

translocation 1. The movement of nutrients or products of **metabolism** from one location to another. 2. Change in position of a segment of a **chromosome** to another, non-homologous chromosome.

1. Kretanje hranljivih materija ili produkata metabolizma od jedne lokacije do druge. 2. Promena delova hromozoma na drugi nehomologni hromozom.

transposable (genetic) element A **DNA** element that can move from one location in the **genome** to another. *Synonym:* **transposon.**

DNK element koji se može kretati od jedne lokacije u genomu do druge. *Sinonim:* transposon.

transposase An enzyme encoded by a **transposon gene** that catalyses the movement of a **DNA** sequence to a different site in a **DNA** molecule.

Enzim, enkodiran putem transpozona gena koji katalizuje kretanje DNK sekvence do različitog mesta u molekulu DNK.

transposition The process whereby a **transposon** or **insertion sequence** inserts itself into a new site on the same or another **DNA** molecule. The exact mechanism is not fully understood and different transposons may transpose by different mechanisms. Transposition in bacteria does not require extensive **DNA homology** bet-

ween the transposon and the **target DNA**.

Proces, kojim transpozoni ili sekvenca insercije se umeće na novo mesto, na istom ili drugom molekulu DNK. Tačan mehanizam nije potpuno razjašnjen i različiti transpozoni mogu se premeštati različitim mehanizmima. Premeštanje u bakterija ne zahteva obimnu DNK homologiju između transpozona i ciljne DNK.

transposon Synonym of **transposable genetic element**.

Sinonim od transposable genetic element.

transposon tagging A method of gene isolation that exploits the disruption of normal **gene expression** that is the result of an insertion of a **transposon** within, or close to the **target**. Since the sequence of the transposon is known, this can be used as a **DNA probe** to define the **DNA** fragment containing the target gene. Large-scale experiments to generate populations of gene **mutations** are colloquially referred to as **gene machines**.

Metod izolacije gena, koji koristi uništavanje normalnog ispoljavanja gena, koje je rezultat uvođenja transpozona u njega, ili blisko cilju. Pošto je sekvenca transpozona poznata, može koristiti kao DNK proba da se definiše DNK fragment koji sadrži ciljni gen. Veliki eksperimenti za stvaranje populacija mutacija gena se zovu genske mašine.

transversion The substitution in **DNA** or **RNA** of one **purine** by a **pyrimidine** or *vice versa*. *See*: **transition, base substitution**.

Zamena u DNK ili RNK jednog purina pirimidinom ili vice versa. *Vidi*: transition, base substitution.

tribrid protein A fusion **protein** that has three segments, each encoded by parts of different genes.

Fuzija proteina koji ima tri segmenta, od kojih je svaki enkodiran delovima različitih gena.

trichome A short filament of cells, resulting in a hair-like structure.

Kratak filament ćelija, nastao u strukturi sličnoj kosi.

tri-hybrid The hybrid **offspring** of a **cross** between parents carrying contrasting **alleles** at three loci.

Hibridno potomstvo nastalo iz ukrštanja između roditelja koji su nosili različite alele na tri lokusa.

trinucleotide repeat Tandem repeats of three **nucleotides** that are present in many genes. Commonly trinucleotide repeats have undergone variable expansion in copy number, forming the basis of **microsatellite** markers, and occasionally resulting in the formation of alleles giving rise to genetic disease.

Tandemska ponavljanja tri nukleotida koji su prisutni u mnogim genima. Obično su trinukleotidna ponavljanja podvrgnuta različitoj ekspanziji u broju kopija, formirajući osnovu mikrosatelitskih markera, i povremeno dovodeći do formiranja alela, koji utiču na pojavu genetičkih bolesti.

tripartite mating A process in which **conjugation** is used to transfer a **plasmid vector** to a **target cell** when the plasmid vector is not self-mobilizable.

Proces u kojem se koristi konjugacija za prenos plazmidnog vektora na ciljnu ćeliju, kada plazmidni vektor nije samomobilan.

triplet A sequential group of three **nucleotides** in **DNA** or **RNA**. *See*: **codon**.

Sekvenciona grupa od tri nukleotida u DNK i RNK. *Vidi*: codon.

triploid A cell, tissue or organism containing three times the **haploid** number of **chromosomes**.

Ćelija, tkivo ili organizam koji sadrže tri puta haploidni broj hromozoma.

trisomic (adj.) *See*: **trisomy**.

Vidi: trisomy.

trisomy The presence in a diploid cell or **organism** of an extra **chromosome** of one **homologue** (chromosome formula: $2n + 1$). *See*: **disomy**; **monosomic**.

Prisustvo jednog ekstra hromozoma jednog homologa u diploidnoj ćeliji ili organizmu (hromozomna formula: $2n+1$). *Vidi*: disomy; monosomic.

triticale The hybrid man-made **species** formed by the crossing of **tetraploid** or hexaploid wheat with **diploid** rye.

Hibridna vrsta koju je stvorio čovek nastale ukrštanjem tetraploidne ili hek-saploidne pšenice, sa diploidnom raži.

tRNA Abbreviation for transfer **RNA**. Small **RNA** molecules that transfer **amino acids** to the **ribosome** during **protein** synthesis. Each tRNA binds just one species of **amino acid** and recognizes a specific **codon** in the **mRNA**, thus implementing the **genetic code**.

Skraćenica za transfer RNK. Mali RNK molekuli koji prenose aminokiseline na ribozom tokom sinteze proteina. Svaka tRNK vezuje baš jednu vrstu aminokiseline i prepoznaje specifičan kodon u mRNK, tako ostvarujući genetski kod.

tropism Plant response to an external stimulus, resulting in the bending/turning of **stem** or **root** growth. Typical tropisms are **phototropism** (light), **geotropism** (gravity) or hydrotropism (water).

Reagovanje biljke na spoljni stimulus, dovodeći do vezivanja/okretanja rasta stabla ili korena. Tipični tropizmi su fototropizam (svetlost), geotropizam (težina) ili hidrotropizam (voda).

true-to-type Conforming to the **phenotype** of the breed/variety.

Usklađen sa fenotipom rase/sorte.

trypsin A **proteolytic** enzyme used *in vivo* for the digestion of **peptides**. It acts by hydrolysing peptide bonds on the carboxyl side of the amino acids arginine and lysine.

Proteolitički enzim, korišćen *in vivo* za digestiju peptida. Dejstvuje hidrolizujući peptidne veze na karboksilnoj strani aminokiseline agninina i lizina.

trypsin inhibitor Substances inactivating **trypsin**, typically found in **seed tissue** of certain plants, where they are thought to have evolved as anti-feedant agents against insect predators.

Supstance koje inaktiviraju tripsin, obično nađene u tkivu semena izvesnih biljaka, smatra se da su se razvile kao anti-nutritivni agensi protiv predatora insekata.

TTP Abbreviation for **thymidine 5'-triphosphate**. TTP is required for **DNA** synthesis since it is a direct precursor molecule. *See*: **thymidine**, **thymidylic acid**.

Skraćenica za thymidine 5'-triphosphate. TTP je potreban za sintezu DNK, pošto je direktan prekursor molekul. *Vidi*: thymidine, thymidylic acid.

tubulin The major **protein** component of the **microtubules** of eukaryotic cells.

Glavna proteinska komponenta mikrotubula eukariotskih ćelija.

tumble tube A glass tube mainly used *in vitro* to agitate and consequently

aerate suspension cultures. The tube, which is commonly attached to a slowly revolving platform, is closed at both ends, with a side-neck opening.

Staklena cev, uglavnom korišćena *in vitro*, da meša i potom provetrava odložene kulture. Cev, koja je obično pridodata sporo okrećućoj platformi, je zatvorena na oba kraja, sa bočnim otvorom na grliću.

tumor-suppressor gene A gene that regulates cell growth. If such a gene becomes dysfunctional, and potentiating damage occurs to the **cell**, then uncontrolled growth and a cancer may result. *See: p53 gene, oncogene.*

Gen koji reguliše rast ćelija. Ako takav gen postane nefunkcionalan, i nastane potencirajuće oštećenje na ćeliji, može nastupiti nekontrolisan rast i rak. *Vidi: p53 gene, oncogene.*

tumour virus A virus capable of transforming a cell to a malignant **phenotype**.

Virus, sposoban za transformaciju ćelije u maligni fenotip.

tumour-inducing plasmid *See: Ti plasmid.*

Vidi: Ti plasmid.

tunica The outer one- to four-cell layer region of the apical meristem, where **cell division** is anticlinal, i.e. perpendicular to the surface. *See: apical meristem.*

Spoljni, jedno-do četvoroćelijski sloj vršnog meristema, gde je ćelijska deoba sa suprotnim nagibom t.j. vertikalnim u odnosu na površinu. *Vidi: apical meristem.*

turbidostat An open **continuous culture** in which a pre-selected **biomass** density is uniformly maintained by

automatic removal of excess cells. The fresh medium flows in response to an increase in the turbidity (usually corresponding to cell density) of the culture.

Otvorena kontinuirana kultura, u kojoj je prethodno odabrana gustina biomase ujednačeno održavana putem automatskog odstranjivanja suvišnih ćelija. Svež medijum reaguje na povećanje zamućenosti (obično povećano sa gustinom ćelija) kulture.

turgid Swollen, distended; referring to a **cell** that is extended as a result of adequate water uptake. Loss of turgidity in plant cells is a sign of water deficit.

Natečen, prošireni; odnosi se na ćeliju koja je povećana kao rezultat adekvatnog upijanja vode. Gubitak turgora u biljnih ćelija je znak deficita vode.

turgor potential *See: pressure potential.*

Vidi: pressure potential.

turgor pressure The pressure within a **cell** resulting from the absorption of water into the **vacuole** and the **imbibition** of water by the protoplasm.

Pritisak u okviru ćelije, nastao putem apsorpcije vode u vakuoli i upijanja vode od strane protoplazme.

turion An underground **bud** or shoot from which an aerial **stem** arises. *See: sucker.*

Podzemni pupoljak ili izdanak iz kojeg se pojavljuje vazdušno stablo. *Vidi: sucker.*

Twin One of two individuals originating from the same **zygote**.

Jedna od dve individue poreklom od istog zigota.

U

U Abbreviation for **uracil**.

Skraćenica za uracil.

ubiquitin A small **protein**, present in all eukaryotic cells, which plays an important role in tagging **proteins** destined for **proteolytic** cleavage (because they are damaged or no longer needed).

Mali protein, prisutan u svim eukariotskim ćelijama, koji igra važnu ulogu u obeležavanju proteina namenjenih za proteolitičko razdvajanje (pošto su oni oštećeni ili više nisu potrebni).

ultrasonication *See: sonication.*

Vidi: sonication.

UMP Abbreviation for the (ribo)**nucleotide uridine 5'-monophosphate**. *See: uridylic acid.*

Skraćenica za (ribo)nucleotide uridine 5'-monophosphate. *Vidi: uridylic acid.*

understock Host plant for a grafted scion, a branch or shoot from another plant; an understock may be a fully grown tree or a stump with a living **root** system.

Biljka domaćin za kalem izdanak, granu ili izdanak od druge biljke; podloga može biti potpuno odraslo drvo ili panj, sa živim korenovim sistemom.

undifferentiated Undifferentiated cells are those which have not been committed to become part of a specialized tissue.

Nediferencirane ćelije su one koje nisu bile predviđene da postanu deo specijalizovanog tkiva.

unencapsidated A virus not enclosed by a **coat protein** or **capsid**.

Virus koji nije okružen zaštitnim proteinom ili omotačem.

unequal crossing over Abnormal meiotic event, in which one **chromatid** contains a **duplication** and the other a **deletion**. Often arises in a region containing repeated **DNA** sequences, which can pair out of register.

Abnormalna mejoza, u kojoj jedna hromatida sadrži duplikaciju, a drugi deleciju. Često se pojavljuje u regionu koji sadrži ponovljene DNK sekvence, koje se mogu pariti neubičajeno.

unicellular Tissues, organs or organisms consisting of a single cell.

Tkiva, organi ili organizmi koji se satoje od jedne ćelije.

uniparental inheritance The inheritance of genes exclusively from one parent, e.g. **chloroplast DNA** is inherited either maternally (many angiosperms) or paternally (most gymnosperms).

Nasledivanje gena isključivo od jednog roditelja, na pr. DNK hloroplasta se nasleđuje po majci (mnoge angiosperme) ili po ocu (većina gimnosperme).

unisexual Higher organisms (animals or plants) possessing either male or female reproductive organs, but not both.

Viši organizmi (životinje ili biljke), koji poseduju bilo muške ili ženske reproduktivne organe, ali ne oba.

univalent An unpaired chromosome at the first division of meiosis.

Neparni hromozom u prvoj mejotičkoj deobi.

universal donor cell Cells that, after introduction into a recipient, will not induce an **immune response** that leads to their rejection.

Ćelije koje, posle uvođenja u recipijent, neće izazvati imunoreagovanje koje vodi njihovom odbijanju.

universality Referring to the genetic code, the **triplet codons** are translated to the same **amino acid**, with minor exceptions, in virtually all species.

Odnosi se na genetički kod, triplet kodoni se sinetizuju u istu aminokiselinu, sa malim izuzecima, i gotovo u svih vrsta.

unorganized growth *In vitro* formation of tissues with few differentiated **cell** types and no recognizable structure; typical structure of calli formed in **tissue culture**. *Opposite: organized growth*.

In vitro formiranje tkiva sa malo diferenciranim ćelijskim tipovima i bez prepoznatljive strukture; tipična struktura kalusa formirana u kulturi tkiva. *Suprotno: organized growth*.

upstream 1. The stretch of **DNA** lying in the 5' direction from the site being considered. Where the reference point is the **initiation** of transcription, the first transcribed base is designated +1 and upstream nucleotides are marked with minus signs, e.g. -1, -10; 2. In chemical engineering, those phases of a manufacturing process that precede the **biotransformation** step. Refers to the preparation of raw

materials for a **fermentation** process. Also called upstream processing.

1. Pružanje DNK koja leži u 5' smeru od mesta koje se razmatra. Gde je referencna tačka započinjanje transkripcije, prva transkribovana baza je označena sa +1, a uzvodni nukleotidi se označavaju sa znacima minus, na pr. -1, -10; 2. U hemijskom inženjeringu, one faze proizvodnog procesa koje prethode koraku biotransformacije. Odnose se na pripremu sirovina za fermentacioni proces. Takođe se naziva upstream processing.

Upstream processing *See: upstream (2)*.

Vidi: upstream (2).

uracil (Abbreviation: U). One the **bases** found in **RNA**. *See: uridine*.

(Skraćenica: U) Jedna od baza nađenih u RNK. *Vidi: uridine*.

uridine The (ribo)**nucleoside** resulting from the combination of the **base uracil** (U) and the sugar **D-ribose**. *See: uridylic acid, uridine triphosphate*.

(Ribo)nukleozid koji nastje iz kombinacije baze uracila (U) i šećera D-riboze. *Vidi: uridylic acid, uridine triphosphate*.

uridine triphosphate (uridine 5'-triphosphate) (Abbreviation: UTP). Required for **RNA** synthesis since it is a direct precursor molecule. *See: uridylic acid*.

(Skraćenica: UTP) Potreban za sintezu RNK, pošto je direktan prekursor molekul. *Vidi: uridylic acid*.

uridylic acid Synonym for **uridine 5'-monophosphate** (abbreviation: UMP), a (ribo)**nucleotide** containing the **base uracil**. *See: uridine triphosphate*.

Sinonim za uridine 5'-monophosphate (skraćenica: UMP), (ribo)nukleotid koji sadrži bazu uracil. *Vidi*: uridine triphosphate.

utilization of farm animal genetic resources The use and development of animal genetic resources for the pro-

duction of food in a sustainable system of agriculture.

Korišćenje i razvoj životinjskih genetičkih resursa za proizvodnju hrane u održivom sistemu poljoprivrede.

UTP *See*: **uridine triphosphate**.

Vidi: uridine triphosphate.

V

V region Variable region in antibodies.

See: **CDR**.

Varijabilan region u antitelima. *Vidi:* CDR.

v/v Abbreviation for volume per volume. The relative proportion of each liquid in a mixture.

Skraćenica za zapreminu po zapremini. Relativna proporcija svake tečnosti u smeši.

Vaccination *See:* **preventive immunization**.

Vidi: preventive immunization.

vaccine A preparation of dead or attenuated (weakened) **pathogens**, or of derived antigenic determinants, that can induce the formation of antibodies in a **host**, and thereby produce host **immunity** against the pathogen. *See:* **sub-unit vaccine**, **viral vaccine**, **DNA vaccine**, **inoculum**.

Preparat mrtvih ili atenuiranih (oslabljenih) patogena, ili antigeničnih determinanata, koje mogu da izazovu formiranje antitela u domaćina, i time proizvedu imunitet domaćina prema patogenu. *Vidi:* sub-unit vaccine, viral vaccine, DNK vaccine, inoculum.

Vaccinia The cowpox **virus** used to vaccinate against smallpox and, experimentally, as a **carrier** of genes for antigenic determinants cloned from other disease organisms.

Virus boginja goveda, korišćen za vakcinaciju protiv malih boginja, i, eks-

perimentalno, kao nosač gena za antigenične determinante, klonirane od drugih organizama bolesti.

vacuole A fluid-filled membrane-bound cavity inside many plant cells, in which various plant products and by-products are stored.

Tečnošću napunjena, šupljina oivičena membranom unutar mnogih biljnih ćelija, u kojoj su skladišteni različiti produkti.

variable domain Regions of **antibody** molecules that have different **amino acid** sequences in different antibody molecules. These regions are responsible for the antigen-binding **specificity** of the antibody.

Regioni molekula antitela, koji imaju različite sekvence aminokiselina u različitim molekulima antitela. Ti regioni su odgovorni za specifičnost antitela za vezivanja antigena.

variable expressivity Variation in the **phenotype** caused by different **alleles** of the same **gene** and/or by the action of other genes and/or by the action of non-genetic factors.

Varijacija u fenotipu, izazvana različitim alelima istog gena i/ili delovanjem drugih gena i/ili dejstvom negenetičkih faktora.

variable number tandem repeat (Abbreviation: VNTR). A **DNA** sequence, present as tandem repeats, for which the number of copies varies

greatly between unrelated **genotypes**.

(Skraćenica: VNTR) Sekvenca DNK, prisutna kao ponavljanja tandema, za koju broj kopija veoma varira između nesrodnih genotipova.

variable surface glycoprotein (Abbreviation: VSG). One of a battery of **antigenic determinants** expressed by a **micro-organism** to elude immune detection.

(Skraćenica: VSG) Jedna od baterija antigenskih determinanata, ispoljena kod mikroorganizama da se izbegne imunološko otkrivanje.

variance A statistical term representing a measure of the dispersion of data from the overall mean. Used to quantify the variability of a population.

Statistički izraz, koji predstavlja meru disperzije podataka od sveukupne srednje vrednosti. Korišćen da količinski odredi varijabilnost populacije.

variant An individual that is genetically distinct from others in the population.

Individua koja je genetički različita od drugih u populaciji.

variation Differences between individuals within a **population** or among populations.

Razlike između individua u okviru populacije ili između populacija.

variegation The occurrence, within a single tissue, organ or organism, of mosaicism. Usually referring to plants showing either both green and **albino** colouration in a leaf, or flecks of contrasting colour in a flower. The origin of variegation can be through viral **infection**, nutritional deficiency, or genetic **instability** caused by **transposon** activity. *See also: chimera*

Nastanak mozaicizma, u okviru pojedinačnog tkiva, organa ili organizama. Obično se odnosi na biljke koje imaju zeleno i albino obojenje u listu, ili pege kontrastnih boja u cvetu. Poreklo varijacije može da bude virusna infekcija usled ishrambene deficitarosti, ili genetičke nestabilnosti, izazvanih putem aktivnosti transpozona. *Vidi takođe: chimera.*

variety 1. A naturally occurring subdivision of a **species**, with distinct morphological characters. 2. A defined **strain** of a crop plant, selected on the basis of phenotypic (sometimes genotypic) homogeneity.

1. Prirodno podela vrste, sa posebnim morfološkim osobinama. 2. Definisani soj biljke - useva, selekcionisan na bazi fenotipskih (ponekad genotipskih) homogenosti.

vascular Plant **tissue** specialized for the conduction of water or nutrients

Biljno tkivo, specijalizovano za sprovođenje vode ili hranljivih materija.

vascular bundle A strand of tissue containing **primary xylem** and **primary phloem** (and **procambium** if present) and frequently enclosed by a bundle sheath of **parenchyma** or fibres.

Tkivo koje sadrži primarni ksilem i primarni floem (i prokambijum, ako je prisutan), i često obuhvaćen slojem ćelija parenhima ili vlakana.

vascular cambium In biennials and perennials, cambium giving rise to **secondary phloem** and **secondary xylem**.

U dvogodišnjih i višegodišnjih biljaka, kambijum doprinosi pojavi sekundarnog floema i sekundarnog ksilema.

vascular plant Plant species possessing organized **vascular** tissues.

Biljna vrsta koja poseduje organizovana vaskularna tkiva.

vascular system 1. A specialized network of vessels for the circulation of fluids throughout the body tissue of an animal. 2. The system of **vascular tissue** in plants.

1. Specijalizovana mreža sudova za cirkulaciju tečnosti kroz telesno tkivo životinje. 2. Sistem vaskulatnog tkiva u biljaka.

vector 1. An organism, usually an insect, that carries and transmits **pathogens**. 2. A small **DNA molecule** (plasmid, virus, bacteriophage, artificial or **cut DNA molecule**) that can be used to deliver **DNA** into a cell. Vectors must be capable of being replicated and contain **cloning** sites for the introduction of foreign **DNA**.

1. Organizam, obično insekt, koji nosi i prenosi patogene. 2. Mala DNK molekula (plazmid, virus, bakteriofag, veštački ili odsečeni DNK molekul) koji se može koristiti da prenese DNK u ćeliju. Vektori mogu da se ponavljaju, i sadrže mesta kloniranja za uvođenje strane DNK.

vegetative propagation *See: asexual propagation.*

Vidi: asexual propagation.

velocity density gradient centrifugation A procedure used to separate **macromolecules** based on their rate of movement through a density gradient.

Postupak, korišćen za odvajanje makromolekula, zasnovan na stepenu njihovog kretanja kroz gredajent gustine.

velogenetics The combined use of **marker-assisted selection** and **embryo technologies** such as **OPU**, **IVM** and **IVF**, in order to increase the rate of genetic improvement in animal populations.

Kombinovano korišćenje selekcije uz pomoć markera i embriotehnologija, kao što su OPU, IVM i IVF, da bi se povećala brzina genetičkog poboljšanja u populacijama životinja.

vermiculite Material made from expanded mica used as a rooting medium and as a soil additive.

Materijal, načinjen od proširenog liskuna, korišćen kao medijum za ukorenjavanje i kao aditiv za zemljište.

vernalization Chilling juvenile plants for a minimum period in order to induce flowering. Some plants require **vernalization** to flower, but others have no such requirement.

Hlađenje mladih biljaka u kratkom vremenu, da bi izazvali cvetanje. Neke biljke zahtevaju jarovizaciju da cvetaju, dok druge nemaju takav zahtev.

vessel A series of **xylem** elements whose function is to conduct water and nutrients in plants.

Serijski elementi ksilema, čija je funkcija da sprovodi vodu i hranljive materije u biljkama.

vessel element A type of **cell** occurring within the **xylem** of flowering plants. Many are water-conducting vessels.

Tip ćelije koji se nalazi u okviru ksilema cvetnica. Mnogi sudovi su provodnici vode.

viability The capability to live and develop normally.

Sposobnost da živi i da se normalno razvija.

viability test Assay of the number or percent of living cells or plants in a **population** following a specific treatment. Often used to describe quality of **seed** following long-term storage.

Analiziranje broja ili procenta živih ćelija ili biljaka u populaciji posle spe-

cifičnog tretmana. Često korišćena da opiše kvalitet semena posle dugoročnog skladištenja.

viable Capable of normal completion of life cycle.

Sposoban za normalno okončanje životnog ciklusa.

vibrio Comma-shaped **bacterium**.

Bakterija u obliku zapete.

vir genes A set of genes on a **Ti plasmid** that prepare the **T-DNA** segment for transfer into a plant cell.

Niz gena na Ti plazmidu, koji priprema T-DNK segment za prenos u biljnu ćeliju.

viral coat protein A **protein** present in the layer surrounding the **nucleic acid** core of a **virus**.

Protein, prisutan u sloju koji okružuje jezgro nukleinske kiseline virusa.

viral oncogene A viral gene that promotes tumour development in a **host**.

Gen virusa koji izaziva razviće tumora u domaćina.

viral pathogen A disease-causing virus. Virus izazivač bolesti.

viral vaccine **Vaccine** consisting of live viruses, genetically engineered to avoid causing the disease itself.

Vakcina koja sadrži žive viruse dobijene genetičkim inženjerstvom, da se izbegne izazivanje bolesti iste.

virion A complete infectious **virus** particle.

Potpuno infektivan delić virusa.

viroid A plant pathogenic agent, composed of an infectious single-stranded low molecular weight **RNA**, and no **coat protein**.

Biljni patogeni agens, sastavljen od infektivne, jednonančane niskomolekularne težine RNK, i bez zaštitnog proteina.

virulence The degree of ability of an **organism** to cause disease. The relative

infectiousness of a bacterium or **virus**, or its ability to overcome the resistance of the **host** metabolism.

Stepen sposobnosti nekog organizma da izazove bolest. Relativna infektivnost bakterije ili virusa, ili njihove sposobnosti da prevaziđu rezistentnost metabolizma domaćina.

virulent phage A **phage** that destroys its **host** bacterium.

Fag koji razara bakteriju domaćina.

viruliferous A vector (usually insect) organism that carries virions and spreads the **virus** from **host** to host by mechanical means.

Vektor (obično insekt), organizam koji nosi virione i širi virus mehaničkim putem od domaćina do domaćina.

virus An infectious particle composed of a **protein capsule** and a **nucleic acid** core (**DNA** or **RNA**), which is dependent on a **host** organism for **replication**.

Infektivni delić, sastavljen od proteinske kapsule i jezgra nukleinske kiseline (DNK ili RNK), koji je zavisao od organizma domaćina za replikaciju.

virus-free Plant, animal, **cell**, **tissue** or **meristem** which exhibits no viral symptoms or contains no identifiable **virus** particles.

Biljka, životinja, ćelija, tkivo ili meristem, koji nemaju virusne simptome ili ne sadrže identifikujuće virusne čestice.

virus-tested Description of a **organism** or a **cell** stock certified as being free of certain specified **viruses** following recognized procedures of virus diagnosis.

Opis organizma ili ćelijskog skladišta sa certifikatom da su slobodni od izvesnih specificiranih virusa, sledeći priznate postupke dijagnoze virusa.

vitamin Naturally occurring organic substance required by living organisms in small amounts to maintain normal health.

Prirодно dešavajuća organska supstanca, potrebna živim bićima u malim količinama da održi normalno zdravlje.

vitrified Cultured **tissue** having leaves and sometimes stems with a glassy, transparent or wet and often swollen appearance. The process of vitrification is a general term for a variety of physiological disorders that lead to **shoot tip** and leaf necrosis. *Synonym*: water soaked.

Kultivirano tkivo koje ima listove i ponekad stabla, sa staklastim, providnim, ili vlažnim, a često nabrekli izgledom. Proces vitrifikacije je opšti izraz za različite fiziološke poremećaje koji dovode do nekroze vrha izdanka i listova. *Sinonim*: water soaked.

viviparous (adj.) *See*: **vivipary**.

Vidi: vivipary.

vivipary 1. A form of reproduction in animals in which the developing **embryo** obtains its nourishment directly from the mother via a placenta or by other means. 2. A form of **asexual reproduction** in certain plants, in which the flower develops into a bud-like structure that forms a new plant when detached from the parent.

3. The development of young plants in the inflorescence of the parent plant.

1. Oblik reprodukcije u životinja, u kojem embrion razviju dobija svoju hranu direktno od majke preko placente, ili na drugi način. 2. Oblik aseksualne reprodukcije u izvesnih biljaka, u kojih se cvet razvija u strukturu sličnu pupoljku koji formira novu biljku kada se odvoji od roditelja. 3. Razviće mladih biljaka u cvasti roditeljske biljke.

V_{\max} The maximal rate of an enzyme-catalysed reaction. V_{\max} is the product of E_0 (the total amount of **enzyme**) and K_{cat} (the catalytic rate constant).

Maksimalna brzina neke enzimski katalizovane reakcije. V_{\max} je produkt od E_0 (ukupne količine enzima) i K_{cat} (konstante katalitičke brzine).

VNTR Abbreviation for **variable number tandem repeat**.

Skraćenica za variable number tandem repeat.

volatilization The conversion of a solid or liquid into a gas or vapour.

Pretvaranje čvrstog ili tečnog u gas ili paru.

VSG Abbreviation for **variable surface glycoprotein**.

Skraćenica za variable surface glycoprotein.

W

w/v Abbreviation for weight per volume. The relative proportions of solid and liquid in a solution.

Skraćenica za weight per volume. Relativne proporcije čvrstih materija i tečnosti u rastvoru.

walking *See: chromosome walking; primer walking.*

Vidi: chromosome walking; primer walking.

wall pressure Pressure that a **cell wall** exerts against the turgor of the cell contents. Wall pressure is equal and opposite to the turgor potential.

Pritisak koji ispoljava ćelijski zid protiv turgora sadržaja ćelije. Pritisak zida je jednak i suprotan potencijalu turgora.

wash-out The loss of the slower growing **micro-organism** when two organisms are being grown together.

Gubitak mikroorganizma koji sporije raste kada dva organizma rastu zajedno.

water potential The pressure gradient that induces the flow of water, particularly with reference to plant water uptake from the soil, comprising the net effects of suction, solutes and matric forces.

Gradijent pritiska koji izaziva tok vode, posebno u odnosu na preuzimanje vode iz zemljišta od strane biljke, obuhvatajući neto efekte usisavanja, rastvora i sila matrice.

water soaked *See: vitrified.*

Vidi: vitrified.

water stress Occurs when plants are unable to absorb enough water to replace that lost by transpiration. Short-term water stress leads to turgor loss (wilting). Prolonged stress leads to cessation of growth, and eventually plant death.

Nastaje kada biljke nisu u stanju da apsorbuju dovoljno vode, da zamene onu izgubljenu transpiracijom. Kratkotrajni vodeni stres vodi gubitku turgora (venjenju). Produženi stres dovodi prestanku rasta, i konačno ugibanju biljke.

wax Water-insoluble esters of long-chain acids with long-chain alcohols. Waxes form protective waterproof layers on leaves, stems, fruits, animal fur and integuments of insects.

Vodno-nerastvorljivi estri kiseline dugog lanca, sa alkoholima dugog lanca. Voskovi formiraju zaštitne nepromočive slojeve na listovima, stablima, plodovima, životinjskom krznu i telesnom zidu insekata.

weed A plant growing where it is not wanted. Generally used to describe plants which colonize readily, and can compete for resources with a planted crop.

Biljka koja raste gde nije poželjna. Opšte uzev, termin korišćen da opiše biljke koje se lako kolonizuju, i mogu da se takmiče za resurse sa zasejanim usevom.

weediness The ability of a plant to colonize a disturbed habitat and compete with cultivated species.

Sposobnost biljke da kolonizuje zapušteno stanište, i da se takmiči sa kultivisanim usevima.

western blot A technique whereby a complex mixture of size-separated **proteins** is fixed to a solid support, and then probed with a labelled **antibody**. Useful, for example, for the measurement of levels of production of a specific **protein** in a particular **tissue** or at particular developmental stage.

Tehnika kojom se kompleksna smeša odvojenih po veličini proteina vezuje za čvrstu podlogu, a zatim testira sa obeleženim antitelom. Korisna, na primer, za merenje nivoa proizvodnje specifičnog proteina u posebnom tkivu, ili u određenom razvojnom stadijumu.

wet weight *See:* **fresh weight**.

Vidi: fresh weight.

wetting agent A substance (usually a detergent) that improves the contact of a liquid to a solid surface by reducing its surface tension.

Supstanca (obično deterdžent) koja poboljšava kontakt tečnosti sa čvrstom površinom, smanjujući njen površinski napon.

wild type The most frequent **allele** or genotype found in nature, or a specified **organism** against which **mutants** are defined.

Najčešći alel ili genotip nađen u prirodi, ili specifikovan organizam prema kojem su mutanti definisani.

wilt Drooping of stems and foliage due to loss of cell turgor. May be caused by water **stress** or by disease.

Malaksalost stabljika i listova usled gubitka ćelijskog turgora. Može biti izazvana vodenim stresom ili bolešću.

wilting point The moisture content of soil at which plants start to wilt, but not to the extent that they fail to recover when placed in a humid atmosphere. *See:* **permanent wilting point**.

Sadržaj vlage zemljišta pri kojem biljke počinju da venu, ali ne do obima da ne mogu da se oporave kada se stave u humidnu atmosferu. *Vidi:* permanent wilting point.

wobble hypothesis An explanation of how one **tRNA** may recognize more than one **codon**. The first two bases of the **mRNA** codon and anticodon pair properly, but the third **base** in the anticodon has some flexibility that permits it to pair with either the expected base or an alternative.

Objašnjenje, kako jedna tRNK može da prepozna više od jednog kodona. Prve dve baze kodona mRNK i antikodona naparuje se ispravno, ali treća baza u antikodonu ima nešto fleksibilnosti koja joj dopušta da se pari, bilo sa očekivanom ili alternativom bazom.

X

xanthophyll A yellow oxygen-containing carotenoid, present in chloroplasts.

Žuti karotinoid koji sadrži kiseonik, prisutan u hloroplastima.

X-chromosome *See: sex chromosome.*

Vidi: sex chromosome.

xenia The immediate effect of **pollen** on some characters of the endosperm.

Neposredan uticaj polena na neke osobine endosperma.

xenobiotic A chemical compound that is not produced by, and often cannot be degraded by, living organisms.

Hemijsko jedinjenje koje nije proizvedeno od, i često ne može biti degradirano od živih organizama.

xenogeneic Refers to **organs**, genetically engineered („humanized“) to decrease the chance of rejection, that have been grown in an animal of another species for potential transplant to humans.

Odnosi se na organe, dobijene genetičkim inženjeringom („humanizovanim“) da bi smanjili šansu za odbijanje onih, koji su stvoreni u životinji druge vrste, za potencijalni transplant ljudima.

xenotransplantation The transplantation of tissue or organs from one **species** to another species, typically

from pigs to humans. **Zoonoses** are an important issue.

Transplantacija tkiva ili organa iz jedne vrste u drugu vrstu, obično od svinja na ljude. Zoonoze su važno sporno pitanje.

xerophyte A plant very resistant to drought, typically adapted to extremely dry environments.

Biljka, veoma otporna na sušu, posebno adaptirana na ekstremno suhu spoljnu sredinu.

X-linked The presence of a gene on the **X-chromosome**.

Prisustvo gena na X-hromozomu.

X-linked disease A genetic disease caused by an **allele** at a locus on the **X-chromosome**.

Genetička bolest, izazvana alelom na lokusu X-hromozoma.

xylem A complex **tissue** specialized for the conduction of water and mineral nutrients in solution. Xylem may also function as a supporting tissue, particularly secondary xylem.

Kompleksno tkivo, specijalizovano za sporovođenje vode i mineralnih hranljivih materija u rastvoru. Ksilem može takođe da funkcioniše kao potporno tkivo, posebno sekundarni ksilem.

Y

YAC Abbreviation for **yeast artificial chromosome**.

Skraćenica za yeast artificial chromosome.

Y-chromosome *See: sex chromosome*.

Vidi: sex chromosome.

yeast A unicellular ascomycete fungus, commonly found as a contaminant in plant tissue culture.

Jednoćelijska gljiva askomiceta obično nađena kao zagađivač u kulturi biljnog tkiva.

yeast artificial chromosome (Abbreviation: **YAC**). A **vector** which can be propagated in budding **yeast** (*Saccharomyces pombe*), consisting of the minimal elements required for a **chromosome** to replicate, and allowing for the **cloning** of large **DNA** fragments (hundreds of **kilobase pairs**).

(Skraćenica: YAC) Vektor koji može da se razmnožava u pupljenom kvascu (*Saccharomyces pombe*), koji se sastoji od mineralnih elemenata potrebnih za replikaciju hromozoma, i omogućava kloniranje velikih fragmenata DNK (stotine kilobaznih parova).

yeast episomal vector (Abbreviation: YEp). A cloning plasmid **vector** for the **yeast** *Saccharomyces cerevisiae* maintained as an **extrachromosomal** nuclear **DNA** molecule.

(Skraćenica: YEp) Klonirajući plazmidni vektor za kvasac *Saccharomyces cerevisiae*, koji se održava kao ekstrahromozomalni nuklearni DNK molekul.

yeast extract A mixture of substances from yeast. *See: organic complex*.

Smeša supstanci od kvasca. *Vidi: organic complex*.

Z

Z-DNA A form of **DNA**, in which the **double helix** is wound in a left-hand, instead of a right-hand, manner. **DNA** adopts the Z conformation when purines and pyrimidines alternate on each strand, e.g. 5'CGCGCGCG 3' or 3'GCGCGCGC5'. *Synonym*: zig-zag **DNA**.

Oblik DNK, u kojem je dvostruki heliks spiralizovan s leve strane umesto sa desne strane. DNK usvaja Z konformaciju kada se purini i pirimidini menjeju na svakom lancu, na pr. 5'CGCGCGCG 3' ili 3'GCGCGCGC 5'. *Sinonim*: zig-zag DNK.

zig-zag DNA *See*: **Z-DNA**.

Vidi: Z-DNK.

zinc finger A DNA-binding **protein motif**, characterized by two closely spaced cysteine and two histidine **residues** that serve as **ligands** for a single Zn^{2+} ion. When bound, the structure takes on a **conformation** in which **amino acid** side chains protrude in a way that allows interaction with the **DNA** major groove.

DNK vezujući proteinski koji se karakteriše sa dva blisko rastavljena cisteinska i dva histidinska ostatka, koji služe kao ligandi za jedini Zn^{2+} jon. Kada je vezana, struktura uzima konformaciju u kojoj aminokiselinski bočni lanci strče tako da omogućavaju interakciju sa glavnom brazdom DNK.

zone of elongation The section of the young **root** or shoot just behind the apical **meristem**, in which the cells are enlarging and elongating rapidly.

Deo mladog korena ili izdanka neposredno iza vršnog meristema, u kojem se ćelije brzo povećavaju i izdužuju.

zoo blot Hybridization of cloned **DNA** from one species to **DNA** from a range of other organisms to determine the extent to which the cloned **DNA** is evolutionarily conserved.

Hibridizacija klonirane DNK jedne vrste na DNK drugih organizama, da bi se odredio obim do kojeg je klonirana DNK evoluciono konzervisana.

zoo FISH Fluorescence *in situ* hybridization technique, probing metaphase **chromosomes** of one species with **DNA** from another species. The technique allows inferences to be made regarding the evolutionary relationships between species. *See*: **Fluorescence in situ hybridization**.

Fluorescentna *in situ* tehnika hibridizacije, testiranje hromozoma metafaze jedne vrste sa DNK od drugih vrsta. Tehnika omogućava da se donose zaključci koji se odnose na evolucione odnose između vrsta. *Vidi*: Fluorescence *in situ* hybridization.

zoonosis A disease that is communicable from animals to humans.

Bolest koja je prenosiva sa životinja na ljude.

zoospore A spore that possesses flagella and is therefore motile.

Spora koja poseduje bičeve (flagele) i zbog toga je pokretna.

zygonema Stage of meiotic **prophase** during which chromosome **synapsis** occurs.

Stanje mejotičke profaze tokom kojeg nastaje sinapsis hromozoma.

zygospore A thick-walled resistant spore developing from a **zygote** resulting from the fusion of **gametes** in the course of isogamy.

Otporna spora debelog zida koja se razvija iz zigota i nastaje fuzijom gameta u toku izogamije.

zygote The **diploid** cell formed by the fusion of two **haploid gametes** during **fertilization** in eukaryotic organisms with sexual reproduction.

Diploidna ćelija, formirana spajanjem dve haploidne gamete tokom oplodjenja u eukariotskim organizmima sa seksualnom reprodukcijom.

zygotene (adj.) *See: zygonema.*

Vidi: zygonema.

zymogen Inactive enzyme precursor that after **secretion** is chemically altered to the active form of the **enzyme**.

Neaktivni prekursor enzima koji je posle lučenja hemijski izmenjen u aktivni oblik enzima.

Aneks 1 – PREFIKSI SI ZA NUMERICKE FAKTORE I OZNAKE

Faktor	Prefiks	Simbol	Faktor	Prefiks	Simbol
10^{18}	eksa	E	10^{-1}	deci	d
10^{15}	peta	P	10^{-2}	centi	c
10^{12}	tera	T	10^{-3}	milli	m
10^9	giga	G	10^{-6}	mikro	μ
10^6	mega	M	10^{-9}	nano	n
10^3	kilo	k	10^{-12}	piko	p
10^2	hekto	h	10^{-15}	femto	f
10	deka	da	10^{-18}	atto	a

Aneks 2 – GRČKA AZBUKA

Slovo	Veliko slovo	Malo slovo	Slovo	Veliko slovo	Malo slovo
alfa	A	α	ni	N	ν
beta	B	β	ksi	Ξ	ξ
gama	Γ	γ	omikron	O	ο
delta	Δ	δ	pi	Π	π, ϖ
epsilon	E	ε	ro	P	ρ
zeta	Z	ζ	sigma	Σ	σ
eta	H	η	tau	T	τ
teta	Θ	θ	ipsilon	Υ	υ
jota	I	ι	fi	Φ	φ
kapa	K	κ	hi	X	χ
lambda	Λ	λ	psi	Ψ	ψ
mi	M	μ	omega	Ω	ω

Aneks 3 – KODONI I AMINOKISELINE

UUU Phe	UCU Ser	UAU Tyr	UGU Cys
UUC Phe	UCC Ser	UAC Tyr	UGC Cys
UUA Leu	UCA Ser	UAA stop (oker)	UGA stop (mlečno plavo)
UUG Leu	UCG Ser	UAG stop (ćilibar)	UGG Trp
CUU Leu	CCU Pro	CAU His	CGU Arg
CUC Leu	CCC Pro	CAC His	CGC Arg
CUA Leu	CCA Pro	CAA Gln	CGA Arg
CUG Leu	CCG Pro	CAG Gln	CGG Arg
AUU Ile	ACU Thr	AAU Asn	AGU Ser
AUC Ile	ACC Thr	AAC Asn	AGC Ser
AUA Ile	ACA Thr	AAA Lys	AGA Arg
AUG Met	ACG Thr	AAG Lys	AGG Arg
GUU Val	GCU Ala	GAU Asp	GGU Gly
GUC Val	GCC Ala	GAC Asp	GGC Gly
GUA Val	GCA Ala	GAA Glu	GGA Gly
GUG Val	GCG Ala	GAG Glu	GGG Gly

Nekoliko manjih varijacija je opaženo, naročito u mitohondrijama i hloroplastima.

Aneks 4 – AMINO KISELINE, KODOVI SA JEDNIM I TRI SLOVA

Amino kiselina	Kod sa tri slova	Kod sa jednim slovom
alanin	ala	A
arginin	arg	R
asparagin	asn	N
asparaginska kiselina	asp	D
asparagin ili asparaginska kiselina	asx	B
cistein	cys	C
glutaminska kiselina	glu	E
glutamin	gln	Q
glutamin ili glutaminska kiselina	glx	Z
glicin	gly	G
histidin	his	H
izoleucin	ile	I
leucin	leu	L
lizin	lys	K
metionin	met	M
fenilalanin	phe	F
prolin	pro	P
serin	ser	S
treonin	thr	T
triptofan	try	W
tirozin	tyr	Y
valin	val	V

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