

Acronyms and Glossary of Terms

List of Acronyms

ACGM	—Advisory Committee on Genetic Manipulation (U.K.)
ACRE	—Advisory Committee on Release to the Environment (U.K.)
ADAMHA	—Alcohol, Drug Abuse, and Mental Health Administration (DHHS)
AID	—Agency for International Development, U.S. (State Department)
AIDS	—acquired immunodeficiency syndrome
ANDA	—Abbreviated New Drug Application (FDA)
APHIS	—Animal and Plant Health Inspection Service (USDA)
APO	—Australian Patent Office
ARC	—AIDS-related complex
ARS	—Agriculture Research Service (USDA)
ATCC	—American Type Culture Collection
BAP	—Biotechnology Action Program (EC)
BBS	—Biological, Behavioral, and Social Sciences Directorate (NSF)
BEP	—Biomolecular Engineering Program (EC)
BIDEC	—Biotechnology Development Center (Japan)
BMFT	—Federal Ministry of Research and Technology (Germany)
BRI	—BioResearch Ireland
BRIDGE	—Biotechnological Research for Industrial Development and Growth in Europe (EC)
BRS	—Biotechnology Research Subcommittee (OSTP)
BSC	—Biological and Critical Systems Division (NSF, ENG)
BSCC	—Biotechnology Science Coordinating committee (OSTP)
bST	—bovine somatotropin
BT	— <i>Bacillus thuringiensis</i>
CAA	—Clean Air Act (U. S.)
CAP	—Common Agricultural Policy (EC)
CCL	—Commodity Control List (U.S.)
Cell Bank	—Human Genetic Mutant Cell Repository
CEN	—Committee for European Standardization
CERCLA	—Comprehensive Environmental Response, Compensation, and Liability Act (U.S.)
CHE	—Chemistry Division (NSF, MPS)
CISE	—Computer and Information Science and Engineering Directorate (NSF)
CoCom	—Coordinating Committee on Multilateral Export Controls
CRADA	—Cooperative Research and Development Agreement

CSRS	— Cooperative Research Service (USDA)
CTS	—Chemical and Thermal Systems Division (NSF, ENG)
CUBE	—Concertation Unit for Biotechnology in Europe (DGXXII)—EC
CWA	—Clean Water Act (U.S.)
DARPA	—Defense Advanced Research Projects Agency (DoD)
DBC	—dedicated biotechnology company
DECHEMA	—German Society for Chemical Equipment, Chemical Technology and Biotechnology
DES	—Department of Education and Science (U.K.)
DGxxII	—Directorate General for Science, Research and Development (EC)
DHHS	—Department of Health and Human Services, U.S.
DMR	—Division of Materials Research (NSF, MPS)
DMS	—Division of Mathematical Sciences (NSF, MPS)
DNA	—deoxyribonucleic acid
DOC	—Department of Commerce, U.S.
DoD	—Department of Defense, U.S.
DOE	—Department of Energy, U.S.
DTI	—Department of Trade and Industry (U.K.)
EC	—European Community
ECLAIR	—European Collaborative Linkage of Agriculture and Industry through Research (EC)
EGTA	—Environmental and Gene Technology Act (Denmark)
EMS	—Eosinophilia-Myalgia Syndrome
ENG	—Engineering Directorate (NSF)
EOLAS	—Irish Science Agency
EPA	—Environmental Protection Agency, U.S.
EPC	—European Patent Convention
EPO	—erythropoietin
ERATO	—Promotion of Exploratory Research for Advanced Technology System (STA, Japan)
ERS	—Economic Research Service (USDA)
EUP	—Experimental Use Permit (EPA)
EUREKA	—European Research Coordination Agency
FASB	—Financial Accounting Standards Board
FCCSET	—Federal Coordinating Council for Science, Engineering and Technology
FDA	—Food and Drug Administration, U.S.
FDCA	—Federal Food, Drug, and Cosmetic Act (U.S.)
FIFRA	—Federal Insecticide, Fungicide, and Rodenticide Act (U.S.)

FLAIR	—Food-Linked Agro-Industrial Research program (EC)	MPBC	—Midwest Plant Biotechnology Consortium
FRG	—Federal Republic of Germany	MPs	—Mathematical and Physical Sciences Directorate (NSF)
FSIS	—Food Safety and Inspection Service (USDA)	MSG	—monosodium glutamate
FTC	—Federal Trade Commission, U.S.	NASA	—National Aeronautics and Space Administration, U.S.
FTTA	—Federal Technology Transfer Act of 1986 (U.S.)	NBS	—National Bureau of Standards (DOC)
GAAP	—generally accepted accounting principles (FASB)	NCBC	—North Carolina Biotechnology Center
GAO	—General Accounting Office, U.S.	NDA	—New Drug Application (FDA)
GATT	—General Agreement on Tariffs and Trade	NEPA	—National Environmental Protection Act (U.S.)
G-CSF	—granulocyte-colony stimulating factor	NICs	—Newly Industrializing Countries
GDR	—German Democratic Republic	NIH	—National Institutes of Health (U.S.)
GenBank	—Genetic Sequence Data Bank	NIST	—National Institute of Standards and Technology (DOC)
GEO	—Geosciences Directorate (NSF)	NOAA	—National Oceanic and Atmospheric Administration (DOC)
GILSP	—Good Industrial Large-Scale Practice (OECD)	NRC	—National Research Council (U.S.)
GMAC	—Genetic Manipulation Advisory Committee (Australia)	NRRL	—Northern Regional Research Laboratory
GM-CSF	—granulocyte macrophage colony stimulating factor	NSF	—National Science Foundation (U.S.)
GNP	—Gross National Product	OCE	—Oceanography Division (NSF, GEO)
GRAS	—generally recognized as safe	OECD	—Organisation for Economic Co-operation and Development
HIV	—human immunodeficiency virus	OMB	—Office of Management and Budget (U.S.)
IDAs	—International Depositary Authorities	OPEC	—Organization of Petroleum Exporting Countries
IFBC	—International Food Biotechnology Council	ORD	—Office of Research and Development (EPA)
IMCB	—Institute of Molecular and Cell Biology (Singapore)	OSHA	—Occupational Safety and Health Administration (U.S.)
INT	—International Division (NSF, STIA)	OSTP	—Office of Science and Technology Policy (White House)
IOP-b	—Innovation Oriented program for Biotechnology (The Netherlands)	OTA	—Office of Technology Assessment (U.S. Congress)
IPO	—initial public offering	PCBs	—polychlorinated biphenyls
ISA	—international searching authority	PCR	—polymerase chain reaction
ISTI	—Industrial Science and Technological Innovation Divison (NSF, STIA)	PCT	—Patent Cooperation Treaty
ITC	—International Trade Commission	PERI	—Protein Engineering Research Institute (Japan)
JBA	—Japan Bio-Industry Association	PHS	—Public Health Service, U.S. (DHHS)
JPO	—Japanese Patent Office	PLA	—Product License Application (FDA)
JRDC	—Japanese Research Development Corporation	PMA	—Pharmaceutical Manufacturers Association
KIST	—Korea Institute of Science and Technology (South Korea)	PPA	—Plant Patent Act (U.S.)
KOGERA	—Korean Genetic Research Association (South Korea)	PQA	—Plant Quarantine Act (U.S.)
KPO	—Korean Patent Office (South Korea)	PTO	—Patent and Trademark Office (U.S.)
MAFF	—Ministry of Agriculture, Forestry, and Fisheries (Japan)	PVPA	—Plant Variety Protection Act (U.S.)
MC	—Ministry of Construction (Japan)	R&D	—research and development
MCTL	—Militarily Critical Technologies List (U.S.)	RAC	—Recombinant DNA Advisory Committee (NIH)
MEOR	—microbial enhanced oil recovery	RCRA	—Resource Conservation and Recovery Act
MEsc	—Ministry of Education, Science and Culture (Japan)	RDLP	—research and development limited partnership
MHW	—Ministry of Health and Welfare (Japan)	rDNA	—recombinant DNA
MITI	—Ministry of International Trade and Industry (Japan)	RFLP	—restriction fragment length polymorphism
MOSS	—Market-Oriented Sector Selective talks	SARA	—Superfund Amendments and Reauthorization Act

SBIR	—Small Business Innovation Research Agency
SDI	—Strategic Defense Initiative (Star Wars) (U.S.)
SIC	—standard industrial classification system (DOC)
SPC	—Supplementary Protection Certificate (EC)
SRS	—Science Resource Studies Division (NSF, <i>STIA</i>)
STA	—Science and Technology Agency (Japan)
STC	—Science and Technology Centers (NSF)
<i>STIA</i>	—Scientific, Technological, and International Affairs Directorate
TNF	—Tumor Necrosis Factor
tPA	—tissue plasminogen activator
TSCA	—Toxic Substances Control Act of 1976
U.K.	—United Kingdom
U.N.	—United Nations
UPov	—International Union for the Protection of New Varieties of Plants
USDA	—Department of Agriculture, U.S.
U.S.S.R.	—Union of Soviet Socialist Republics
USTR	—United States Trade Representative
VA	—Veteran's Administration (U. S.)
WHO	—World Health Organization (U.N.)
WIPO	—World Intellectual Property Organization
ZKBS	—Advisory Board for Biological Safety (Germany)

Glossary of Terms

Acquisition: One company taking controlling interest in another company. Investors are always looking for companies that are likely to be acquired because those who want to acquire such companies are often willing to pay more than the market price for the shares they need to complete the acquisition.

Aerobic: Living or acting only in the presence of oxygen.

Allele: Alternative form of a genetic locus (e.g., at a locus for hair color there may be alleles for blonde or black hair); alleles are inherited separately from each parent.

Amino acid: Any of a group of 20 molecules linked together in various combinations to form proteins. Each different protein is made up of a specific sequence of these molecules with the unique sequence coded for by DNA.

Amortization: Accounting procedure that gradually reduces the cost-value of a limited life or intangible asset through periodic charges to income.

Anaerobic: Living or acting in the absence of oxygen.

Animal: A nonhuman living being with a capacity for spontaneous movement and a rapid motor response to stimulation. Animals can be divided into two groups, invertebrates (animals without backbones) and vertebrates (animals with backbones).

Animal patents: The patenting of nonhuman transgenic animal life forms. The United States is currently the only country that has issued a patent for an animal developed using biological techniques. The ability to patent animals introduces a new legal concept of animal ownership and raises a number of ethical, economic, and practical issues.

Antibody: A protein (immunoglobulin) produced by the immune system of humans and higher animals in response to exposure to a specific antigen and characterized by specific reactivity with its complementary antigen. (See also *antigen* and *monoclonal antibodies*.)

Antigen: A molecule (usually a protein or carbohydrate) that when introduced into an organism (usually humans or higher animals) is recognized as a foreign substance and elicits an immune response (antibody production, lymphokine production, or both) directed specifically against that molecule. (See also *antibody* and *monoclonal antibodies*.)

Applied research: Research done to gain knowledge or understanding necessary for determining the means by which a recognized and specific need may be met. In biotechnology, it is the use of rDNA, hybridomas, and other tools to develop specific products or processes (e.g., rDNA use to develop vaccines for specific antigens, such as malaria or HIV; the transfer of herbicide or pesticide resistance to a particular plant species; or the use of monoclonal antibodies as purification tools in bioprocessing). (See also *generic applied research*.)

Asexual reproduction: Reproduction of plants by purely vegetative means without the function and interaction of the two sexes. Examples of asexually produced plants are roses, peach trees, and lilies.

Assets: Anything having commercial or exchange value that is owned by a business, institution, or individual.

B lymphocyte: A specialized white blood cell involved in the immune system response of vertebrates that originates in the bone marrow and produces antibody molecules after challenge by an antigen. In hybridoma technology, these cells contribute antibody-producing capability to the hybridoma. (See also *T lymphocyte*.)

Bacterium (p]. bacteria): Any of a group of unicellular or noncellular micro-organisms having round, rodlike, spiral, or filamentous bodies that are enclosed by a cell wall or membrane and lack fully differentiated nuclei. Bacteria may exist as free-living organisms in soil, water, organic matter, or as parasites in the live bodies of plants or animals.

Base pair: Two complementary nucleotides (adenosine and thymidine or guanosine and cytidine) held together by weak bonds. Two strands of DNA are held together in the shape of a double helix by the bonds between base pairs.

Basic research: Research performed to gain fuller knowledge or understanding of the fundamental as-

pects of phenomena and of observable facts, without specific applications toward products or processes in mind. In biotechnology it is the use of its component tools (e.g., DNA and hybridomas) to study ways in which biological systems work and to identify the mechanisms that govern how they work.

Biologics: Vaccines, therapeutic serums, toxoids, antitoxins, and analogous biological products used to induce immunity to infectious diseases or harmful substances of biological origin.

Biomass: All organic matter that grows by the photosynthetic conversion of solar energy.

Bioprocess engineering: Process that uses complete living cells or their components (e.g., enzymes, chloroplasts) to effect desired physical or chemical changes.

Bioreactor: A vessel used for bioprocessing.

Bioremediation: A strategy that uses biotechnological methods to cleanup wastes. These methods involve engineering systems that use biological processes to degrade, detoxify, or accumulate contaminants. Bioremediation, or biotreatment, systems can use naturally occurring or laboratory-altered microbes, or both.

Biosynthesis: Production, by synthesis or degradation, by a chemical or living organism.

Biotechnology: Any technique that uses living organisms or substances from those organisms to make or modify a product, to improve plants or animals, or to develop micro-organisms for specific uses. These techniques include the use of novel technologies such as recombinant DNA, cell fusion, and other bioprocesses. (See also *genetic engineering* and *recombinant DNA*.)

Black Monday: October 19, 1987, when the Dow Jones Industrial Average plunged a record 508 points following sharp drops the previous week—reflecting investor anxiety about inflated stock price levels, Federal budget and trade deficits, and foreign market activity.

Book value: Net asset value of a company's securities, calculated as total assets minus intangible assets (goodwill, patents, etc.), minus current liabilities, minus any long-term liabilities and equity issues that have prior claim. The total net asset figure, divided by the number of bonds, shares of preferred stock, or shares of common stock, gives the net asset value, or book value, per bond or per share of preferred or common stock. Book value can be a guide in selecting stocks and is an indication of the ultimate value of securities in liquidation.

Capital gain: The difference between an asset's purchase price and selling price, when the difference is positive.

Carrier: See *vector*.

Cash burn rate: The rate at which a company uses cash, i.e., cash flow. Biotechnology companies are generally cash users, not generators. Cash burn rates are very high in the years before the first profits are made.

Cell: The smallest component of life. A membrane-bound protoplasmic body capable of carrying on all essential life processes.

Cell culture: The in vitro growth of cells isolated from multicellular organisms; also used to refer to any particular individual sample. (See also *tissue culture*.)

Cell fusion: The joining of the membrane of two cells, thus creating a hybrid cell that contains the nuclear matter from the parent cells.

Chloroplasts: Cellular organelles where photosynthesis occurs.

Chromosome: A thread-like structure contained in the nucleus of a cell that carries the genes that convey hereditary characteristics.

Claim: The part of a patent that points out and distinctly specifies the subject matter that the applicant regards as the invention. Claims represent the metes and bounds of the property to be protected.

Clone: A group of genetically identical cells or organisms produced asexually from a common ancestor.

Cloning: The process of producing clones. In rDNA technology, the process of using a variety of DNA manipulation procedures to produce multiple copies of a single gene or segment of DNA.

Common law: Law created by judicial decisions, as distinguished from law created by the enactments of legislatures. In the United States, common law encompasses that portion of the common law of England (including such acts of Parliament as were applicable) that had been adopted and was in force (in the United States) at the time of the American Revolution.

Common stock: Units of ownership of a public corporation. Owners typically are entitled to vote on the selection of directors and other important matters as well as to receive dividends on their holdings. In the event that a corporation is liquidated, the claims of secured and unsecured creditors and owners of bonds and preferred stock take precedence over the claims of those who own common stock. For the most part, however, common stock has more potential for appreciation.

Convertible debt: Debt that is exchangeable in another form for a prestated price. Convertible debt is appropriate for investors who want higher income than is available from common stock. Most commonly corporate securities (usually preferred shares or bonds) are purchased and later traded for common shares.

Copyright: A patent-like instrument that protects the expression of the idea, not the idea itself.

Cost of capital: The rate of return that a business could earn if it chose another investment with equivalent risk—in other words, the opportunity cost of the funds employed as the result of an investment decision or actual debt costs as part of the capital structure of the company.

Cultivar: Often used to refer to plant strains. (See *strain*.)

Culture deposits: See *&posits*.

Cytoplasm: The substance within a cell, external to the nuclear membrane.

Deoxyribonucleic acid (DNA): 20 The molecule that is the repository of genetic information in all organisms (with the exception of a small number of viruses in which the hereditary material is ribonucleic acid—RNA). The information coded by DNA determines the structure and function of the organism.

Deposit: Placement of micro-organisms, vectors, cells, plant tissues, seeds, and other biological materials that are newly isolated, novel, manmade, or not generally available to the public on a long-term basis in recognized patent depositories as part of the patent application process.

Depositories: A facility that accepts, maintains, classifies, and distributes cultures of micro-organisms, viruses, cells, and other genetic or biological material. Since 1983, a few depositories have begun to accept seeds and plant tissue cultures, but to date no depository has accepted any animal. Depositories can be public, private, for-profit, or nonprofit. Three depositories in the United States are recognized as International Depositary Authorities (IDAs) for patent purposes.

Enablement: A patent requirement for adequate public disclosure of an invention, enabling others in the relevant field to build or use the invention.

Endotoxin: A poison produced by some gram-negative bacteria present in the cellular membrane and released only on cell rupture; it is composed of complex lipopolysaccharide and is more heat-stable than protein exotoxins. (See also *exotoxin*.)

Enzyme: A protein that acts as a catalyst, speeding the rate at which a biochemical reaction proceeds, but not altering its direction or nature and without itself being destroyed.

Equity: In economics, the monetary value of property, or of an interest in a property, in excess of claims or liens against it. Also, ownership interest possessed by shareholders in a corporation stock as opposed to bonds. Shares can be common or preferred. In law, a body of law separate from common law that is designed to achieve a lawful result when legal procedure is inadequate.

Equity capital: Capital proceeds arising from the sale of company stock.

Equity investment: An investment made in a company in exchange for a part ownership of that company.

Eukaryote: A cell or organism with membrane-bound, structurally discrete nuclei and well-developed cell organelles. Eukaryotes include all organisms except viruses, bacteria, and blue-green algae. (See *prokaryote*.)

Exit opportunities: A term commonly used by venture capitalists to describe opportunities for investors to realize their investment or pullout of a deal. Examples are the public markets, mergers, and acquisitions.

Exotoxin: A poison excreted by some gram-negative or gram-positive organisms; it is composed of protein. (See also *endotoxin*.)

Fermentation: An anaerobic process used for growing micro-organisms for the production of various chemical or pharmaceutical compounds. Microbes are normally incubated under specific conditions in the presence of nutrients in large tanks called fermenters.

Gamete: A mature reproductive cell (haploid set of chromosomes) capable of fusing with a similar cell of the opposite sex to yield a zygote; it is also called a sex cell.

Gene: The fundamental physical and functional unit of heredity; an ordered sequence of nucleotide base pairs that produce a specific product or have an assigned function.

Gene pool: The sum total of genes in a breeding population.

Gene probe: A molecule of known structure and/or function used to locate and identify a specific region or nucleotide sequence of a genome. It is usually a piece of complementary DNA that has been labeled with a tracer substance, such as a dye or radioactive label.

Generic applied research: Research that falls between the extremes of basic and applied research. This research may be characterized as follows: 1) it is not committed to open-ended expansion of knowledge as university-like basic research usually is but is less specific than the typical industrial product or process development effort; 2) it has more well-defined objectives than basic research but is long term, relative to product or process development; and 3) it is high risk, in the sense that the stated objectives may fail and the resources committed may be lost for practical purposes.

Genetic engineering: Technologies (including rDNA methods) used to isolate genes from an organism, manipulate them in the laboratory, and insert them stably in another organism. (See also *recombinant DNA* and *biotechnology*.)

Genome: All the genetic material in the chromosomes of a particular organism; its size is generally given as its total number of base pairs.

Genome projects: Research and technology development efforts aimed at mapping and sequencing some or all of the genome of human beings and other organisms.

Genotype: The genetic constitution of an organism as distinguished from its physical appearance (phenotype).

Germ line: The earliest, primitive stage of development; *P* e “-g to tissues or cell lineages producing gametes. (See also *somatic*.)

Germplasm: The total genetic variability available to a species.

Gram negative/positive: A classification of bacteria based on differential staining utilizing the Gram-Wiegent procedure.

Host: A cell whose metabolism is used for growth and reproduction of a virus, plasmid, or other form of foreign DNA.

Hybrid: An offspring of a cross between two genetically unlike individuals.

Hybridization: The act or process of producing hybrids. More specifically, in cell culture, the formation of new cells as a result of the fusion of whole cells or cell parts of different parental origin. In rDNA, a procedure in which single-stranded nucleic acid segments are allowed to bind to identical or nearly identical sequences, forming double-stranded helices.

Hybridoma: A cell produced by fusing a myeloma cell (a type of tumor cell that divides continuously in culture and is “immortal”) and a lymphocyte (an antibody-producing cell). The resulting cell grows in culture and produces the specific antibody produced by the parent lymphocyte (a monoclonal antibody).

Immune response: The reaction of an organism to invasion by a foreign substance. Immune responses are often complex and may involve the production of antibodies in special cells (lymphocytes), as well as the removal of the foreign substance by other cells.

Immunoglobulin: See *antibody*.

In vitro: Literally, in glass; pertaining to a biological reaction taking place in an artificial apparatus.

In vivo: Literally, in life; pertaining to a biological reaction taking place in a living cell or organism.

Intellectual property: The area of law encompassing patents, trademarks, trade secrets, copyrights, and plant variety protection.

Linkage: The proximity of two or more markers (e.g., genes, RFLP markers) on a chromosome; the closer together the markers are, the lower the probability that they will be separated during meiosis and hence the greater the probability they will be inherited together.

Liquidity: Ability of an individual or company to convert assets into cash or cash equivalents without significant loss. Having a good amount of liquidity means being able to meet maturing obligations promptly, earn trade discounts, benefit from a good credit rating, and take advantage of market opportunities.

Locus (pi. loci): A specific, physical position on a chromosome occupied by a particular gene or its alleles.

Lymphocytes: See *B lymphocytes* and *T lymphocytes*.

Lymphokines: Proteins that mediate interactions among lymphocytes and are vital to proper immune function.

Microphage: A large specialized cell that originates in the bone marrow and is involved in many stages of the immune response, including consumption of foreign particles such as viruses and lymphokine production.

Marker: A gene with a known location on a chromosome and a clear-cut phenotype that is used as a point of reference when mapping another locus.

Market capitalization: Value of a corporation as determined by the market price of its issued and outstanding common stock. It is calculated by multiplying the number of outstanding shares by the current market price of a share. Institutional investors often use market capitalization as one investment criterion. Analysts look at market capitalization in relation to book or accounting value for an indication of how investors value a company’s future prospects.

Meiosis: The process of two consecutive cell divisions in the diploid progenitors of sex cells. Meiosis results in four rather than two daughter cells, each with a haploid set of chromosomes.

Merger: Combination of two or more companies, either through a pooling of interests, where the accounts are combined; a purchase, where the amount paid over and above the acquired company’s book value is carried on the books of the purchaser as goodwill; or a consolidation, where a new company is formed to acquire the net assets of the combining companies.

Mitochondria: Structures, or organelles, within cells where energy is produced and stored; they contain DNA molecules, inherited from the mother only, that replicate independently.

Monoclonal antibodies: Identical antibodies that recognize a single antigen; they are produced by a clone of specialized cells.

Mutation: Any change in DNA sequence that results in a new characteristic that can be inherited. (See also *polymorphism*.)

National treatment: A principle which provides that, with regard to the protection of industrial property, nationals of any country are to enjoy the advantages of the laws concerning industrial property granted to nationals of the country in which protection is being sought.

Neoplasm: A growth of tissue serving no physiological function (e.g., a tumor).

Nitrogen fixation: A biological process (usually associated with plants) whereby certain bacteria convert nitrogen in the air to ammonia, thus forming a nutrient essential for growth.

Novelty: One of the criteria used in the evaluation of patent applications. The invention or discovery must be new and not have previously existed through the work of others in order to be accepted on the grounds of novelty.

Obviousness: One of the criteria used in the evaluation of patent applications. Obviousness addresses the degree

of difference between the invention being evaluated and that which is already known or available. (See also *prior art*.)

Oncogene: A gene, one or more forms of which is associated with cancer. Many oncogenes are involved, directly or indirectly, in controlling the rate of cell growth.

Operating profit (or loss): The difference between the revenues of a business and the related costs and expenses, excluding income derived from sources other than its regular activities and before income deductions.

Organelle: A structure in the cytoplasm of a cell that is specialized in its ultrastructure and biochemical composition to serve a particular function (e.g., mitochondria, chloroplast).

Pathogenic: Able to cause disease; often utilized to express inactivation or lethality.

Phenotype: The observable characteristics of an organism produced by the interaction of the genotype and the environment

Plant patents: Plant patents protect asexually reproduced plant varieties, including cultivated sports, mutants, hybrids, and newly found seedlings. They cannot be obtained for tubers or wild varieties found in nature that are not asexually reproduced.

Plant variety protection: Patent-like protection for certain sexually produced plants.

Plasmid: An extrachromosomal, circular piece of DNA found in the cytoplasm and capable of replicating and segregating independently of the host chromosome.

Polymerase chain reaction (PCR): An in vitro process, through which repeated cycling of the reaction reproduces a specific region of DNA, yielding millions of copies from the original.

Polymorphism: Difference in DNA sequence among individuals. Genetic variation in more than 1 percent of a population would be considered useful for genetic linkage analysis. (See also *mutation*.)

Preferred stock: A class of stock that pays dividends at a specific rate and that has preference over common stock in the payment of dividends and the liquidation of assets. Preferred stock does not ordinarily carry voting rights.

Prior art: That which is already known or available, part of the criteria of obviousness used in evaluating patent applications. (See also *obviousness*.)

Prokaryote: An organism (e.g., bacteria, virus, and blue-green algae) whose DNA is not enclosed within a nuclear membrane. (See eukaryote.)

Protein: A polypeptide consisting of amino acids whose structure is determined by the sequence of nucleotides in DNA. Proteins, in their biologically active states function as catalysts in metabolism and as structural elements of cells and tissues.

Recombinant DNA (rDNA): A broad range of techniques involving the manipulation of the genetic material in organisms. The term is often used synonymously with genetic engineering. It is also used to describe a DNA molecule constructed by genetic engineering techniques composed of DNA from different individuals or species. (See also *biotechnology* and *genetic engineering*.)

Restriction enzymes: Certain bacterial enzymes that recognize short sequences of DNA and cut the DNA where these sites occur. Restriction enzymes can be used to isolate a gene that has been identified in the heredity material of an organism.

Restriction Fragment Length Polymorphisms (RFLPs): Variation in DNA fragment sizes cut by restriction enzymes; polymorphic sequences that are responsible for RFLPs are used as markers on genetic linkage maps.

Retrovirus: A family of viruses whose genetic material is RNA and is further characterized by the presence of reverse transcriptase in the viron; it is also called tumor virus.

Reverse transcriptase: An enzyme capable of directing the production of a single strand DNA copy from an RNA template.

Ribonucleic acid (RNA): A molecule existing in three forms-messenger RNA, transfer RNA, and ribosomal RNA-responsible for translating the genetic information encoded by an organism (i.e., DNA) into a protein product; the heredity material of some viruses.

Right of priority: A right that enables any resident or national regardless of nationality to first file a patent application in a country and thereafter file the same patent application in another country, thus ensuring that the subsequently filed applications enjoy the right of priority established by the first filing date.

Royalty: Payment to the holder for the right to use property such as a patent, copyrighted material, or natural resources. Royalties are set in advance as a percentage of income arising from the commercialization of the owner's rights or property.

Somatic: Pertaining to all diploid cells of an organism except the germ line, i.e., sex cells-sperm and eggs (See also *germ*.)

Species: Reproductive communities and populations that are distinguished by their collective manifestation of ranges of variation with respect to many different characteristic and qualities.

Specifications: In law, relating to patents, machinery, and building contracts, a particular or detailed statement of the various elements involved.

Statute: A law enacted and established by the legislative branch of a government.

Strain: A pure culture of organisms within a species, characterized by one or more particular physical or genetic properties.

Strategic alliances: Associations between separate business entities that fall short of a formal merger but that unite certain agreed on resources of each entity for a limited purpose. Examples include equity purchase, licensing and marketing agreements, research contracts, and joint ventures.

T lymphocyte: Specialized white blood cells involved in the immune response of vertebrates that originate in the bone marrow, mature in the thymus gland, and produce some lymphokines. Subclasses of T lymphocytes are important to antibody production and the enhancement or suppression of an immune response. (See also *B lymphocyte*.)

Technology transfer: The process of converting scientific knowledge into useful products. This most often refers to the flow of information between public and private sectors or between countries.

Tissue culture: *In vitro* growth in a nutrient medium of cells isolated from tissue. (See also *cell culture*.)

Tissue plasminogen activator (tPA): A genetically engineered protein drug that helps to dissolve blood clots.

Tort law: Derived from legal principles governing wrongful acts, except those involving a breach of

contract, committed against a person or property for which civil action would be valid.

Toxin: See *endotoxin* and *exotoxin*.

Transgenic animals: Animals whose hereditary DNA has been augmented by the addition of DNA from a source other than parental germplasm, usually from another animal or human, and done in a laboratory using rDNA techniques.

Transgenic plants: Plants whose hereditary DNA has been augmented by the addition of DNA from a source other than parental germplasm, usually from a related species, using rDNA techniques.

Utility patents: These are patents issued to inventors of any new and useful process, machine, manufacture, or composition or any new and useful improvement thereof.

Vector: A DNA molecule used to introduce foreign DNA into host cells.

Venture capital: An important source of financing for start-up companies that entails some investment risk but offers the potential for above-average future profits.

Virus: Any of a large group of organisms containing genetic material but unable to reproduce outside a host cell.