

Glossary

PRONUNCIATION GUIDE FOR GLOSSARY

Many of the terms in the glossary are followed by informal phonetic spellings in parentheses. A precise rendering of the pronunciation of each term from scratch is impossible without the use of a full-scale phonetic system, such as can be found in an unabridged dictionary. All that we intend is that a speaker (and speller) of English be able to form a workable idea of a term's pronunciation. Only words or word elements whose proper pronunciation may not be obvious are provided with these informal phonetic spellings.

In these informal phonetic spellings, stressed syllables are set in boldface type. The intended pronunciations of some of the letters and letter combinations we have used are:

Letter(s)	Pronunciation.
ah	Broad a sound, as in father , rotten
ay	Long a sound, as in ray , fade
g	Hard g sound, as in good , rug
i	Short i sound, as in sit , pacific , except when used with final e (e.g., tide) or in igh
igh	as in sight
j	as in jump (used for soft g , as in rage)
o alone or preceded by consonant	long o sound as in no , boat
o followed by consonant	short o sound, as in fox (also rendered by ah)
oe (e.g., doe)	long o sound as in foe
oy	as in toy , soy
uh	unaccented syllable, as in biology (bye-ahl-uh-jee), telephone (tel-uh-fone), arrest (uh-rest)
ye	long i sound, as in dye , rye , side
zh	as in revision , pleasure

PREFIXES AND COMBINING FORMS USED AS PREFIXES

anti-, ant-. Against, inhibiting.
auto-. Self, independent.
bio-. Life.
cardi-, cardio-. Heart.
cary-, caryo-. Nucleus, nuclear.
centi-. Hundred.
cyt-, cyto-. Cell.
de-. From, removal.
dermato-. Skin.
di-. Two, double.
ecto-. Outside.
endo-. Within.
exo-, ex-. Outside, without.
hem-, hema-, hemo-. Blood.
hetero-. Different.
hist-, histo-. Tissue.
holo-. Complete, homogeneous.
hom-, homo-. Like, similar.
hyp-, hypo-. Deficiency, below.
hyper-. Excessive, above normal.
inter-. Between, among.
intra-. Within, into.
iso-. Equality, similarity.
kary-, karyo-. Nucleus, nuclear.
leuk-, leuko-. White.
macro-. Large.
meso-. Middle.
micro-. Small.

mono-. One.
multi-. Many.
myco-. Fungus.
necro-. Dead.
neo-. New.
noso-. Disease.
nucle-, nucleo-. Nucleus, nuclear.
olig-, oligo-. Few, deficiency.
oxy-. Oxygen in a compound.
pan-. All, many.
path-, patho-. Disease, pathologic.
peri-. About, around.
pneumo-. Pulmonary, respiration.
poly-. Many, diverse.
post-. After, behind.
pre-. Before.
pseudo-. False.
pyo-. Pus.
sacchar-, sacchari-, saccharo-. Sugar.
syn-, sym-. With, together.
tax-, taxi-, taxo-. Arrangement.
therm-, thermo-. Heat, temperature.
thi-, thio-. Sulfur present.
tox-, toxi-, toxo-. Poisonous, toxin, poison.
trans-. Through, across.
trich-, tricho-. Hair, filament.

SUFFIXES AND COMBINING FORMS USED AS SUFFIXES

-algia. Pain, suffering.
-ase. Enzyme.
-cide. Killer, killing.
-cyte. Cell.
-emia. Condition of blood.
-ia. Condition; abnormal or pathologic condition.
-iasis. Diseased condition.
-ism. Condition or disease.
-itis. Inflammation of a part.
-logy. Field of study.
-lysis. Dissolution or disintegration.
-oma. Tumor, neoplasm.
-osis. Process, disease, cause of disease.
-otic. Related to causing a process or condition.
-otomy. A cutting into.
-ous. Having or pertaining to.
-pathia. Disease.
-penia. Deficiency.
-phage-, -phag. Ingesting, breaking down.
-rrhage-, -rrhagia. Abnormal or excessive discharge.
-rrhea. Discharge.
-scope. Instrument for seeing or examining.
-taxia-, -taxis. Arrangement or order.
-trophy. Nutrition, growth.
-tropic. Turning toward, having an affinity for.

- abiogenesis** (ay-bye-o-jen-uh-sis, ab-ee-o-jen-uh-sis). See **spontaneous generation**. (Abio- means nonliving; genesis means origin.)
- abiotic** (ab-bye-ot-ik, ab-ee-ot-ik). Pertaining to or characterized by the absence of living organisms.
- abscess** (ab-sess). A localized collection of pus in a cavity formed by tissue disintegration.
- acervulus**. An asexual fruiting body or reproductive structure in a fungus.
- acid curd**. Milk protein coagulated by acid.
- acid dye**. A dye consisting of an acidic organic grouping of atoms (anion), which is the actively staining part, combined with a metal; the dye has affinity for cytoplasm.
- acid-fast**. Retaining the initial stain and difficult to decolorize with acid alcohol. A property of certain bacteria.
- actinomycetes** (ak-tin-o-mye-seets). Gram-positive bacteria that are characterized by the formation of branching filaments.
- activated-sludge process**. The use of biologically active sewage sludge to hasten the breakdown of organic matter in raw sewage during secondary treatment.
- active immunity**. Specific resistance to disease acquired by individuals as a result of their own reactions to pathogenic microorganisms or to the products of such organisms.
- active transport**. The energy-requiring pumping of ions or other solutes across a cell membrane from a lower to a higher concentration.
- adaptive enzyme**. An enzyme produced by an organism in response to the presence of the enzyme's substrate or a related substance. Also called **induced enzyme**.
- adenine** (ad-un-need). A purine component of nucleosides, nucleotides, and nucleic acids.
- adenosine** (uh-den-o-seen). A mononucleoside consisting of adenine and D-ribose, produced by the hydrolysis of adenosine monophosphate.
- adenosine triphosphate** (trye-fos-fate). A compound of one molecule each of adenine and D-ribose and three molecules of phosphoric acid; it plays an important role in energy transformations in metabolism. Abbreviation: ATP.
- adenoviruses**. A group of icosahedral double-stranded DNA viruses.
- adjuvant** (aj-oo-vunt). A substance that when injected together with antigen increases antibody production.
- aerobe** (air-obe). An organism that requires oxygen for growth and can grow under an air atmosphere (21% oxygen). Compare **anaerobe**.
- aerosol**. Atomized particles suspended in air.
- aflatoxin** (aff-luh-tahk-sin). The toxin produced by some strains of the fungus *Aspergillus flavus*; a carcinogen.
- agar** (ah-gar). A dried polysaccharide extract of red algae (*Rhodophyceae*) used as a solidifying agent in microbiological media.
- agglutination** (uh-gloo-tin-ay-shun). The clumping of cells.
- agglutinin** (uh-gloo-tin-in). An antibody capable of causing the clumping or agglutination of bacteria or other cells.
- akinetes**. Thick-walled single-celled nonmotile asexual resting spores formed by the thickening of the parent cell wall; formed by some cyanobacteria.
- alga**, pl. **algae** (al-guh, al-jee). Any member of a heterogeneous group of eucaryotic, photosynthetic, and unicellular or multicellular organisms.
- alleles** (uh-leelz). Two genes that are alternative occupants of the same chromosomal locus on a pair of homologous chromosomes.
- allergy**. A type of antigen-antibody reaction marked by an exaggerated physiological response to a substance in sensitive individuals.
- allosteric enzymes** (al-o-stehr-ik, al-o-steer-ik). Regulatory enzymes with a binding or catalytic site for the substrate and a different site (the **allosteric site**) where a modulator acts.
- allosteric site**. See **allosteric enzymes**.
- alveoli**. Air sacs of the lung.
- amino acid** (uh-meen-o). An organic compound containing both amino ($-\text{NH}_2$) and carboxyl ($-\text{COOH}$) groups.
- aminoglycoside antibiotics**. A class of antibiotics which disrupt the normal synthetic sequence of protein synthesis.
- ammonification** (uh-mon-i-fi-kay-shun, uh-mo-nif-i-kay-shun). The decomposition of organic nitrogen compounds, e.g., proteins, by microorganisms with the release of ammonia.
- amphitrichous** (am-fit-rik-us). Having a single flagellum at each end of a cell.
- amylase** (am-i-lase, am-i-laze). An enzyme that hydrolyzes starch.
- anabolism** (uh-nab-o-lizm). The synthesis of cell constituents from simpler molecules, usually requiring energy. Compare **catabolism**.
- anaerobe** (an-uh-robe). An organism that does not use O_2 to obtain energy, cannot grow under an air atmosphere, and for which O_2 is toxic. Compare **aerobe**.

- anaerobic respiration.** Respiration under anaerobic conditions in which a terminal electron acceptor other than oxygen is involved.
- anamnestic response** (an-am-ness-tik). The heightened immunologic reaction to a second exposure to an antigen.
- anaphylatoxin.** A complement-derived peptide, C5a, that causes the release of histamine from mast cells.
- anaphylaxis** (an-uh-fi-lak-sis). Hypersensitivity in an animal following the parenteral injection of an antigen.
- anaplasia** (an-uh-play-zhub). Structural abnormality in a cell or cells.
- angstrom** (Å). A unit of length equal to 10^{-8} cm (1/100,000,000 cm). Conventionally used for measuring wavelengths. Also used to express dimensions of some intracellular structures of microbes.
- antagonism.** The killing, injury, or inhibition of growth of one species of microorganism by another when one organism adversely affects the environment of the other.
- antheridium, pl. antheridia.** A male gametangium.
- anthramycin.** An antitumor antibiotic.
- antibiosis** (an-tee-bye-o-sis). An antagonistic association between two organisms in which one is adversely affected.
- antibiotic** (an-tee-bye-ot-ik). A substance of microbial origin that has antimicrobial activity in very small amounts.
- antibody** (an-ti-bod-ee). Any of a class of substances (proteins) produced by an animal in response to the introduction of an antigen.
- anticodon** (an-tee-ko-don). A sequence of three nucleotides (in a tRNA) complementary to a codon triplet in mRNA.
- antigen** (an-ti-jen). A substance that when introduced into an animal body stimulates the production of specific substances (antibodies) that react or unite with the substance introduced (antigen).
- antigenic determinant** (an-ti-jen-ik). The part of an antigen molecule that, as the structural complement of certain chemical groupings on certain antibody molecules, determines the specificity of the antigen-antibody reaction.
- antimicrobial agent** (an-tee-migh-kro-bee-ul). Any chemical or biologic agent that either destroys or inhibits the growth of microorganisms.
- antiseptic.** Acting against or opposing sepsis, putrefaction, or decay by either preventing or arresting the growth of microorganisms.
- antiserum** (an-tee-seer-um). Blood serum that contains antibodies.
- antitoxin** (an-tee-tahk-sin). An antibody capable of uniting with and neutralizing a specific toxin.
- aperture.** The magnitude of the angle subtended by the optical axis and the outermost rays still covered by the objective.
- aplanospore** (ay-plan-o-spore). A nonmotile spore; an abortive zoospore.
- apoenzyme** (ap-o-en-zime). The protein moiety (portion) of an enzyme.
- apophysis.** The base of the sporangium.
- apothecium.** A sexual fruiting body in a fungus.
- archaeobacteria.** A major group of bacteria that includes the methanogens, the red extreme halophiles, and the thermoacidophiles, and which diverged from other bacteria at a very early stage in evolution. Also called archaeobacteria.
- arthropod** (ahr-thro-pod). An invertebrate with jointed legs, such as an insect or a crustacean.
- arthrospore** (ahr-thro-spore). An asexual spore formed by the fragmentation of the mycelium.
- ascitic fluid** (uh-sit-ik). Serous fluid that accumulates abnormally in the peritoneal cavity.
- Ascomycetes** (ass-ko-migh-see-teez). A class of fungi distinguished by the ascus.
- ascospore** (ass-ko-spore). A sexual spore, characteristic of the Ascomycetes, produced in a saclike structure (an ascus) after the union of the two nuclei.
- ascus** (ass-kus). A saclike structure, characteristic of the Ascomycetes, in which ascospores are produced.
- asepsis** (ay-sep-sis). A condition in which harmful microorganisms are absent. Adjective: aseptic (ay-sep-tik).
- aseptic technique.** Precautionary measures taken to prevent contamination.
- assay** (ass-ay). The qualitative or quantitative determination of the components of a material, such as a drug.
- assimilation** (uh-sim-i-lay-shun). The conversion of nutritive material into protoplasm.
- asymptomatic** (ay-sim-tuh-mat-ik). Exhibiting no symptoms.
- ATP.** See adenosine triphosphate.
- attenuation** (un-ten-yoo-ay-shun). A weakening; a reduction in virulence.
- autoclave** (aw-toe-klave). An apparatus using pressurized steam for sterilization.

autogenous vaccine (aw-toj-uh-nus). A vaccine prepared from bacteria isolated from the patient to be treated.

autoimmune disease (aw-toe-im-yoon). A condition in which the body develops an immunological reaction against its own tissues.

autolysis (aw-tol-i-sis). The disintegration of cells by the action of their own enzymes.

autotroph (aw-toe-trofe). A microorganism that uses inorganic materials as a source of nutrients; carbon dioxide is the sole source of carbon. Compare **heterotroph**.

auxotrophic mutant (awk-so-trofik). An organism having a growth requirement of specific nutrients not necessary in the parental strain.

axenic culture (ay-zen-ik, ay-zee-nik). A microorganism of a single species, e.g., a bacterium, fungus, alga, or protozoan, growing in a medium free of other living organisms.

bacillus (buh-sil-us). Any rod-shaped bacterium.

bacteremia (bak-tuh-ree-mee-uh). A condition in which bacteria are present in the bloodstream.

bacterial filter. A special type of filter through which bacterial cells cannot pass.

bactericide (bak-teer-i-side). An agent that destroys bacteria.

bacterin (bak-tuh-rin). A suspension of killed or attenuated bacteria used for artificial immunization.

bacteriochlorophyll (bak-teer-ee-oklor-uh-fil). A chlorophyll-like pigment possessed by anoxygenic photosynthetic bacteria.

bacteriocin (bak-teer-ee-o-sin). See **bacteriocinogenic factor**.

bacteriocinogenic factor (bak-teer-ee-o-sin-o-jen-ik). A plasmid in

some bacteria that determines the formation of bacteriocins, which are proteins that kill the same or closely related species of bacteria.

bacteriolysin (bak-teer-ee-o-lye-sin). A substance that causes the disintegration of bacteria.

bacteriophage (bak-teer-ee-o-fayj). A virus that infects bacteria and causes the lysis of bacterial cells.

bacteriorhodopsin. A purple pigment that occurs in the cytoplasmic membrane of the group of archaeobacteria called the red extreme halophiles; similar to the rhodopsin that occurs in the retinal rods of higher vertebrates.

bacteriostasis (bak-teer-ee-o-stay-sis). The inhibition of the growth and reproduction of bacteria without killing them.

bacteriostatic. Inhibiting the growth of bacteria without killing them.

bacterium, pl. **bacteria** (bak-teer-ee-um, bak-teer-ee-uh). Any of a group of diverse and ubiquitous prokaryotic single-celled microorganisms.

bacteroids. The morphological form of *Rhizobium* cells within the root nodules of legumes.

barophile. An organism that grows under conditions of high hydrostatic pressure.

basic dye. A dye consisting of a basic organic grouping of atoms (cation), which is the actively staining part, combined with an acid, usually inorganic; the dye has affinity for nucleic acids.

Basidiomycetes (bah-sid-ee-o-mye-see-teez). A class of fungi that form basidiospores.

basidiospore (bah-sid-ee-o-spore). A sexual spore produced following the union of two nuclei on a specialized clublike structure

known as a basidium.

basidium (bah-sid-ee-um). A club-shaped specialized structure of the *Basidiomycetes* on which are borne the exogenous basidiospores.

BCG vaccine. *Bacillus Calmette-Guérin* vaccine; an attenuated strain of *Mycobacterium bovis* used to immunize against tuberculosis.

benthos (ben-thahss). A collective term for the organisms living along the bottom of oceans and lakes.

Bergey's Manual. An international reference work which classifies and describes bacteria.

beta hemolysis. A colorless, clear, sharply defined zone of hemolysis surrounding certain bacterial colonies growing on blood agar.

binomial nomenclature (bye-no-mee-ul). The scientific method of naming plants, animals, and microorganisms, so-called because species names are binomial, i.e., consist of two terms.

biochemical oxygen demand. A measure of the amount of oxygen consumed in biological processes that break down organic matter in water; a measure of the organic pollutant load. Abbreviation: BOD.

biodegradable (bye-o-dee-grade-uh-bul). Capable of being broken down by microorganisms.

biogenesis (bye-o-jen-uh-sis). The production of living organisms only from other living organisms. Compare **spontaneous generation**.

biogeochemical agents (bye-o-jee-o-kem-i-kul). Microorganisms that mineralize organic carbon, nitrogen, sulfur, phosphorus, and other compounds.

bioluminescence (bye-o-loo-min-

- ess-unce**). The emission of light by living organisms.
- biomass** (bye-o-mass). The mass of living matter present in a specified area.
- biosphere** (bye-o-sfeer). The zone of the earth that includes the lower atmosphere and the upper layers of soil and water.
- biota** (bye-o-tuh). The animal, plant, and microbial life characterizing a given region.
- biovar**. A subdivision of a species based upon physiological characteristics. Also called *biotype*.
- blastospore** (blass-toe-spore). A spore produced by a budding process along the hypha or by a single cell.
- blood plasma**. The fluid portion of blood. Also called *plasma*.
- blood serum**. The fluid expressed from clotted blood or clotted blood plasma.
- bloom**. A colored area on the surface of a body of water caused by heavy growth of plankton.
- BOD**. See **biochemical oxygen demand**.
- botulism** (bot-choo-lizm). Food poisoning due to the toxin of *Clostridium botulinum*.
- Braun's lipoprotein**. A cell-wall lipoprotein which anchors the outer membrane of enteric Gram-negative bacteria to the peptidoglycan layer.
- bronchi**. Branches of the trachea.
- Breed count**. A microscopic method of counting bacteria in a dried, stained film of milk.
- Brownian motion** (brown-ee-un). A peculiar dancing motion exhibited by finely divided particles and bacteria in suspension, due to bombardment by the molecules of the fluid.
- bubo**. A swollen infected lymph node.
- budding**. A form of asexual reproduction typical of yeast, in which a new cell is formed as an outgrowth from the parent cell.
- buffer**. Any substance in a fluid that tends to resist the change in pH when acid or alkali is added.
- calorie**. A unit of heat; the amount of heat required to raise the temperature of 1 g of water by 1°C.
- capsid**. The protein coat of a virus.
- capsomere** (kap-so-meer). A morphologic subunit of a capsid as seen by electron microscopy.
- capsule**. An envelope or slime layer surrounding the cell wall of certain microorganisms.
- carotenoid**. A water-insoluble pigment, usually yellow, orange, or red, which consists of a long aliphatic polyene chain composed of isoprene units.
- carrier**. A person in apparently good health who harbors a pathogenic microorganism.
- catabolism** (kuh-tab-o-lizm). The dissimilation, or breakdown, of complex organic molecules, releasing energy. A part of the total process of metabolism. Compare **anabolism**.
- catalase** (kat-uh-lase, kat-uh-laze). An enzyme that converts hydrogen peroxide to water and oxygen.
- catalyst** (kat-uh-list). Any substance that accelerates a chemical reaction but remains unaltered in form and amount.
- cavitation** (kav-i-tay-shun). The use of high-frequency sound waves in liquid to produce small bubbles that collapse violently, disintegrating microbial cells.
- cecum**. The distended intestinal pouch into which open the ileum, the colon, and the appendix.
- cell**. The microscopic, functionally and structurally basic unit of all living organisms.
- cellulase** (sel-yoo-lase). An extracellular enzyme that hydrolyzes cellulose to produce cellobiose.
- cellulose**. A complex polysaccharide consisting of many glucose molecules; the characteristic structural material of plant cell walls.
- cell wall**. A rigid external covering of the cytoplasmic membrane.
- centrifuge**. An apparatus that uses centrifugal force to separate or remove particulate matter suspended in a liquid.
- chelating agent**. An organic compound in which atoms form more than one coordinate bond with metals, keeping them in solution.
- chemiosmotic theory**. A theory which states that the energy liberated by the oxidation-reduction reactions of a respiratory chain can be conserved in the form of an electrochemical gradient of protons across the membrane; this gradient then is used to drive the synthesis of ATP.
- chemoautotroph** (kee-mo-aw-toe-trofe). An organism that obtains energy by oxidizing inorganic compounds. Carbon dioxide is the sole source of carbon.
- chemolithotroph** (kee-mo-lith-o-trofe). An organism that uses inorganic compounds as electron donors and relies on chemical compounds for energy.
- chemoreceptor**. Proteins located on the cytoplasmic membrane which sense gradients and are specific for various attractants and repellents.
- chemostat** (kee-mo-stat, kem-o-stat). A device for maintaining organisms in continuous culture; it regulates the growth rate of the organisms by regulating the concentration of an essential nutrient.
- chemotaxis** (kee-mo-tak-sis). The

- movement of an organism in response to a chemical stimulus.
- chemotherapy** (kee-mo-thehr-uh-pee). The treatment of a disease by the use of chemicals.
- chemotroph** (kee-mo-trofe). An organism that uses chemical compounds for energy. Compare **phototroph**.
- chitin**. A polymer of *N*-acetylglucosamine present in the covering layer of arthropods and in the cell walls of many fungi.
- chlamydospore** (klam-id-o-spore). A thick-walled, resistant spore formed by the direct differentiation of the cells of the mycelium.
- chlorophyll** (klor-uh-fil). A light-trapping green pigment essential as an electron donor in photosynthesis.
- chloroplast** (klor-o-plast). A cell plastid (specialized organelle) in plants and algae that contains chlorophyll pigments and functions in photosynthesis.
- chromatin body**. Bacterial nuclear material.
- chromatophore**. A pigment-containing body; specifically applied to chlorophyll-bearing granules in bacteria.
- chromogenesis**. The production of pigments by microorganisms.
- chromosome** (kro-muh-sohm). A gene-containing filamentous structure in a cell nucleus; the number of chromosomes per cell nucleus is constant for each species.
- cilium**, pl. **cilia** (sil-ee-um, sil-ee-uh). On certain eucaryotic cells a relatively short hairlike appendage which is capable of a vibratory beating or lashing movement.
- cis-trans**. A genetic analysis in which the action of two genes on the same chromosome is compared with their action when on different chromosomes.
- cistron** (siss-trahn). The genetic unit that carries information for the synthesis of a single enzyme or protein molecule; determined by the *cis-trans* complementation test.
- citric acid cycle**. See **Krebs cycle**.
- classification**. The systematic arrangement of units (e.g., organisms) into groups, and often further arrangement of those groups into larger groups.
- clone** (klohn). A population of cells descended from a single cell.
- coagulase** (ko-ag-yoo-lase, ko-ag-yoo-laze). An enzyme, produced by pathogenic staphylococci, that causes the coagulation of blood plasma.
- coccus** (kock-us). A spherical bacterium.
- codon** (ko-dahn). A sequence of three nucleotide bases (in mRNA) that codes for an amino acid or the initiation or termination of a polypeptide chain.
- coenocytic** (see-no-sit-ik). A term applied to a cell or an aseptate hypha containing numerous nuclei.
- coenzyme** (ko-en-zime). The non-protein portion of an enzyme.
- coenzyme F₄₂₀**. A flavinlike coenzyme unique to methanogenic bacteria and which fluoresces under ultraviolet light.
- coenzyme M**. A coenzyme unique to methanogenic bacteria and which is involved in methyl transfer reactions.
- cofactors**. Metal ions which function in combination with the enzyme protein and are regarded as coenzymes.
- coliphage** (ko-li-fayj). A virus that infects *Escherichia coli*.
- colony**. A macroscopically visible growth of microorganisms on a solid culture medium.
- colony-forming unit**. The cell or aggregate of cells which gives rise to a single colony in the plate-count technique. Abbreviation: cfu.
- colostrum**. The first milk secreted by a mother after giving birth.
- columella**. The dome-shaped apex of the sporangiophore in some phycomycetes.
- commensalism** (kuh-men-suh-lizm). A relationship between members of different species living in proximity (the same cultural environment) in which one organism benefits from the association but the other is not affected.
- communicable**. Pertaining to a disease whose causative agent is readily transferred from one person to another.
- competitive inhibition**. The inhibition of the action of an enzyme by a nonsubstrate molecule occupying the site on the enzyme that would otherwise be occupied by the substrate.
- complement** (kom-pluh-ment). A normal thermolabile protein constituent of blood serum that participates in antigen-antibody reactions.
- complement fixation**. The binding of complement to an antigen-antibody complex so that the complement is unavailable for a subsequent reaction.
- compromised host**. A person already weakened with debilitating disease.
- conidiophore** (ko-nid-ee-o-fore). A hypha which bears conidiospores.
- conidiospores** (ko-nid-ee-o-spore). Any asexual spores which are formed at the tip of a hypha and which are not enclosed within a sac (as distinguished from sporangiospores). Also called *conidia*.
- conidium** (ko-nid-ee-um). An asex-

- ual spore that may be one-celled or many-celled and may be of many sizes and shapes. Also called *conidiospore*.
- conjugation.** A mating process characterized by the temporary fusion of the mating partners and the transfer of genes. Conjugation occurs particularly in unicellular organisms.
- conjunctiva.** The membrane covering the eyeball and lining the eyelids.
- contamination.** The entry of undesirable organisms into some material or object.
- cord factor.** A toxic mycolic acid derivative, trehalose dimycolate, which occurs in the cell walls of corynebacteria and mycobacteria.
- crustose.** A flat crustlike growth of lichens.
- culture.** A population of microorganisms cultivated in a medium.
- cyst.** A thick-walled dormant form of an organism which is resistant to desiccation, e.g., the cysts formed by certain bacteria such as *Azotobacter* or by various protozoa.
- cytochrome (sigh-toe-krome).** One of a group of iron porphyrins that serve as reversible oxidation-reduction carriers in respiration.
- cytokinesis.** The division of the cytoplasm following nuclear division.
- cytolysis.** The dissolution or disintegration of a cell.
- cytopharynx.** The region through which nutrients must pass to be enclosed in a food vacuole.
- cytoplasm (sigh-toe-plazm).** The living matter of a cell between the cell membrane and the nucleus.
- cytoplasmic membrane.** A thin layer under the cell wall consisting mainly of phospholipids and proteins; it is responsible for the selective permeability properties of the cell. Also called *plasma membrane*.
- cytostome.** The opening through which food is ingested in ciliates.
- DAP. Diaminopimelic acid.** A seven-carbon diamino acid that occurs as a component of cell-wall peptidoglycan in some bacteria.
- dark-field microscopy.** A type of microscopic examination in which the microscopic field is dark and any objects, such as organisms, are brightly illuminated.
- deaminase.** An enzyme involved in the removal of an amino group from a molecule; ammonia is liberated.
- deamination (dee-am-i-nay-shun).** The removal of an amino group, especially from an amino acid.
- decarboxylase.** An enzyme that liberates carbon dioxide from the carboxyl group of a molecule, e.g., an amino acid.
- decarboxylation (dee-kar-bock-silay-shun).** The removal of a carboxyl group ($-\text{COOH}$).
- decimal reduction time.** The amount of time at a particular temperature sufficient to reduce a viable microbial population by 90 percent.
- dehydrogenase.** An enzyme which oxidizes a substrate by removing hydrogen atoms from it.
- demineralization (dee-min-ur-ul-i-zay-shun).** The process by which acid produced by bacteria dissolves the calcium salts of tooth enamel.
- denature (dee-nay-chur).** To modify, by physical or chemical action, the structure of an organic substance, especially a protein.
- denitrification (dee-nigh-tri-fi-kay-shun).** The reduction of nitrates to nitrogen gas.
- dental plaque (plak).** An aggregation of bacteria and organic material on the tooth surface.
- deoxyribonucleic acid (dee-ahk-see-rye-bo-new-klee-ik).** The carrier of genetic information; a type of nucleic acid occurring in cells, containing phosphoric acid, D-2-deoxyribose, adenine, guanine, cytosine, and thymine. Abbreviation: DNA.
- deoxyribose (dee-ahk-see-rye-bose, dee-ahk-see-rye-boze).** A five-carbon sugar having one oxygen atom fewer than the parent sugar, ribose; a component of DNA.
- dermato-.** A prefix meaning "skin."
- dermatotropic (dur-muh-toe-trope-ik).** Having a selective affinity for the skin.
- dermis.** The connective tissue layer under the epidermis.
- desmid.** Any of several freshwater algae.
- detergent.** A synthetic cleaning material containing surface-active agents which do not precipitate in hard water.
- dextran (deks-tran).** A polysaccharide (glucose polymer) produced by a wide range of microorganisms, sometimes in large amounts.
- dialysis (dye-al-i-sis).** The separation of soluble substances from colloids by diffusion through a semipermeable membrane.
- dialyze.** To pass through a semipermeable membrane.
- diatomite.** Silica-containing shells (cell walls) resulting from centuries of growth of diatoms.
- diauxic growth (dye-awk-sik).** Growth in two separate phases due to the preferential use of one carbon source over another; be-

- tween the phases a temporary lag occurs.
- differential stain.** A procedure using a series of dye solutions or staining reagents to bring out differences in microbial cells.
- dilution, serial.** Successive dilution of a specimen; e.g., a 1:10 dilution equals 1 ml of specimen plus 9 ml of diluent; a 1:100 dilution equals 1 ml of a 1:10 dilution plus 9 ml of diluent.
- dimorphic** (dye-more-fik). Occurring in two forms.
- dipicolinic acid.** A compound found in large amounts in endospores. Abbreviation: DPA.
- diplobacilli** (dip-lo-buh-sil-eye). Bacilli occurring in pairs.
- diplococci** (dip-lo-kahk-sigh). Cocci occurring in pairs.
- diploid** (dip-loyd). Having chromosomes in pairs the members of which are homologous; having twice the haploid number.
- disaccharide** (dye-sak-uh-ride). A sugar composed of two monosaccharides.
- disinfectant.** An agent that frees from infection by killing the vegetative cells of microorganisms.
- dissimilation** (dis-sim-i-lay-shun). Chemical reactions that release energy by the breakdown of nutrients.
- DNA.** See **deoxyribonucleic acid.**
- droplet nucleus.** Airborne particle containing viable microbes.
- ecology.** The study of the interrelationships that exist between organisms and their environment.
- ecosystem.** A functional system which includes the organisms of a natural community together with their environment.
- edema** (eh-dee-muh). The excessive accumulation of fluid in body tissue.
- effluent** (eff-loo-unt). The liquid waste of sewage and industrial processing.
- electrophoresis.** An electrochemical process in which suspended particles with an electric charge migrate in a solution under the influence of an electric current.
- endemic** (en-dem-ik). With reference to a disease, one that has a low incidence but which is constantly present in a particular geographic region.
- endergonic** (en-dur-gahn-ik). Describing or pertaining to a chemical reaction which requires the input of free energy in order to proceed.
- endoenzyme** (en-doe-en-zime). An enzyme formed within the cell and not excreted into the medium. Also called *intracellular enzyme*.
- endoflagella.** See **periplasmic flagella.**
- endogenous** (en-dahj-uh-nus). Produced or originating from within.
- endonuclease** (en-doe-new-klee-ase, en-doe-new-klee-aze). An enzyme that excises a damaged segment of DNA.
- endophytic** (en-doe-fit-ik). Describing or pertaining to algae that are not free-living but live in other organisms.
- endoplasmic reticulum** (en-doe-plax-mik ree-tik-yoo-lum). An extensive array of internal membranes in a eucaryotic cell.
- endospore** (en-doe-spore). A thick-walled spore formed in the bacterial cell. Very resistant to physical and chemical agents.
- endosymbiont.** An organism that lives within the body of the host without a deleterious effect on the host.
- endothermic** (en-doe-thur-mik). Describing or pertaining to a chemical reaction in which energy is consumed overall.
- endotoxin** (en-doe-tahk-sin). A heat-stable toxin which consists of lipopolysaccharide; it is located in the outer membrane of Gram-negative bacteria and is liberated only when the bacteria disintegrate.
- enteric** (en-tehr-ik). Pertaining to the intestines.
- enterotoxin** (en-tur-o-tahk-sin). A toxin specific for cells of the intestine.
- enzyme** (en-zime). An organic catalyst produced by an organism. See also **adaptive enzyme**, **endoenzyme**, **exoenzyme**, and **enzyme, constitutive**.
- enzyme, adaptive.** See **adaptive enzyme**.
- enzyme, constitutive.** An enzyme whose formation is not dependent upon the presence of a specific substrate.
- enzyme, inducible.** See **adaptive enzyme**.
- enzyme, intracellular.** See **endoenzyme**.
- epicellular.** On the surface of host cells.
- epidemic** (ep-i-dem-ik). With reference to a disease, one that displays a sudden increase in incidence in a particular geographic region.
- epidemiology** (ep-i-dee-mee-ahl-uh-jee, ep-i-dem-ee-ahl-uh-jee). The study of the occurrence and distribution of disease.
- epidermis.** The outer surface of skin.
- episome** (ep-i-sohm). A plasmid which can integrate reversibly with the chromosome of its bacterial host; in the integrated state it behaves as part of the chromosome, but it is also able to multiply independently of the chromosome.

- esterase.** One of a group of enzymes that hydrolyze esters.
- estuary.** A semienclosed coastal body of water which opens to the sea.
- etiology** (ee-tee-ahl-uh-jee). The study of the cause of a disease.
- eubacteria.** One of the two major groups of bacteria (the other being the archaeobacteria). Eubacteria have fundamental features that are considered to be typical of most bacteria.
- eucaryote** (yoo-care-ee-ote). A cell that possesses a definitive or true nucleus. Compare **procaryote**.
- eutrophication.** An aging process in lakes, during which the water becomes overly rich in dissolved nutrients; this results in the excessive development of algae and other microscopic plants, causing a decline in the levels of dissolved oxygen.
- evapotranspiration.** Evaporation from soil surfaces, lakes, and streams and by transpiration from plants into the atmosphere.
- exergonic** (ek-sur-gahn-ik). Energy-yielding, as in a chemical reaction.
- exoenzyme** (ek-so-en-zime). An enzyme excreted by a microorganism into the environment. Also called **extracellular enzyme**.
- exogenous** (ek-sahj-uh-nus). Produced or originating from without.
- exons.** Code-bearing sequences of a gene.
- exonuclease** (ek-so-new-klee-ase, ek-so-new-klee-aze). An enzyme that hydrolyzes a nucleic acid, starting at one end.
- exospore.** A heat- and desiccation-resistant spore formed external to the vegetative cell by a budding process; e.g., the exospores of the methane-oxidizing genus *Methylosinus*.
- exothermic** (ek-so-thur-mik). Describing a chemical reaction that gives off energy.
- exotoxin** (ek-so-tahk-sin). A toxic protein excreted by a microorganism into the surrounding medium.
- exponential phase** (ek-spuh-nen-chul). The period of culture growth when cells divide steadily at a constant rate. Also called **logarithmic phase** (commonly, **log phase**).
- extrachromosomal genetic element** (ek-struh-kro-muh-so-mul). A genetic element, called a **plasmid**, that is capable of autonomous replication in the cytoplasm of the bacterial cell.
- exudate** (eks-yoo-date). The more or less fluid material found in a lesion or inflamed tissue.
- facultative anaerobe** (fak-ul-tay-tiv). An organism which does not require O₂ for growth (but may use it if available), which grows well under both aerobic and anaerobic conditions, and for which oxygen is not toxic.
- fastidious organism** (fass-tid-ee-us). An organism that is difficult to isolate or cultivate on ordinary culture media because of its need for special nutritional factors.
- fauna.** The animal life characteristic of a region or environment.
- feedback inhibition.** A cellular control mechanism by which the end product of a series of metabolic reactions inhibits the further activity of an earlier enzyme of the sequence.
- fermentation** (fur-men-tay-shun). The anaerobic oxidation of compounds by the enzyme action of microorganisms; neither gaseous oxygen nor a respiratory chain is involved in this energy-yielding process. An organic compound is the electron acceptor.
- F factor.** The fertility or sex factor in the cytoplasm of male bacterial cells.
- fibril, axial.** A flagellalike structure located just beneath the outer membrane of spirochetes.
- fibrinolysin** (figh-bri-nahl-i-sin). A substance, produced by hemolytic streptococci, that can liquefy clotted blood plasma or fibrin clots. Also called **streptokinase**.
- filamentous** (fil-uh-men-tus). Characterized by threadlike structures.
- filter, bacteriological.** A special type of filter through which bacterial cells cannot pass.
- fimbriae, sing. fimbria** (fim-bree-ee, fim-bree-uh). Surface appendages of certain Gram-negative bacteria, composed of protein subunits. They are shorter and thinner than flagella. Also called **pili**.
- fission** (fish-un). An asexual process by which some microorganisms reproduce; transverse cell division in bacteria.
- fission, binary.** A single nuclear division followed by the division of the cytoplasm to form two daughter cells of equal size.
- flagellates** (flaj-uh-luts, flaj-uh-laits). Members of one of the subphyla of the phylum Protozoa.
- flagellin.** The protein monomer of bacterial flagella.
- flagellum, pl. flagella** (fluh-jel-um, fluh-jel-uh). A thin, filamentous appendage on cells, responsible for swimming motility.
- floc.** An aggregate of the finely suspended and colloidal matter of sewage.
- floccule.** An adherent aggregate of

- microorganisms or other materials floating in or on a liquid.
- flora** (flore-uh). In microbiology, the microorganisms present in a given situation, e.g., intestinal flora, the normal flora of soil. See also **biota**.
- fluorescence** (floo-uh-ress-unce). The emission of light of a particular wavelength by a substance which has absorbed light of a shorter wavelength (for example, the emission of green light by molecules of fluorescein dye which have absorbed blue light).
- fluorescence microscopy** (migh-krahss-kuh-pee). Microscopy in which cells or their components are stained with a fluorescent dye and thus appear as glowing objects against a dark background.
- foliose**. Leaflike.
- fomites** (fo-mites). Inanimate objects that carry viable pathogenic organisms.
- food poisoning**. Stomach or intestinal disturbances due to food contaminated with certain microbial toxins.
- formalin** (for-muh-lin). A 37 to 40% aqueous solution of formaldehyde.
- Forsman antigens** (force-mun). Heterophile antigens widely distributed in nature.
- fractional sterilization**. The sterilization of material by heating it to 100°C (212°F) on 3 successive days with incubation periods in between.
- Frei test** (fry). A skin test to determine sensitivity to the agent that causes lymphogranuloma venereum.
- fruticose**. Shrublike.
- fruiting body**. A specialized, spore-producing organ.
- fulminating infection**. A sudden severe and rapidly progressing infectious disease.
- fungicide** (fun-ji-side). An agent that kills or destroys fungi.
- fungus**, pl. **fungi** (fung-gus, fun-ye). A microorganism that lacks chlorophyll and is usually filamentous; a mold or yeast.
- fusiform** (fyoo-zi-form). Spindle-shaped, tapered at the ends.
- gametangium**, pl. **gametangia**. Sex organelle of fungi.
- gamete** (gam-eet, guh-meet). A reproductive cell that fuses with another reproductive cell to form a zygote, which then develops into a new individual; a sex cell.
- gamma globulin**. A fraction of serum globulin that is rich in antibodies.
- gas chromatograph**. An instrument which allows the separation and identification of various volatile chemical compounds in a gaseous mixture by means of selective adsorption.
- gastroenteritis** (gass-tro-en-tur-eye-tis). Inflammation of the mucosa of the stomach or intestine.
- gelatin**. A protein obtained from skin, hair, bones, tendons, etc., used in culture media for the determination of a specific proteolytic activity of microorganisms or for the preparation of a peptone.
- gelatinase** (juh-lat-i-nase, juh-lat-i-naze). An exoenzyme that degrades gelatin.
- gene** (jeen). A segment of a chromosome, definable in operational terms as the repository of a unit of genetic information.
- generation time**. The time interval necessary for a cell to divide.
- genome** (jee-nohm). A complete set of genetic material; i.e., a complete set of genes.
- genotype** (jee-nuh-tipe, jen-uh-tipe). The particular set of genes present in an organism's cells; an organism's genetic constitution. Compare **phenotype**.
- genus**, pl. **genera** (jee-jus, jen-ur-uh). A group of very closely related species.
- germ**. A microbe, usually a pathogenic one.
- germicide** (jurm-i-side). An agent capable of killing germs, usually pathogenic microorganisms.
- giardiasis**. The presence of the protozoan *Giardia lamblia* in the human small intestine.
- gingiva** (jin-ji-vuh). The mucous membrane and soft tissue surrounding a tooth. Adjective: **gingival** (jin-ji-vul).
- gliding motility**. A type of movement across surfaces that is exhibited by some bacteria (e.g., myxobacters) which are devoid of flagella.
- globulin** (glahb-yoo-lin). A protein soluble in dilute solutions of neutral salts but insoluble in water. Antibodies are globulins.
- glucan**. A polymer of glucose.
- glucose** (gloo-kose). A carbohydrate classified as a monosaccharide and hexose, used as an energy source by many microorganisms. Also called **dextrose** or **grape sugar**.
- glycogen** (glye-kuh-jen). A carbohydrate of the polysaccharide group stored by animals. It yields glucose on hydrolysis.
- glycolysis** (glye-kahl-i-sis). Anaerobic dissimilation of glucose to pyruvic acid by a sequence of enzyme-catalyzed reactions. Also called the **Embden-Meyerhoff pathway**.
- glyoxylate cycle**. A sequence of biochemical reactions by which acetate is converted to succinic

- acid (a bypass of the Krebs cycle).
- gnotobiotic** (no-toe-bye-aht-ik). Pertaining to higher organisms living in the absence of all demonstrable viable organisms other than those known to be present.
- Golgi apparatus** (gol-jee). A membranous organelle in the endoplasmic reticulum of the cell.
- gonidium**. An asexual reproductive cell arising in a special organ in eucaryotes.
- Gram-negative bacteria**. Bacteria that do not retain the crystal violet-iodine complex when subjected to the Gram technique and thus acquire the color of the dye (usually a red dye) that is used to counterstain the cells.
- Gram-positive bacteria**. Bacteria that retain the crystal violet-iodine complex when stained by the Gram technique and thus appear dark blue or violet.
- Gram stain**. A differential stain by which bacteria are classed as Gram-positive or Gram-negative depending upon whether they retain or lose the primary stain (crystal violet) when subjected to treatment with a decolorizing agent.
- granules, metachromatic**. Intracellular granules of polyphosphate found in certain microorganisms; such granules stain a deep violet color when the cells are stained with dilute methylene blue.
- groundwater**. All subsurface water, especially that occurring in the zone of saturation.
- growth curve**. A graphic representation of the growth (population changes) of bacteria in a culture medium.
- guanine** (gwah-noon) A purine base, occurring naturally as a fundamental component of nucleic acids.
- Guarnieri bodies**. Cytoplasmic inclusion bodies found in the epidermal cells of smallpox and chickenpox patients.
- habitat**. The natural environment of an organism.
- halophile** (hal-o-file). A microorganism whose growth is accelerated by or dependent on high salt concentrations.
- hanging-drop technique**. A technique in which microorganisms are observed suspended in a drop of fluid.
- H antigen**. A type of heat-labile protein antigen found in the flagella of certain bacteria.
- haploid** (hap-loyd). Having a single set of unpaired chromosomes in each nucleus; having the chromosome number characteristic of a mature gamete of the species. Compare **diploid**.
- haptén**. A simple substance that reacts like an antigen in vitro by combining with antibody but cannot induce the formation of antibodies by itself.
- haustoria**. Rootlike projections through which a fungus obtains nourishment from the alga in lichens.
- HeLa cells** (hee-luh). A pure cell line of human cancer cells used for the cultivation of viruses.
- helical**. Shaped like a corkscrew, with one or more turns or twists.
- helix** (hee-lik). A coiled spiral form.
- hemagglutination** (hee-muh-gloo-ti-nay-shun). The agglutination (clumping) of red blood cells.
- hemoglobin** (hee-mo-glo-bin). The constituent of red blood cells that gives them their color and carries oxygen.
- hemolysin** (hee-mahl-i-sin). A substance produced by microorganisms that lyses red blood cells, liberating hemoglobin. Also can refer to a type of antibody that acts in conjunction with complement to cause the lysis of red blood cells.
- hemolysis** (hee-mahl-i-sis). The process of dissolving red blood cells.
- hemorrhagic**. Showing evidence of hemorrhage (bleeding). The tissue becomes reddened by the accumulation of blood that has escaped from capillaries into the tissue.
- hetero-**. A prefix meaning "different."
- heterocysts**. Thick-walled cells formed by certain cyanobacteria. Heterocysts lack photosystem II but can fix molecular nitrogen, unlike the vegetative cells.
- heterogamy** (het-ur-og-uh-mee). The conjugation of unlike gametes.
- heterokaryon** (het-ur-o-care-ee-on). A cell having two nuclei that differ genetically.
- heterologous** (het-ur-ahl-uh-gus). Different with respect to type or species.
- heterophile antibody** (het-ur-o-file). An antibody that reacts with microorganisms or cells that are unrelated to the antigen that stimulated production of the antibody. The agglutination of *Proteus* spp. cells by serum from typhus fever patients is an example.
- heterophile antigen**. An antigen that reacts with antibodies stimulated by unrelated species.
- heterothallic**. Organisms in which one individual produces male gametes and another produces ova.
- heterotroph** (het-ur-o-trofe). A mi-

- croorganism that is unable to use carbon dioxide as its sole source of carbon and requires one or more organic compounds. Compare **autotroph**.
- histiocyte**. A large phagocyte of the reticuloendothelial system. Also known as a *macrophage*.
- holdfast**. An adhesive base that attaches the thallus of certain microorganisms to a surface.
- holoenzyme** (ho·lo·en·zime, hal·o·en·zime). A fully active enzyme, containing an apoenzyme and a coenzyme.
- homograft**. A tissue graft with tissue from one species of animal to a recipient of the same species.
- homologous**. The same with respect to type or species.
- homothallic**. Plants which produce both male and female sex cells and can self-fertilize.
- host**. An organism harboring another organism as a parasite (or as an infectious agent).
- humoral immunity** (hyoo·mur·ul). Immunity arising from the formation of specific antibodies that circulate in the bloodstream in response to the introduction of an antigen.
- humus**. Highly complex organic residual matter in soil; not readily degraded by microorganisms.
- hyaluronidase** (high·ul·yoo·ron·i·dase, high·ul·yoo·ron·i·daze). An enzyme that catalyzes the breakdown of hyaluronic acid. Also called *spreading factor*.
- hybridization**. The act of producing hybrids, i.e., offspring from genetically dissimilar strains.
- hybridoma**. A hybrid cell resulting from the fusion of a myeloma cell with an antibody-producing B lymphocyte.
- hydrologic cycle** (high·dro·lahj·ik). The complete cycle through which water passes, from oceans, through the atmosphere, to the land, and back to the oceans.
- hydrolysis** (high·drahl·i·sis). The process by which a substrate is split to form products through the intervention of a molecule of water.
- hypersensitivity**. Extreme sensitivity to foreign antigens, e.g., allergens.
- hypha** (high·fuh). One filament or thread of a mycelium.
- icosahedron** (eye·kah·suh·hee·drun, eye·ko·suh·hee·drun). A solid formed of 20 triangular faces and 12 corners; the geometrical shape of many virions.
- IDU**. An antiviral agent; 5-iodo-2'-deoxyuridine.
- immune serum**. Blood serum that contains one or more specific antibodies.
- immunity**. A natural or acquired resistance to a specific disease.
- immunization**. Any process that develops resistance (immunity) to a specific disease in a host.
- immunoelectrophoresis**. A technique which employs a combination of immunodiffusion and electrophoresis to identify various antigens.
- immunogenicity** (im·yoo·no·jeh·niss·i·tee). The capacity to stimulate the formation of specific antibodies.
- immunoglobulin** (im·yoo·no·glob·yoo·lin). Any of the serum proteins, such as gamma globulin, that possess antibody activity.
- imperfect fungi**. Fungi that do not have a sexual cycle.
- impingement**. The entrapment of aerosol particles on a solid surface in a sampling device.
- IMViC**. A group of tests used to differentiate *Escherichia coli* from *Enterobacter aerogenes*.
- inactivate**. To destroy the activity of a substance; e.g., to heat blood serum to 56°C for 30 min to destroy complement.
- inclusion bodies**. Discrete assemblies of virions and/or viral components that develop within virus-infected cells.
- incubation**. In microbiology, the subjecting of cultures of microorganisms to conditions (especially temperatures) favorable to their growth.
- incubation period**. The elapsed time between the exposure to an infection and the appearance of disease symptoms, or the time period during which microorganisms inoculated into a medium are allowed to grow.
- indicator**. A substance that changes color as conditions change; e.g., pH indicators reflect changes in acidity or alkalinity.
- induced enzyme**. See **adaptive enzyme**.
- induction**. The production of an increase in the rate of synthesis of an enzyme, generally by the enzyme's substrate or a closely related compound.
- infection**. A pathological condition due to the growth of microorganisms in a host.
- infectious**. Capable of producing disease in a susceptible host.
- inflammation**. A tissue reaction resulting from irritation by a foreign material and causing a migration of leukocytes and an increased flow of blood to the area, producing swelling, reddening, heat, pain, and tenderness.
- inhibition**. In microbiology, the

- prevention of the growth or multiplication of microorganisms.
- inoculation** (in-ahk-yoo-lay-shun). The artificial introduction of microorganisms or other substances into the body or into a culture medium.
- inoculum** (in-ahk-yoo-lum). The substance, containing microorganisms or other material, that is introduced in inoculation.
- in situ** (in sigh-too, in sigh-tyoo). In the original or natural location.
- intercellular**. Between cells.
- interferon** (in-tur-feer-ahn). An antiviral substance produced by animal tissue.
- intracellular** (in-truh-sel-yoo-lur). Within a cell.
- introns**. Extraneous pieces of the DNA of a gene.
- invertase** (in-vur-tase, in-vur-tase). An enzyme that hydrolyzes sucrose to glucose and fructose.
- in vitro** (in vee-troe). Literally, "in glass." Pertaining to biologic experiments performed in test tubes or other laboratory vessels. Compare **in vivo**.
- in vivo** (in vee-voe). Within the living organism; pertaining to the laboratory testing of agents within living organisms. Compare **in vitro**.
- iodophores**. Organic compounds of iodine.
- isoantibody** (eye-so-an-ti-bod-ee). An antibody, found only in some members of a species, that acts upon cells or cell components of other members of the same species.
- isoantigen**. A tissue-specific antigen present in one individual of a species but not in another. Also called **alloantigen**.
- isoenzyme** (eye-so-en-zime). Any one of a group of enzymes of different structural forms that possess identical (or nearly identical) catalytic properties. Also called **isozyme**.
- isograft** (eye-so-graft). A graft of tissue from a donor of the same species as the recipient. Also called **homograft**.
- isoniazid**. A structural analog of pyridoxine used for the treatment of tuberculosis. Also called **isonicotinic acid hydrazide**, or **INH**.
- isotonic**. Pertaining to a solution that has the same osmotic pressure as that within a cell.
- isotope** (eye-suh-tope). Any of several possible forms of a chemical element, differing from other forms in atomic weight but not in chemical properties.
- Kahn test**. A flocculation test for the diagnosis of syphilis.
- karyogamy**. The fusion of gametic nuclei as in fertilization.
- karyotype**. The diploid appearance of the set of chromosomes.
- Kline test**. A microscopic flocculation test for the diagnosis of syphilis.
- Koch's postulates**. Guidelines to prove that a disease is caused by a specific microorganism.
- Krebs cycle**. An enzyme system that converts pyruvic acid to carbon dioxide in the presence of oxygen, with the concomitant release of energy that is captured in the form of ATP molecules. Also called **citric acid cycle**, **tricarboxylic acid cycle**.
- krill**. A name applied to planktonic crustaceans.
- lachrymal fluid**. Tears.
- lactose**. A carbohydrate (disaccharide) that is split into glucose and galactose on hydrolysis. Also called **milk sugar**. Abbreviation: **lac**.
- lag phase**. The period of slow, orderly growth when a medium is first inoculated with a culture.
- laminar airflow** (lam-i-nur). The flow of air currents in which streams do not intermingle; the air moves along parallel flow lines.
- Lancefield groups**. Groups of streptococci based on various kinds of cell-wall polysaccharides.
- latent**. Not obvious or manifest; a disease carrier who shows no symptoms has a **latent infection**. Noun: **latency**.
- LD₅₀**. The dose (number of microorganisms or amount of toxin) that will kill 50 percent of the animals in a test series.
- leghemoglobin**. A hemoglobin-like oxygen-binding red pigment in the root nodules of legumes which protects the nitrogenase enzyme complex from being destroyed by excess oxygen.
- leukocidin** (loo-ko-sigh-din). A substance that destroys leukocytes.
- leukocyte** (loo-ko-sight). A type of white blood cell which is characterized by a beaded, elongated nucleus; a polymorphonuclear leukocyte.
- leukocytosis** (loo-ko-sigh-toe-sis). An increase in the number of leukocytes that is caused by the body's response to an injury or infection.
- leukopenia** (loo-ko-pee-nee-uh). A decrease in the number of leukocytes.
- lichen** (lye-kun). A symbiotic, or mutualistic, association of an alga and a fungus.
- ligand** (lig-und, lye-gand). A molecule that binds to a protein; e.g., one that binds to an enzyme and, through the role it plays in other processes, directly controls enzyme activity.
- limnology**. The study of the physical, chemical, geological, and

- biological aspects of lakes and streams.
- lipase** (lye-pase, lye-paze). An enzyme that catalyzes the hydrolysis of fats into glycerol and fatty acids.
- lipid**. A fat or fatlike substance.
- lipolytic enzyme** (lip-o-lit-ik). An enzyme that hydrolyzes lipids.
- lipopolysaccharide**. A complex molecular structure composed of sugars and fatty acids; occurs in the outer membrane of Gram-negative bacteria. Abbreviation: LPS.
- liquefaction** (lik-wi-fak-shun). The transformation of a gas or solid (e.g., a gel) to a liquid.
- liter** (lee-tur). A metric unit of volume containing 1,000 ml, or 1,000 cm³.
- lithotroph** (lith-o-trofe). An organism which uses reduced inorganic compounds as electron donors.
- litmus**. A lichen extract used as an indicator for pH and oxidation or reduction.
- locus**. In genetics, the site on a chromosome occupied by a gene, operon, mutation, etc.; in some cases, identifiable by reference to a marker.
- logarithmic phase** (log-uh-rith-mik). Commonly called *log phase*. See **exponential phase**.
- lophotrichous** (lo-faht-ri-kus). Having a polar tuft of flagella.
- lumen**. A hypha cavity filled by protoplasm. Also, a channel within a tubular organ, as in the lumen of the intestine.
- lymph**. The fluid within lymphatic vessels.
- lymph nodes**. Ovoid structures of the lymphatic system which range in size from 1 to several mm. and are widely distributed throughout the body. Also called *lymph glands*.
- lymphocytosis** (lim-fo-cye-to-sis). An abnormally high lymphocyte count in the blood.
- lyophilization** (lye-off-ili-zay-shun). The preservation of biological specimens by rapid freezing and rapid dehydration in a high vacuum.
- lysin** (lye-sin). An enzyme, antibody, or other substance capable of disrupting or disintegrating cells (lysis).
- lysis** (lye-sis). The disruption or disintegration of such cells as bacteria or erythrocytes, e.g., by the action of specific antibodies plus complement.
- lysogenic bacteria** (lye-so-jen-ik). Bacteria that carry prophages.
- lysogeny** (lye-sah-juh-nee). The state of a bacterium that is carrying a bacteriophage (often as a prophage) to which it is not itself susceptible.
- lysosomes** (lye-so-sohms). Membrane-enclosed granules which occur in the cytoplasm of animal cells and contain hydrolytic enzymes.
- lysozyme** (lye-so-zime). An enzyme capable of digesting the cell walls of certain bacteria.
- lytic phage** (lit-ik). A virulent bacterial virus.
- macrophage**. See **histiocyte**.
- macroscopic** (mak-ro-skahp-ik). Visible without the aid of a microscope.
- magnetosomes**. Magnetite inclusions within a cell that allow the cell to become oriented as a magnetic dipole.
- magnetotaxis**. A movement of organisms in response to a magnetic field.
- maltase** (mawl-tase, mawl-taze). An enzyme that hydrolyzes maltose, yielding glucose.
- maltose** (mawl-tose). A carbohydrate (disaccharide) produced by the enzymatic hydrolysis of starch by diastase.
- marine**. Of or relating to oceanic and estuarine environments.
- medium**, pl. **media**. A substance used to provide nutrients for the growth and multiplication of microorganisms.
- meiosis** (mye-o-sis). A process occurring during cell division at different points in the life cycles of different organisms, in which the chromosome number is reduced by half, thus compensating for the chromosome-doubling effect of fertilization. Compare **mitosis**.
- membrane filter**. A filter made from such polymeric materials as cellulose, polyethylene, or tetrafluoroethylene.
- meninges**. The membranes that cover the brain and the spinal cord.
- mesophile** (mez-o-file). A bacterium growing best at the moderate temperature range 25 to 40°C.
- mesosomes** (mez-o-sohms). Membrane invaginations in the form of convoluted tubules and vesicles.
- messenger RNA**. The intermediary substance that passes information from the DNA in the nuclear region to the ribosomes in the cytoplasm. Abbreviation: mRNA.
- metabolic pathway** (met-uh-bol-ik). A series of steps in the chemical transformation of organic molecules.
- metabolism** (meh-tab-o-lizm). The system of chemical changes by which the nutritional and functional activities of an organism are maintained.
- metabolite** (meh-tab-uh-light). Any chemical participating in metabolism; a nutrient.

- metachromatic granule** (met-uh-kro-mat-ik). See **granules, metachromatic**.
- metastasis** (meh-tass-tuh-sis). The process of a malignant cell's detaching itself from a tumor and establishing a new tumor at another site within the host.
- metazoa** (met-uh-zoe-uh). Animals whose bodies consist of many cells.
- methanogenic bacteria** (meth-uh-no-jen-ik). Bacteria that produce methane gas under anaerobic conditions.
- microaerophile** (might-kro-air-o-file). An organism that requires low levels of oxygen for growth but cannot tolerate the level of oxygen (21 percent) present in an air atmosphere.
- microbe** (migh-krobe). Any microscopic organism; a microorganism. Adjective: **microbial** (migh-kro-bee-ul).
- microbiology** (migh-kro-bye-ah-uh-jee). The study of organisms of microscopic size (microorganisms), including their culture, economic importance, pathogenicity, etc.
- microbiota** (migh-kro-bye-o-tuh). The microscopic flora and fauna.
- microcysts** (migh-kro-sists). Desiccation-resistant resting cells of myxobacteria. Also called **myxospores**.
- micromanipulator** (migh-kro-muh-nip-yoo-lay-tur). A device for the manipulation of microscopic specimens under a microscope.
- micrometer** (migh-kro-mee-tur). A unit of measurement: one-thousandth of a millimeter. Abbreviation: μm .
- microorganism** (migh-kro-or-guh-nizm). Any organism of microscopic dimensions.
- microtome** (migh-kro-tohm). An instrument for making thin sections of tissues or cells.
- microtubules** (migh-kro-tyoo-byoolz). Very thin rods that occur within all types of eucaryotic microbial cells.
- mineralize**. To convert into mineral substances.
- minicell**. A small daughter cell that arises from asymmetric septum formation during binary fission and which lacks DNA.
- mitochondrion** (migh-toe-kahn-dree-un). A cytoplasmic organelle in eucaryotic cells; the site of cell respiration.
- mitosis** (mye-toe-sis). A form of nuclear division characterized by complex chromosome movement and exact chromosome duplication. Compare **meiosis**.
- mixotrophs**. Chemolithotrophic heterotrophs which obtain energy by utilizing inorganic electron donors but obtain most of their carbon from organic compounds.
- MLD**. Minimum lethal dose. The smallest number of microorganisms or the smallest amount of a toxin that kills 100 percent of the animals in a test series; equivalent to LD_{100} dose.
- modification**. A temporary change or variation in the characteristics of an organism.
- modulator**. The regulatory metabolite that binds to the allosteric site of an enzyme and alters the maximum velocity. Also called **effector, modifier**.
- moiety**. A part of a molecule having a characteristic chemical property.
- mold**. A fungus characterized by a filamentous structure.
- monoclonal antibody**. A specific antibody produced by hybridoma cells.
- mononucleotide** (mah-no-new-klee-o-tide). The basic building block of nucleic acids (DNA and RNA); consists of a purine or pyrimidine base, ribose or deoxyribose, and phosphate.
- monosaccharide** (mah-no-sak-uh-ride). A simple sugar, such as a five-carbon or six-carbon sugar.
- monotrichous** (mo-not-ri-kus). Having a single polar flagellum.
- mordant** (more-dunt). A substance that fixes dyes.
- morphogenesis** (more-fo-jen-uh-sis). The process by which cells are organized into tissue structures.
- morphology** (more-fahl-uh-jee). The branch of biological science that deals with the study of the structure and form of living organisms.
- MPN**. Most probable number, a statistical expression of estimating cell number in a culture.
- M proteins**. Antiphagocytic protein antigens located on the surface of the cell walls of streptococci.
- mRNA**. See **messenger RNA**.
- murein**. See **peptidoglycan**.
- mutagen** (myoo-tuh-jen). A substance that causes mutation.
- mutant** (myoo-tunt). An organism with a changed or new gene.
- mutation** (myoo-tay-shun). A stable change of a gene such that the changed condition is inherited by offspring cells.
- mutualism**. A symbiosis in which two or more organisms living together benefit each other.
- mycelium** (mye-see-lee-um). A mass of threadlike filaments, branched or composing a network, that constitutes the vegetative structure of a fungus.
- mycolic acids**. High-molecular-weight α -branched β -hydroxy

- fatty acids which occur in the cell walls of corynebacteria, mycobacteria, and some nocardiform bacteria.
- mycology** (mye-kahl-uh-jee). The study of fungi.
- mycophage** (mye-ko-fayj). A fungal virus.
- mycoplasma** (mye-ko-plaz-muh). A member of a group of bacteria lacking cell walls.
- mycorrhiza**. A symbiotic association of a fungus with the roots of a higher plant.
- mycosis** (mye-ko-sis). A disease caused by fungi.
- mycotoxin** (mye-ko-tok-sin). Any toxic substance produced by fungi.
- myxamoeba** (mik-suh-mee-buh). A nonflagellated amoeboid cell that occurs in the life cycle of acellular slime molds.
- myxospore** (mik-so-spore). A desiccation-resistant resting cell of myxobacteria. Also called a *microcyst*.
- NAD**. Nicotinamide adenine dinucleotide, a coenzyme that functions in enzymatic systems concerned with oxidation-reduction reactions.
- naked virion**. A nonenveloped virus.
- nanometer** (nan-o-mee-tur, nay-no-mee-tur). A unit of length equal to one-billionth of a meter, or 10^{-9} m; 1 millimicrometer. Abbreviation: nm.
- nasopharynx**. The region of the respiratory tract above the soft palate.
- Negri bodies** (neg-ree). Minute pathological structures (inclusion bodies) found in certain brain cells of animals infected with rabies virus.
- nematodes**. Roundworms, many of which are pathogenic for plants.
- Some are animal pathogens, and some are saprophytes.
- neoplasm** (nee-o-plazm). An aberrant new growth of abnormal cells or tissue; a tumor.
- neurotoxin** (nyoo-ro-tahk-sin). Any nerve poison, such as those produced by certain marine algae.
- neutralism**. A neutral interaction between two species in which there is no evident effect on either species.
- nitrate reduction**. The reduction of nitrates to nitrites or ammonia.
- nitrification** (nigh-trif-i-kay-shun). The transformation of ammonia nitrogen to nitrates.
- nitrofurans**. Synthetic antimicrobial agents derived from furfural.
- nitrogen fixation**. The formation of ammonia from free atmospheric nitrogen.
- nitrogenous** (nigh-traj-i-nus). Relating to or containing nitrogen.
- nomenclature** (no-men-klay-chur). Any system of scientific names, such as those employed in biological classification.
- nonseptate** (non-sep-tait). Having no dividing walls in a filament.
- nosocomial disease** (no-so-ko-mee-ul). Describing or pertaining to disease acquired in the hospital.
- nucleic acid** (new-klee-ik). One of a class of molecules composed of joined nucleotide complexes; the types are deoxyribonucleic acid (DNA) and ribonucleic acid (RNA).
- nucleoid**. An indistinct area within a bacterial cell where the DNA is located. Also termed *chromatin body*, *nuclear equivalent*, or *bacterial chromosome*.
- nucleolus**, pl. **nucleoli** (new-klee-o-lus, new-klee-o-lye). A small body in a cell nucleus.
- nucleoprotein** (ne-klee-o-pro-teen). A molecular complex composed of nucleic acid and protein.
- nucleoside**. A pentose sugar linked to a purine or pyrimidine base.
- nucleotide** (new-klee-o-tide). The basic building block of nucleic acids (DNA and RNA); consists of a purine or pyrimidine base, ribose or deoxyribose, and phosphate.
- nucleus**. The structure in a cell that contains the chromosomes.
- numerical taxonomy**. A method used in taxonomy to determine and numerically express the degree of similarity of every strain to every other strain in a particular group.
- O antigens**. Polysaccharide antigens which extend from the outer membrane of Gram-negative bacterial cells into the surrounding medium.
- objective**. In a compound microscope, the system of lenses nearest the object being observed.
- ocular micrometer** (migh-krom-uh-tur). A glass disk etched with equidistant lines that fits into the eyepiece of a microscope.
- oidium**, pl. **oidia** (oh-id-ee-um, oh-id-ee-uh). A single-celled spore formed by the disjoining of hyphal cells.
- Okazaki fragments** (oh-kuh-zah-kee). DNA strands replicated in small pieces.
- oligodynamic action** (ahl-i-go-dye-nam-ik). The lethal effect exerted on bacteria by small amounts of certain metals.
- oncology** (on-kahl-uh-jee). The study of the causes, development, characteristics, and treatment of tumors.
- oogamy**. The union of an egg cell and a sperm cell.
- oogonium**. In certain algae and fungi, the female sex organ that contains one or more eggs.

- ookinete.** The elongated mobile zygote of certain sporozoa, as that of a malarial parasite.
- oospores.** Spores formed after the fertilization of the eggs within the oogonium.
- operator.** A specific region of DNA at the initial end of the gene, where the synthesis of mRNA is initiated.
- operon (ahp-ur-on).** A cluster of genes whose expression is controlled by a single operator.
- opportunistic microorganism.** A microorganism that exists as part of the normal flora but becomes pathogenic when transferred from the normal habitat into other areas of the host or when host resistance is lowered.
- opsonin (op-suh-nin).** An antibody that renders microorganisms susceptible to ingestion by phagocytes.
- order.** In systematic biologic classification, a group of families.
- organelle (or-guh-nel).** A structure or body in a cell.
- organotroph (or-gan-uh-trofe).** An organism that uses organic compounds as a source of electrons.
- osmosis (oz-mo-sis).** The passage, due to osmotic pressure, of a fluid through a semipermeable membrane.
- osmotic pressure (oz-mot-ik).** The force or tension built up when water diffuses through a membrane.
- ovum.** An egg cell.
- oxidase (ok-si-dase, ok-si-daze).** An enzyme that brings about oxidation.
- oxidase test.** A test for the presence of cytochrome c; in a positive test, colonies become purple when treated with tetramethyl-p-phenylenediamine.
- oxidation.** 1. The process of combining with oxygen. 2. The loss of electrons or hydrogen atoms.
- oxidation-reduction potential.** A measure of the ability of an O/R system to absorb electrons, compared with that of the standard hydrogen O/R system. Symbol: E_h .
- oxidative phosphorylation.** The utilization of energy liberated by oxidation reactions in a respiratory chain to drive the synthesis of ATP.
- palisade arrangement.** Cells lined side by side, as in the genus *Corynebacterium*.
- palmelloid.** A stage in which masses of daughter cells without flagella develop.
- pandemic (pan-dem-ik).** A worldwide epidemic.
- papain.** A proteolytic enzyme found in the juice of the fruit and in the leaves of the papaya plant.
- paramecium (pehr-uh-mee-see-um).** A protozoan ciliate having cilia over the entire cell.
- parasite.** An organism that derives its nourishment from a living plant or animal host. A parasite does not necessarily cause disease.
- parasitism (pehr-uh-sit-izm).** The relationship of a parasite to its host.
- parenteral (pur-ren-tur-ul).** By some route other than via the intestinal tract.
- Paschen bodies.** Aggregates or colonies of virions growing in the cytoplasm of the host cell.
- passive immunity.** Immunity produced by injecting blood or serum containing antibodies.
- pasteurization.** The process of heating a liquid food or beverage to a controlled temperature to enhance the keeping quality and destroy harmful microorganisms.
- pathogen (path-uh-jen).** An organism capable of producing disease.
- pathogenic.** Capable of producing disease.
- pebrine (pay-breen).** A silkworm disease caused by a protozoan.
- pellicle.** A compound covering of membranes in protozoa; also, a film on the surface of fluid culture media due to the growth of microorganisms.
- penicillin.** The generic name for a large group of antibiotic substances derived from several species of the mold *Penicillium*.
- pentose.** A sugar with five carbon atoms; e.g., ribose.
- pentose cycle.** A pathway by which pentoses are metabolized or transformed in plants and microorganisms.
- pepsin.** A proteolytic enzyme from hog stomach tissues.
- peptidase.** An enzyme catalyzing the liberation of individual amino acids from a peptide.
- peptide.** A compound consisting of two or several amino acids.
- peptidoglycan (pep-ti-doe-glye-kan).** A large polymer that provides the rigid structure of the procaryotic cell wall, composed of three kinds of building blocks: (1) acetylglucosamine, (2) acetylmuramic acid, and (3) a peptide consisting of four or five amino acids.
- peptone.** A partially hydrolyzed protein.
- peptonization (pep-tun-i-zay-shun).** The conversion of proteins into peptones; the solubilization of casein in milk curd by proteolytic enzymes.
- perfect fungi.** Fungi with both an asexual and a sexual life cycle.
- periphytes (pehr-i-fites).** Microorganisms that become attached to surfaces, grow and form microcolonies, and produce a film to

- which other organisms become attached and grow.
- periplasmic flagella.** Flagella of the type which is possessed by spirochetes; they are located between the protoplasmic cylinder and the outer sheath; also called axial fibrils or endoflagella.
- periplasmic space.** The space between the cytoplasmic membrane and the outer membrane of Gram-negative bacteria.
- periplast** (pehr-i-plast). A surface membrane or pellicle of certain algae and bacteria.
- peristalsis.** Progressive and rhythmic contractions of the intestines.
- perithecium** (pehr-i-thee-ce-ee-um). A spherical, cylindrical, or oval ascocarp that usually opens by a slit or pore at the top.
- peritrichous** (puh-rit-ri-kus). Having flagella on the entire surface of the cell.
- permeability.** The extent to which molecules of various kinds can pass through cell membranes.
- permease** (pur-me-ase). Any of a group of enzymelike proteins which are located in the cytoplasmic membrane and mediate the passage of nutrients across the membrane.
- per os** (pur ose, pur oss). Through the mouth.
- peroxidase.** An enzyme which catalyzes the reaction of hydrogen peroxide with a reduced substrate, resulting in the formation of H₂O and oxidized substrate.
- pH.** A symbol for the degree of acidity or alkalinity of a solution; $\text{pH} = \log (1/[\text{H}^+])$, where $[\text{H}^+]$ represents the hydrogen ion concentration.
- phage** (fayj). See **bacteriophage**.
- phagocyte** (fag-o-site). A cell capable of ingesting microorganisms or other foreign particles.
- phagovar.** A subdivision of a bacterial species based on a particular pattern of susceptibility and resistance to various bacteriophages.
- phenetic.** In taxonomy, the relation based not on ancestry but on overall affinity or similarity.
- phenol coefficient.** The ratio between the greatest dilution of a test germicide capable of killing a test organism in 10 min but not in 5 min and the greatest dilution of phenol giving the same result.
- phenotype** (fee-no-tipe). That portion of the genetic potential of an organism which is actually expressed.
- phosphatase** (fahss-fuh-tase, fahss-fuh-taze). An enzyme that splits phosphate from its organic compound.
- phosphatase test.** A test to determine the efficiency of the pasteurization of milk. The test is based on the thermolability of the enzyme phosphatase.
- phosphoglycerides.** Straight-chain fatty acids ester-linked to glycerol phosphate.
- phosphorylation** (fahss-fo-ri-lay-shun). The addition of a phosphate group to a compound.
- photoautotroph** (fo-toe-aw-toe-trofe). An organism that derives energy from light and uses carbon dioxide as its sole carbon source.
- photolithotroph.** An organism which obtains energy from light and uses inorganic compounds as a source of electrons.
- photolysis.** Light-generated breakdown of water.
- photoorganotroph.** An organism which obtains energy from light and uses organic compounds as a source of electrons.
- photophosphorylation.** The utilization of light energy to drive the synthesis of ATP.
- photoreactivation.** The restoration to full viability by the immediate exposure to visible light of cells damaged by an exposure to lethal doses of ultraviolet light.
- photosynthesis** (fo-toe-sin-thuh-sis). The process in which chlorophyll and the energy of light are used by plants and some microorganisms to synthesize carbohydrates from carbon dioxide.
- phototaxis.** The movement of organisms in response to a change in light intensity.
- phototroph** (fo-toe-trofe). A bacterium capable of utilizing light energy for metabolism.
- phycobilins.** Water-soluble pigments, such as phycocyanin and phycoerythrin, which can transmit the energy of absorbed light to chlorophyll.
- phycobilisomes.** Granules on the surface of thylakoids, which contain phycobilin pigments.
- phycology** (fye-kahl-uh-jee). The study of algae.
- phylogeny** (fye-lahj-uh-nee). The evolutionary or ancestral history of organisms.
- phylum, pl. phyla** (fye-lum, fye-luh). A taxon consisting of a group of related classes.
- physiology.** The study of the life processes of living things.
- phytoflagellate** (fye-toe-flaj-uh-lut, fye-toe-flaj-uh-lait). A plantlike form of flagellate. Compare **zoo-flagellate**.
- phytoplankton** (fye-toe-plank-tun). A collective term for plants and plantlike organisms present in plankton. Compare **zooplankton**.
- pilus.** Any filamentous appendage other than flagella on certain Gram-negative bacteria.

- pinocytosis.** The uptake of fluids and soluble nutrients through small invaginations in the cell membrane that form intracellular vesicles.
- plankton** (plank-tun). A collective term for the passively floating or drifting flora and fauna of a body of water, consisting largely of microscopic organisms.
- plasma.** See **blood plasma.**
- plasmalemma.** The double-layered membrane surrounding the protoplasm in a hypha.
- plasma membrane.** See **cytoplasmic membrane.**
- plasmin.** An enzyme that dissolves the fibrin of blood clots.
- plasmogamy.** The joining of two cells and the fusion of their protoplasts in the process of sexual reproduction.
- plasmolysis** (plaz-mahl-i-sis). The shrinkage of cell contents as a result of the withdrawal of water by osmosis.
- plastid.** A pigmented inclusion body found in algae.
- pleomorphism** (plee-o-more-fizm). The existence of different morphological forms in the same species or strain of microorganism. Also called *polymorphism*.
- polar.** Located at one end or at both ends.
- poly- β -hydroxybutyrate.** A chloroform-soluble polymer of β -hydroxybutyric acid; occurs in the form of intracellular granules within certain bacteria and can be stained by fat-soluble dyes. Abbreviation: PHB.
- polyene antibiotics.** A chemical class of antibiotics that have large ring structures and increase cell permeability.
- polyhedrosis.** Any of several virus diseases of insects.
- polypeptide** (pahl-ee-pep-tide). A molecule consisting of many joined amino acids.
- polysaccharide.** A carbohydrate formed by the combination of many molecules of monosaccharides; examples of polysaccharides are starch, cellulose, and glycogen.
- polysome** (pahl-ee-sohm). A complex of ribosomes bound together by a single mRNA molecule. Also called *polyribosome*.
- porins.** Channel-containing proteins that span the outer membrane of Gram-negative bacteria.
- potable** (po-tuh-bul). Suitable for drinking.
- PPLO.** Pleuropneumonia-like organisms. These organisms belong to the order *Mycoplasma*-tales.
- Prausnitz-Küstner antibodies.** The principal agents responsible for such allergies as hay fever, food and drug sensitivities, and anaphylaxes.
- precipitin** (pree-sip-i-tin). An antibody causing the precipitation of a soluble homologous antigen.
- predation.** The killing and eating of an individual of one species by an individual of another species.
- primary treatment.** The first stage in wastewater treatment, in which floating or settleable solids are mechanically removed by screening and sedimentation.
- procaryote** (pro-care-ee-ote). A type of cell in which the nuclear substance is not enclosed within a membrane; e.g., a bacterium or cyanobacterium. Compare **eucaryote**.
- promoter.** The binding site for RNA polymerase; it is near the operator.
- prophage.** The viral DNA of a temperate phage which becomes incorporated into the host DNA.
- prophylaxis** (pro-fi-lak-sis). Preventive treatment for protection against disease.
- prostheca** (pros-theek-uh). A semi-rigid extension of the cell wall and cytoplasmic membrane; it has a diameter that is always less than that of the cell.
- protein.** One of a class of complex organic nitrogenous compounds composed of an extremely large number of amino acids joined by peptide bonds.
- proteinase** (pro-teen-ase, pro-teen-aze). An enzyme that hydrolyzes proteins to polypeptides.
- proteolytic** (pro-tee-o-lit-ik). Capable of splitting or digesting proteins into simpler compounds.
- protist** (pro-tist). A microorganism in the kingdom *Protista*.
- protonmotive force.** The force which results from an electrochemical gradient of protons across a membrane and which can be used to drive ATP synthesis and certain other energy-requiring processes of a living cell.
- protoplasm** (pro-toe-plazm). The living substance of a cell. The term usually refers to the substance enclosed by the cytoplasmic membrane.
- protoplast** (pro-toe-plast). That portion of a bacterial cell consisting of the cytoplasmic membrane and the cell material bounded by it.
- prototroph** (pro-toe-trofe). An organism that is nutritionally independent and able to synthesize all required growth factors from simple substances.
- protozoa** (pro-tuh-zo-uh). Eucaryotic microorganisms with animal characteristics.
- pseudopodium** (syoo-doe-po-dee-um). A temporary projection of the protoplast of an amoeboid cell in which cytoplasm flows during extension and withdrawal.
- psychrophile** (sigh-kro-file). A "cold-loving" microorganism,

- capable of growing at 0°C or lower. Sometimes restricted to organisms that cannot grow above 20°C.
- psychrotroph.** An organism which is able to grow at 0°C but which grows best at a temperature above 20°C; also termed *facultative psychrophile*.
- ptomaine (toe-main).** Substances that are produced during the putrefaction of animal or plant protein and cause food poisoning.
- pure culture.** A culture containing only one species of organism.
- pus.** The fluid product of inflammation, containing serum, bacteria, dead cells, and leukocytes.
- putrefaction (pyoo-truh-fak-shun).** The decomposition of proteins by microorganisms, producing disagreeable odors.
- pycnidium.** An asexual fruiting body in fungi.
- pyemia (pye-ee-mee-uh).** A form of septicemia in which pyogenic organisms in the bloodstream set up secondary foci in organs and tissues.
- pyocins.** Bacteriocins produced by *Pseudomonas aeruginosa*.
- pyogenic (pye-o-jen-ik).** Forming pus.
- pyrenoids.** In chloroplasts, dense regions on which surface starch granules form.
- pyrogen.** A chemical which affects the hypothalamus, which regulates body temperature.
- Quellung reaction.** The increase in the visibility of a bacterial capsule that results from the reaction between the capsular antigen and specific anticapsular serum.
- rabies (ray-beez).** An acute disease of humans and other animals, caused by a virus. It is transmitted from infected animals to humans through bites.
- radioisotope (ray-dee-o-ye-so-tope).** An isotope that exhibits radioactivity.
- RDE. Receptor-destroying enzyme.** An enzyme that destroys the specific receptor by which a virus can attach to a susceptible cell.
- reagin.** Antibodies against cardiolipin, such as occur in syphilitic patients. Also termed *Wassermann antibodies*. The term is sometimes used to refer to the IgE antibodies which are involved in immediate hypersensitivities.
- recombinant (ree-kahm-bi-nunt).** A cell or clone of cells resulting from recombination.
- recombination.** The formation in daughter cells of gene combinations not present in either parent.
- reduction.** A chemical process involving the removal of oxygen, the addition of hydrogen atoms, or the gain of electrons.
- regulator gene.** A gene that controls the rate of enzyme synthesis in an operon.
- rennet curd.** The result of the coagulation of milk by the action of the enzyme rennin. Referred to as *sweet curd*.
- rennin.** An enzyme that transforms the soluble casein of milk into insoluble paracasein. The enzyme is obtained from the gastric juice of a calf.
- replica plating.** The replication of a pattern of colonies from one plate to another; a disk of sterile material (often velveteen) is pressed on the surface of the first plate, and the adhering bacteria are printed on the second.
- replication.** (1) In molecular biology, the production of a strand of DNA from the original. (2) In virology, the multiplication of a virus in a cell.
- repression.** A decrease in the rate of synthesis of an enzyme specifically caused by a small molecule which is usually the end product of a biosynthetic pathway, e.g., an amino acid or nucleotide.
- resolution.** In microscopy, the smallest distance by which two objects can be separated and still be visualized as separate objects.
- resolving power.** The ability of a microscope to distinguish fine details in a microscopic specimen.
- respiration.** An energy-yielding process in which electrons from an oxidizable substrate are transferred via a series of oxidation-reduction reactions to an exogenous terminal electron acceptor.
- respiratory chain.** A sequence of oxidation-reduction reactions by which electrons are transferred from an oxidizable substrate to an exogenous terminal electron acceptor.
- reticulate body.** In the developmental cycle of chlamydias, a noninfectious intracellular form that develops from an elementary body, is larger than the elementary body, and has a less dense arrangement of nuclear material. Also termed *initial body*.
- reticuloendothelial system (reetik-yoo-lo-en-doe-theel-ee-ul).** A system of cells in various organs and tissues, such as the spleen, liver, and bone marrow, that are important in resistance and immunity.
- reverse transcriptase (tran-skriptase).** An enzyme for the synthesis of a DNA molecule using RNA as a template.
- rhizines.** Short twisted strands of hyphae which serve as anchors in an alga-fungus lichenlike relationship.
- rhizoid (rye-zoyd).** A single-celled

- or multicellular hairlike structure having the appearance of a root.
- rhizosphere** (rye-zo-sfeer). The soil region subject to the influence of plant roots and characterized by a zone of increased microbiological activity.
- ribonucleic acid** (rye-bō-new-klee-ik). A nucleic acid occurring in the cytoplasm and the nucleolus, containing phosphoric acid, D-ribose, adenine, guanine, cytosine, and uracil. Abbreviation: RNA.
- ribosomal RNA** (rye-bo-so-mul). The RNA of the ribosomes constituting about 90 percent of the total cellular RNA. Abbreviation: rRNA.
- ribosome** (rye-bo-sohm). A cytoplasmic structural unit, made up of RNA and protein, that is the site of protein synthesis.
- rickettsias** (ri-ket-see-uhs). Obligately parasitic bacteria of arthropods; many are pathogenic for humans and other mammals.
- RNA**. See **ribonucleic acid**.
- RNA polymerase** (pahl-im-ur-ase, pahl-im-ur-ase). An enzyme that synthesizes mRNA on a DNA template.
- root-nodule bacteria**. Bacteria belonging to the genus *Rhizobium*, family *Rhizobiaceae*, that live symbiotically in the nodules of roots of leguminous plants and fix atmospheric nitrogen.
- rRNA**. See **ribosomal RNA**.
- RPR test**. Rapid plasma reagin test; a macroscopic agglutination screening test for the detection of Wassermann antibodies in the serum of syphilitic patients.
- rumen**. The first chamber of the ruminant stomach.
- saccharolytic** (sak-uh-ro-lit-ik). Capable of splitting sugar compounds.
- salmonellosis** (sal-muh-nel-o-sis). An infection by *Salmonella* spp. that affects the gastrointestinal tract.
- sanitizer**. An agent that reduces to levels judged safe by public health authorities the microbial flora in materials or on such articles as eating utensils.
- saprophyte** (sap-ro-fight). An organism living on dead organic matter.
- sarcoma**. A tumor made up of cells derived principally from connective tissue.
- Schick test**. A skin test used to determine a person's susceptibility to diphtheria.
- schizogony** (skiz-og-uh-nee). Asexual reproduction by multiple fission of a trophozoite (a vegetative protozoan).
- schizont** (skiz-ont). A stage in the asexual life cycle of the malaria parasites.
- Schultz-Charlton reaction**. A skin test used in the diagnosis of scarlet fever.
- semiconservative replication**. The replication of a complete DNA molecule in such a way that both the resultant double-stranded molecules contain one original and one new strand.
- sepsis** (sep-sis). Poisoning by the products of putrefaction; a severe toxic state resulting from an infection with pyogenic microorganisms.
- septate**. Possessing crosswalls.
- septicemia** (sep-ti-see-mee-uh). A systemic disease caused by the invasion and multiplication of pathogenic microorganisms in the bloodstream.
- septic tank**. A unit using an anaerobic system for the treatment of a limited volume of sewage.
- septum**. A crosswall.
- serial dilution**. The dilution of a specimen in successive stages. Thus a 1:100 dilution is achieved by combining one part of a 1:10 dilution (one part of specimen plus nine parts of diluent, such as sterile water) with nine parts of diluent.
- serology** (suh-rah-l-uh-jee, seer-ahl-uh-jee). The branch of science that is the study of serum.
- serotype**. See **serovar**.
- serovar**. A subdivision of a species based on its antigenic composition. Also called **serotype**.
- serum**. See **blood serum**.
- sewage**. Liquid or solid refuse (domestic and industrial wastes) carried off in sewers.
- sewerage system**. The system that collects and carries sewage from the source to the point of treatment and disposal.
- sexual reproduction**. Reproduction in which two cells (gametes) fuse into one fertilized cell.
- sheath**. A hollow tubular structure surrounding a chain of cells or a trichome; also refers to the covering that surrounds the flagella of certain Gram-negative bacteria.
- shunt**. An alternate pathway, a bypass.
- siderophores**. Iron-binding compounds formed by microorganisms.
- simple stain**. The coloration of bacteria or other organisms by applying a single solution of a stain to a fixed film or smear.
- single-cell proteins**. Microorganisms cultivated on industrial wastes or by-products as nutrients to yield a large cell crop rich in protein.
- slime layer**. A gelatinous covering of the cell wall. The term is sometimes used as a synonym of **capsule**.
- sludge**. The semisolid part of sewage that has been sedimented or acted upon by bacteria.
- smear**. A thin layer of material, e.g., a bacterial culture spread on

- a glass slide for microscopic examination. Also called a *film*.
- soredia**. In lichens, reproductive bodies which are knots of hyphae containing a few alga cells.
- species**. The basic taxonomic group; in bacteriology, a species consists of a type strain together with all the other strains that are considered sufficiently similar to the type strain to warrant inclusion in the species.
- spectrophotometer**. An instrument that measures the transmission of light, permitting the accurate analysis of color or the accurate comparison of the luminous intensities of two sources of specific wavelengths.
- spermatium**, pl. **spermatia**. A special male structure in fungi.
- spheroplast** (sfeer-o-plast). A Gram-negative bacterial cell with the peptidoglycan removed, leaving it devoid of rigidity.
- spirillum** (spye-ril-um). A rigid helical bacterium. A genus of helical bacteria is *Aquaspirillum*.
- spirochete** (spye-ro-keet). A helical bacterium which is flexible and has periplasmic flagella.
- spontaneous generation**. The origination of life from nonliving material. Also called *abiogenesis*. Compare *biogenesis*.
- sporangioles**. Walled vessels containing myxospores; occur in the fruiting bodies formed by certain myxobacters. Also termed *cysts*.
- sporangiophore** (spo-ran-jee-o-fore). A specialized mycelial branch bearing a sporangium.
- sporangiospores**. Asexual spores that develop within a sac (sporangium).
- sporangium** (spo-ran-jee-um). A saclike structure within which asexual spores are produced.
- spore**. A resistant body formed by certain microorganisms.
- sporicide** (spore-i-side). An agent that kills spores.
- sporogenesis** (spore-o-jen-uh-sis). 1. Reproduction by means of spores. 2. The formation of spores.
- sporophore** (spore-o-fore). A specialized mycelial branch upon which spores are produced.
- sporozoite** (spore-uh-zo-ite). A motile infective stage of certain sporozoans; it results from sexual reproduction and gives rise to an asexual cycle in a new host.
- sporulation** (spore-yoo-lay-shun). The process of spore formation.
- stage micrometer** (migh-krom-uh-tur). An instrument that functions as a ruler for the measurement of microorganisms under the microscope.
- stalk**. A nonliving ribbonlike or tubular appendage excreted by a bacterial cell.
- staphylococci** (staff-i-lo-kahk-sigh). Spherical bacteria (cocci) occurring in irregular, grapelike clusters.
- starter culture**. A known culture of microorganisms used to inoculate milk, pickles, and other food to produce the desired fermentation.
- stationary phase**. The interval directly following a growth phase when the number of viable bacteria remains constant.
- stem cells**. Formative cells in the bone marrow from which specialized cells, such as lymphocytes, arise.
- stenothermophile**. An organism which grows at 60°C or higher and which cannot grow at mesophilic temperatures; a true or obligate thermophile.
- sterile**. Free of living organisms.
- sterilization**. The process of making sterile; the killing of all forms of life.
- steroid** (steer-oyd). A complex chemical substance containing the tetracyclic carbon ring system of the sterols; steroids are often used as therapeutic agents.
- sterol**. Any of the natural products derived from the steroid nucleus.
- stock cultures**. Known species of microorganisms maintained in the laboratory for various tests and studies.
- strain**. All the descendants of a pure culture; usually a succession of cultures derived from an initial colony.
- streaked-plate method**. A procedure for separating cells on a sterile agar surface so that individual cells will grow into distinct, separate colonies.
- streptobacilli** (strep-toe-buh-sil-eye). Bacilli in chains.
- streptococci** (strep-toe-kahk-sigh). Cocci that divide in such a way that chains of cells are formed.
- streptokinase** (strep-toe-kigh-nase). See *fibrinolysin*.
- structural gene**. A gene coding for the structure of a protein.
- subclinical**. Pertaining to an infection so minor that there are no detectable clinical signs or symptoms of the infection.
- subcutaneous** (sub-kyoo-tay-nee-us). Beneath the skin.
- substrate**. The substance acted upon by an enzyme.
- subterminal**. Situated near the end, but not at the extreme end, of a cell.
- sulfonamide**. A synthetic chemotherapeutic agent characterized by the chemical group $-SO_2N<$.
- supernate**. The liquid over a precipitate or sediment; the fluid remaining after the removal of suspended matter.
- superoxide dismutase**. An enzyme which catalyzes the dismutation

- of superoxide radicals to form O_2 and H_2O_2 .
- suppuration.** The formation of pus.
- surface tension.** The force acting on the surface of a liquid, tending to minimize the area of the surface.
- susceptibility** (suh-sep-ti-bil-i-tee). The state of being open to disease; specifically, the capability of being infected; a lack of immunity.
- symbiosis** (sim-bee-o-sis). The living together of two or more organisms; microbial association.
- synchronous growth** (sing-kruh-nus). Growth in a cell population in which all cells divide at the same time.
- synergism.** The ability of two or more organisms to bring about changes (usually chemical) that neither can accomplish alone.
- synnemata.** Compacted groups of erect hyphae which have a stem-like appearance.
- synthetic medium.** A medium composed of pure chemical compounds.
- syntrophism.** A type of mutualism involving an exchange of nutrients between two species.
- syphilis.** A venereal disease caused by *Treponema pallidum*.
- systematics.** The science of animal, plant, and microbial classification.
- systemic** (sis-tem-ik). Relating to the entire organism instead of to a part.
- taxis** (tack-sis). The movement away from or toward a chemical or physical stimulus.
- taxon, pl. taxa** (tack-sahn, tack-suh). A taxonomic group, such as a species, genus, or family.
- taxonomy** (tack-sahn-uh-mee). The classification (arrangement), nomenclature (naming), and identification of organisms.
- teichoic acid** (tei-ko-ik). Polymers of ribitol phosphate or glycerol phosphate which occur in the walls of certain Gram-positive bacteria.
- temperate bacteriophage.** A bacteriophage capable of integrating with the host genome, being thus transmitted through cell divisions without causing host lysis.
- temporal gradient.** A change in the concentration of a chemical substance, or in the intensity of a physical agent such as light, with time.
- terminal disinfection.** The disinfection of a room or building after it has been vacated by a patient who had a contagious disease.
- terminal infection.** An infection with pathogenic microorganisms that terminates in the death of the host.
- test.** The outer shell of certain protozoa.
- tetanus** (tet-uh-nus, tet-nus). Lockjaw, a disease caused by *Clostridium tetani*.
- tetracyclines.** A chemical class of broad-spectrum antibiotics which inhibit protein synthesis.
- thallophyte** (thal-o-fite). A plant having no true stem, roots, or leaves; the group includes the algae and fungi.
- thallospore** (thal-o-spore). A spore that develops by the budding of hyphal or vegetative cells.
- thallus** (thal-us). A plant or microbial body lacking special tissue systems or organs; thalli may vary from a single cell to a complex, branching, multicellular structure.
- therapeutic.** Pertaining to the treating or curing of a disease.
- thermal death point** The lowest temperature at which microorganisms are killed in a given time.
- thermoduric** (thur-mo-dyoo-rik). Capable of surviving an exposure to a high temperature.
- thermolabile** (thur-mo-lay-bile, thur-mo-lay-bil). Destroyed by heat at temperatures below $100^\circ C$ ($212^\circ F$).
- thermophile** (thur-mo-file). An organism that grows best at temperatures above $45^\circ C$.
- thermostable** (thur-mo-stay-bul). Relatively resistant to heat; resistant to temperatures of $100^\circ C$ ($212^\circ F$).
- thylakoids.** Flattened membranous sacs which contain the photosynthetic pigments of the cell. In cyanobacteria they occur within the cytoplasm; in photosynthetic eucaryotes they occur within the chloroplasts.
- thymine** (thigh-meen). One kind of pyrimidine.
- tinea** (tin-ee-uh). Ringworm, which is caused by fungi.
- tissue.** A collection of cells forming a structure.
- tissue culture.** A growth of tissue cells in a laboratory medium.
- toxemia** (tahk-see-mee-uh). The presence of toxins in the blood.
- toxigenicity.** The ability to produce a toxin.
- toxin** (tahk-sin). A poisonous substance, such as a bacterial toxin, elaborated by an organism.
- toxin-antitoxin.** A mixture of toxin and antitoxin containing slightly more toxin than antitoxin. This was formerly used to produce an active immunity.
- toxoid** (tahk-soyd). A toxin that has been treated to destroy its toxic properties without affecting its antigenic properties.
- transcription.** The process in which a complementary single-stranded mRNA is synthesized from one of the DNA strands.
- transduction.** The transfer of genetic material from one bacte-

- rium to another through the agency of a virus.
- transfection.** The introduction of phage hybrid DNA into the host cell.
- transfer RNA.** A specific RNA for each amino acid that becomes esterified to the terminal adenosine. Each of the 60 or so tRNAs has a specific trinucleotide sequence that interacts with a complementary sequence in mRNA. Abbreviation: tRNA. Also called *soluble RNA* (sRNA).
- transformation.** The phenomenon by which certain bacteria incorporate DNA from related strains into their genetic makeup.
- translation.** The process in which genetic information in mRNA directs the order of assembly of the specific amino acids during protein synthesis.
- transposons.** Units of DNA which can move from one DNA molecule to another.
- transverse binary fission** (*bye-nuh-ree*). An asexual reproductive process in which a single cell divides transversely into two cells.
- tribe.** A division of the plant, animal, or microbial kingdoms containing a number of related genera within a family.
- tricarboxylic acid cycle** (*trye-kar-bock-sil-ik*). See **Krebs cycle**.
- trichome.** A single row of distinct cells in which there is a large area of contact between the adjacent cells (in contrast to a chain of cells).
- trickling filter.** A secondary treatment process in which sewage is trickled over a bed of rocks so that bacteria can break down organic wastes.
- tRNA.** See **transfer RNA**.
- trophic stage** (*tro-f k*). The vegetative stage of free-living protozoa.
- trophozoite** (*tro-fo-zo-ite*). The vegetative form of a protozoan.
- trypsin** (*trip-sin*). A proteolytic enzyme in pancreatic juice.
- tubercle** (*tyoo-bur-kul*). A nodule, the specific lesion of tuberculosis.
- tuberculin** (*tyoo-bur-kyoo-lin*). An extract of the tuberculosis bacillus capable of eliciting an inflammatory reaction in an animal that has been sensitized by the presence of living or dead tubercle bacilli. Used in a skin test for tuberculosis.
- turbidimetry.** A method of estimating bacterial growth or populations by the measurement of the degree of opacity (or turbidity) of the suspension.
- turbidostat.** A device for maintaining microorganisms in continuous culture; it monitors cell density and regulates the dilution rate to maintain the cell density at a constant value.
- tyndallization.** A process of fractional sterilization with flowing steam.
- type species.** The species that is the permanent reference example of the genus.
- type strain.** The strain that is the permanent reference strain of the species; it is the strain to which all other strains must be compared in order to be included in the species.
- ultracentrifuge.** A high-speed centrifuge used for the determination of the particle size of viruses and proteins.
- ultrafiltration.** A method for the removal of all but the very smallest particles, e.g., viruses, from a fluid medium.
- ultrasonic waves.** Sound waves of high intensity (beyond the audible range), used for the destruction of microbes or the cleaning of materials.
- ultraviolet rays.** Radiations from about 3900 to about 2000 Å.
- undulant fever.** Brucellosis, a disease caused by bacterial pathogens of the genus *Brucella*.
- undulating.** Exhibiting a wavelike motion.
- upwelling.** The rise of water from a deeper to a shallower depth in an ocean; the rise brings nutrients to the surface region.
- urea.** A soluble nitrogenous compound, $H_2N-CO-NH_2$, found in the urine of humans and other mammals.
- urease.** An enzyme that catalyzes the hydrolysis of urea.
- vaccination.** Inoculation with a biologic preparation (a vaccine) to produce immunity.
- vaccine.** A preparation of killed or attenuated microorganisms, or their components, or their products, that is used to induce active immunity against a disease.
- vacuole** (*vak-yoo-ole*). A clear space in the cytoplasm of a cell.
- variant.** An organism showing some variation from the parent culture.
- vascular.** Containing specialized vessels for the conduction of fluids: blood and lymph in animals, sap and water in plants.
- VDRL test.** Venereal Disease Research Laboratory test; a microscopic agglutination screening test for the detection of Wassermann antibodies in the serum of syphilitic patients.
- vector.** An agent, such as an insect, capable of mechanically or biologically transferring a pathogen from one organism to another.
- vegetative stage.** The stage of active growth, as opposed to the resting or spore stages.
- venereal.** Sexually transmitted.
- V factor.** Nicotinamide adenine dinucleotide; required for the growth of certain *Haemophilus* spp.
- viable** (*vye-uh-bul*). Capable of liv-

- ing, growing, and developing; alive.
- vibrio** (vib-ree-o). A bacterium that is curved with a twist; has less than one complete turn or twist (in contrast to a helical bacterium). *Vibrio* is a genus of Gram-negative bacteria.
- Vincent's angina**. An ulcerative condition of the tonsils and gums caused by a spirochete and a fusiform bacillus.
- viremia** (vye-ree-mee-uh). The presence of virus in the bloodstream.
- virion** (vye-ree-on). The complete mature virus particle.
- viropexis**. The engulfment of whole virions by cells in a phagocytic process.
- virucide** (vye-ru-side). An agent that kills viruses.
- virulence** (vir-yoo-lunçə). The degree of pathogenicity exhibited by a strain of microorganisms.
- virus** (vye-rus). An obligate intracellular parasitic microorganism that is smaller than bacteria. Most viruses can pass through filters that retain bacteria.
- viscidify**. Stickiness; a characteristic produced by a bacterial sediment in broth that rises in a coherent swirl upon shaking.
- Voges-Proskauer reaction**. A test for the presence of acetylmethylcarbinol to assist in distinguishing between species of the coliform group. Abbreviation: VP test.
- volutin**. See **granule**, **metachromatic**.
- Warburg respirometer**. An apparatus used to study enzyme reactions in which an exchange of gases takes place.
- Wassermann antibodies**. Antibodies against cardiolipin, such as occur in syphilitic patients; also called reagents.
- Wassermann test**. A complement-fixation test for syphilis.
- Weil-Felix test**. An agglutination test for typhus using *Proteus* spp. as antigens.
- white corpuscle**. A leukocyte of the blood.
- Widal test**. A slide agglutination test for typhoid or paratyphoid fever.
- X factor**. Heme; required for the growth of certain *Haemophilus* spp.
- yeast**. A kind of fungus that is unicellular and lacks typical mycelia.
- yolk sac**. The membrane covering the yolk of an egg.
- zonation** (zo-nay-shun). The distribution of organisms in zones; specifically, a stratification of certain kinds of algae at certain depths and locations in the ocean.
- zooflagellate** (zo-o-flaj-uh-lut, zo-o-flaj-uh-lait). An animallike form of flagellate. Compare **phytoflagellate**.
- zoogloal masses** (zo-o-glee-ul). Masses composed of microorganisms which are embedded in a common matrix of slime.
- zoonosis** (zo-ahn-uh-sis, zo-o-no-sis). An animal disease transmissible to human beings.
- zooplankton** (zo-o-plank-tun). A collective term for the nonphotosynthetic organisms present in plankton. Compare **phytoplankton**.
- zoospore** (zo-o-spore). A motile, flagellate spore.
- zygospore** (zye-go-spore). A kind of spore resulting from the fusion of two similar gametes in some fungi.
- zygote** (zye-gote). An organism produced by the union of two gametes.
- zymosan**. An extract of yeast cell walls.