

DICTIONARY OF BIOCHEMISTRY

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ALARM

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I. Biological chemistry--Dictionaries. I. Title

monoamines such as epinephrine and norepinephrine. *Abbr* MAO.

monochromatic radiation. Electromagnetic radiation of a single wavelength; electromagnetic radiation in which all of the photons have the same energy.

monochromator. An instrument for the isolation of narrow band widths of radiation by means of filters, prisms, or diffraction gratings.

monocistronic messenger RNA. A messenger RNA molecule that carries the information for the synthesis of only one polypeptide chain.

monodentate. Designating a ligand that is chelated to a metal ion through one donor atom.

monodisperse. Consisting of macromolecules that are all alike in size.

Monod, Wyman, and Changeaux model. *See* symmetry model.

monoenergetic radiation. Radiation that consists of either photons or particles and in which all of the photons or all of the particles have the same energy.

monoenoic fatty acid. A fatty acid that has one double bond.

monoesterase. An enzyme that catalyzes the hydrolysis of an ester which is formed by the esterification of one of the hydroxyl groups of phosphoric acid.

monoglyceride. A glyceride formed by the esterification of one glycerol molecule with one fatty acid molecule.

monolayer. 1. A monomolecular layer formed either at a surface or at an interface. 2. A single layer of cells that are growing on a surface.

monomer. 1. The repeating unit in a polymer. 2. The basic unit in a molecular aggregate, regardless of the number of polypeptide chains or the number of subunits of which it is composed; thus the 70S ribosome is a monomer while the 30 and 50S ribosomes are subunits and the 100S ribosome is a dimer. 3. The individual polypeptide chain in an oligomeric protein. 4. A protein that is composed of a single polypeptide chain. 5. STRUCTURAL UNIT. *See also* protomer; subunit.

monomolecular layer. A layer, one molecule thick.

monomolecular reaction. A chemical reaction in which one molecule of a single reactant is converted into products.

monomorphism. The occurrence of only one form or one shape. *See also* doctrine of monomorphism.

mononuclear complex. A metal ion-ligand complex that is formed from a single metal ion. *See also* polynuclear complex.

mononucleotide. 1. A single nucleotide. 2. A compound that is structurally related to a nucleotide,

monooxygenase. An enzyme that catalyzes a reaction with molecular oxygen in which only one of the oxygen atoms is introduced into a compound.

monoploid state. The chromosome state in which the number of chromosomes is the basic one in a polyploid series; the haploid state. *Aka* monoploidy.

monoprotic acid. An acid that has one dissociable proton.

monosaccharide. A polyhydroxy alcohol containing either an aldehyde or a ketone group, a simple sugar.

monsosome. 1. The complex that consists of a single ribosome attached to a strand of messenger RNA. 2. A chromosome that lacks a homologue.

monospecific antiserum. A purified antiserum that reacts with only one type of antigen or one type of antigenic determinant.

monovalent. 1. Having a valence of one. 2. Descriptive of a regulatory enzyme that responds to only one effector.

monozygotic twins. Twins that are genetically identical and that are derived from one fertilized egg; they are formed by a division of the embryo into two halves at some stage of its development.

Monte Carlo method. A method for calculating the time course of a reaction from the probability that the reaction will occur during a given time interval.

MOPS. 2-(*N*-Morpholino)-propanesulfonic acid; used for the preparation of buffers in the pH range of 6.5 to 7.9.

Morawitz theory. An early formulation of the blood clotting mechanism in terms of a two-stage process, consisting of the activation of prothrombin to thrombin and the conversion of fibrinogen to fibrin.

Morgan unit. A measure of the distance between genes on a chromosome that is equal to a crossover value of 100%.

Morner's test. 1. A test for tyrosine that is based on the production of a green color upon treatment of the sample with sulfuric acid and formaldehyde. 2. A test for cysteine that is based on the production of a purple color upon treatment of the sample with sodium nitroprusside.

morphine. An alkaloid narcotic drug that occurs in opium.

morphogenesis. The developmental processes that lead to the mature size, form, and structure of organelles, cells, tissues, organs, or whole organisms.

morphogenetic. Of, or pertaining to, morphogenesis. *Aka* morphogenic.

morphogenetic gene. A gene that plays a role in morphogenesis through some function other

mucilage

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multiplicity of infection

mucilage. A complex, colloidal, carbohydrate material that is derived from plants; it can form gels and has adhesive properties.

mucin. A mucoprotein secreted by mucous glands and mucous cells.

mucin clot. The clot, composed of hyaluronic acid and small amounts of protein, that is formed upon acidification of some biological fluids such as the vitreous humor of the eye and the synovial fluid.

muco- Combining form meaning amino sugar.

mucoid. MUCOPROTEIN.

mucopепptide. A peptide that is covalently linked to an amino sugar.

mucopolysaccharide. A polysaccharide that contains either an amino sugar or a derivative of an amino sugar; hyaluronic acid, chondroitin sulfate, dermatan sulfate, and heparin are some examples.

mucoprotein. A conjugated protein in which the nonprotein portion is a mucopolysaccharide that is covalently linked to the protein and that contains more than 4% of amino sugars.

mucosa. MUCOUS MEMBRANE.

mucosal block. The permeability barrier of the intestinal mucosa to the absorption of iron from the intestine.

mucous. Of, or pertaining to, mucus.

mucous gland. A gland that secretes mucus.

mucous membrane. An epithelial membrane, the surface of which is bathed by mucus.

mucus. The viscous secretion of mucous glands that consists largely of mucin and water and that serves to bathe mucous membranes.

multi- Combining form meaning many.

multichannel analyzer. A scintillation spectrometer that can record pulses in a number of different channels.

multicomponent survival curve. MULTITARGET SURVIVAL CURVE.

multienzyme complex. MULTIENZYME SYSTEM.

multienzyme system. The structural and functional entity that is formed by the association of several different enzymes which catalyze a sequence of closely related reactions; the aggregate may contain one or more molecules of a given enzyme.

multifactorial. Of, or pertaining to, a polygene; polygenic.

multihit survival curve. 1. A survival curve that describes a radiation phenomenon in which two components are assumed to contribute to the

ternative alleles, any one of which may occur at the same locus on a chromosome.

multiple binding. MULTIPLE EQUILIBRIA.

multiple codon recognition. The binding of a given molecule of transfer RNA to more than one codon, as postulated by the Wobble hypothesis.

multiple development. A chromatographic technique, used particularly with paper or thin-layer chromatography, in which the sample is developed repeatedly with either the same or different solvents.

multiple equilibria. The interactions that occur between a macromolecule that has several binding sites and the ligands that bind to these sites.

multiple factor hypothesis. The hypothesis that quantitative traits, such as size and weight, result from the cumulative effect of a group of genes. *See also* polygene.

multiple forms of an enzyme. A collective term for all the proteins that possess the same enzyme activity and that occur naturally in a single species; includes genetically independent proteins, heteropolymers, genetic (allelic) variants, proteins conjugated with other groups, proteins derived from one polypeptide chain, polymers of a single subunit, and forms differing in conformation.

multiple gene. POLYGENE.

multiple-hit survival curve. *See* multihit survival curve.

multiple inhibition analysis. A kinetic analysis of the interactions of two or more inhibitors of an enzymatic reaction. The analysis indicates whether the inhibitors are mutually exclusive or whether they can bind simultaneously to the enzyme and, if so, whether the binding of one inhibitor to the enzyme facilitates or hinders the binding of another.

multiple myeloma. A malignant disease of antibody-producing plasma cells that is characterized by the formation of large amounts of Bence-Jones protein.

multiple sclerosis. A disease that is characterized by partial paralysis, changes in speech, and inability to walk; caused by demyelination, by sclerosis of the brain, and by sclerosis of the spinal cord. *Aka* demyelination disease.

multiplet. A multiple peak, as that obtained in nuclear magnetic resonance.

multiplication cycle. The sequence of steps from the infection of a cell by a virus to the formation of new virus particles and their release from the

either monomers or protomers, linked together covalently or noncovalently. *See also* monomer; protomer.

oligomycin. A polyene antibiotic produced by *Streptomyces diastatochromogenes*.

oligonucleotide. A linear nucleic acid fragment that consists of from 2 to 10 nucleotides joined by means of phosphodiester bonds; oligoribonucleotides consist of ribonucleotides, and oligodeoxyribonucleotides consist of deoxyribonucleotides.

oligopeptide. A linear peptide that consists of from 2 to 10 amino acids joined by means of peptide bonds.

oligosaccharide. A linear or branched carbohydrate that consists of from 2 to 10 monosaccharide units joined by means of glycosidic bonds.

oligotrophic lake. A deep and clear-water lake, having a depth of 15 m or more, that has a plant population at various depths, and that has a low rate of nutrient supply in relation to its volume of water. In such a lake, both the biomass and the productivity are low. The bottom layers of the lake are saturated with dissolved oxygen throughout the year. *See also* eutrophic lake; mesotrophic lake.

O-locus. The locus of the operator.

-oma. Suffix meaning tumor.

-OMe. Methoxy group.

omega oxidation. A minor oxidative pathway of fatty acids.

ommochrome. One of a group of pigments that are derived from tryptophan and that occur in the eyes of insects.

OMP. 1. Orotidine monophosphate (orotidylic acid). 2. Orotidine-5'-monophosphate (5'-orotidylic acid).

Oncley equation. An equation expressing the frictional ratio of a macromolecule as a product of two factors, one of which is a measure of the hydration, and the other is a measure of the asymmetry of the molecule. Specifically, $f/f_0 = (f/f_h) (f_h/f_0)$, where f , f_0 , and f_h are, respectively, the frictional coefficients for the macromolecule, an anhydrous sphere, and a hydrated sphere; f_h/f_0 is the hydration factor, and f/f_h is the shape, or asymmetry, factor.

onco-. Combining form meaning tumor.

oncogene. An abnormal gene derived from the RNA of an oncogenic RNA virus. *See also* oncogene theory.

oncogenesis. The origin and growth of a tumor.

oncogene theory. A theory of cancer according to which the RNA of oncogenic RNA viruses

carcinogens to become determinants of cancer, possibly through the synthesis of specific enzymes and/or the synthesis of complete, oncogenic virus particles. The information for the production of oncogenic viruses and malignant transformations of cells is, therefore, vertically transmitted through the germ line and is present in the DNA of all the cells of all the animals prone to cancer. *Aka* virogenic theory; virogenic-oncogene theory. *See also* provirus theory.

oncogenic. Capable of inducing tumors.

oncogenic virus. A DNA- or RNA-containing virus that can transform infected cells so that they proliferate in an uncontrolled fashion and may form a tumor. *See also* oncornavirus.

oncology. The study of tumors.

oncolytic. Capable of destroying tumor cells.

oncornavirus. Acronym for oncogenic RNA virus. Oncornaviruses are characterized by (a) their content of a high-molecular weight RNA genome (60-70S RNA, 10^7 daltons), (b) their banding at a particular density level in density gradient centrifugation, and (c) their content of RNA-dependent DNA polymerase (reverse transcriptase). The oncornaviruses are divided into three classes, denoted A, B, and C. Type A viruses constitute a small group of protein-encapsulated viruses that have not been shown to be oncogenic; they occur either in the cytoplasm, believed to be immature forms of type B viruses, or in body fluids, believed to be immature forms of type C viruses. Type B viruses have a somewhat eccentric nucleoid and glycoprotein surface spikes; they are associated primarily with the formation of carcinomas. Type C viruses have a roughly spherical nucleoid surrounded by an electron-translucent lipid layer; they infect a large number of animal species and cause leukemias, lymphomas, and sarcomas.

oncotic pressure. The effective colloid osmotic pressure; it is equal to the difference between the osmotic pressure of the plasma proteins and that of the tissue fluid proteins.

one-carbon fragment. A group of atoms or a compound that contains one carbon atom.

one gene-one enzyme hypothesis. The hypothesis that there is a large group of genes among the genes of an organism in which each gene codes for a specific enzyme or other protein. Since it is now known that many enzymes, as well as other proteins, consist of several polypeptide chains coded for by different genes, this hypothesis has been replaced by the one gene-one polypeptide chain hypothesis.

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