

2nd Year Biology Glossary Definitions Notes

GLOSSARY

A

5' cap: The 5' of a pre-mRNA modified by the addition of a cap of a guanine nucleotide.

A band: The broad region that corresponds to the length of the thick filaments of myofibrils.

A site: One of a ribosome's three binding sites for tRNA during translation. The A site holds the tRNA carrying the next amino acid to be added to the polypeptide chain. (A stands for aminoacyl tRNA).

abiotic: Nonliving

ABO blood groups: Genetically determined classes of human blood that are based on the presence or absence of carbohydrates A and B on the surface of red blood cells. The ABO blood group phenotypes, also called blood types, are A, B, AB and O.

abortion: The termination of pregnancy in progress.

acclimatization: Physiological adjustment to a change in an environmental factor.

acetylcholine: One of the most common neurotransmitters, functions by binding to receptors and altering the permeability of the postsynaptic membrane to specific ions, either depolarizing or hyperpolarizing the membrane.

acid precipitation: Rain, snow or fog that is more acidic than pH 5.6

actin: A globular protein which twist helically about each other, forming microfilaments in muscle and other contractile elements in the cells.

action potential: A rapid change in the membrane potential of an excitable caused by stimulus-triggered, selective opening and closing voltage-sensitive gates in sodium and potassium ion channels.

activator: A protein that binds to DNA and stimulates transcription of a specific gene.

adenyl cyclase: An enzyme that converts ATP to cyclic AMP in response to a chemical signal.

adrenal gland: One of two endocrine glands located to the kidneys in mammals. Endocrine cells in the outer portion (cortex) respond to help maintain homeostasis during long term stress.

Neurosecretory cells in the central portion (medulla) secrete epinephrine and norepinephrine in response to nervous inputs triggered by short-term stress.

adrenocorticotrophic hormone (ACTH): A tropic hormone produced and secreted by the anterior pituitary that stimulates the production and secretion of steroid hormones by the adrenal cortex.

aerobic: containing oxygen, referring to an organism, environment or cellular process that requires oxygen

agarose: It is a polysaccharide polymer material, generally extracted from seaweed. Agarose is one of the two principal components of agar, and is purified from agar by removing agar's other component, agarpectin.

Agarose is frequently used in molecular biology for the separation of large molecules, especially DNA, by electrophoresis

agonistic behaviour: A type of behaviour involving a contest of some kind that determines which competitor gains access to some resource such as food or mates.

aldosterone: An adrenal hormone that acts on the distal tubule of the kidney to stimulate the reabsorption of sodium (Na^+) and the passive flow of water from the filtrate.

allantois: One of the four extraembryonic membranes; serves as a repository for the embryo's nitrogenous waste.

alleles: Alternative versions of gene that produce distinguishable phenotypic effects.

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allopatric speciation: a mode of speciation induced when an ancestral population becomes segregated by a geographic barrier or itself divided into two or more geographically isolated subpopulation.

allopolyploid: A common type of polyploid species resulting from two different species interbreeding and combining their chromosomes.

altruism: Behaviour that reduces an individual's fitness while increasing the fitness of another individual.

alveolus: One of the dead-end, multi-lobed air sacs that constitute the gas exchange surface of the lungs.

Alzheimers disease: An age related dementia (mental deterioration) characterized by confusion, memory loss and other symptoms.

aminoacyl-tRNA synthetase: An enzyme that joins each amino acid to the correct tRNA.

amniocentesis: A technique of prenatal diagnosis in which amniotic fluid, obtained by aspiration from a needle inserted into the uterus, is analyzed to detect certain genetic and congenital defects in the fetus.

amnion: The innermost of four extra-embryonic membranes, enclosed in a fluid filled sac in which the embryo is suspended.

anaerobic: Lacking oxygen, referring to an organism, environment, or cellular process that lacks oxygen and may be poisoned by it.

androgen: Any steroid hormone, such as testosterone, that stimulates the development and maintenance of the male reproductive system and sex characteristics.

aneuploidy: A chromosomal aberration in which one or more chromosomes are present in extra copies or are deficient in number.

angiotensin II: A hormone that stimulates constriction of precapillary arterioles and increases reabsorption of NaCl and water by the proximal tubules of the kidney, increasing blood pressure and volume.

anterior pituitary: Also called the adenohypophysis, portion of the pituitary that develops from nonneural tissue, consists of endocrine cells that synthesize and secrete several tropic and nontropic hormone.

anticodon: A specialized base triplet at one end of a tRNA molecule that recognizes a particular complementary codon on an mRNA molecule.

antidiuretic hormone (ADH): A hormone produced in the hypothalamus and released from the posterior pituitary. It promotes water retention by the kidneys as part of an elaborate feedback scheme that helps regulate the osmolarity of the blood.

antiparallel: The opposite arrangement of the sugar-phosphate backbones in a DNA double helix.

archenteron: The endodermal lined cavity, formed during gastrulation process, that develops into the digestive tract of an animal.

artificial selection: The selective breeding of domesticated plants and animals to encourage the occurrence of desirable traits.

aspartate: An amino acid that functions as neurotransmitter.

assisted reproductive technology (ART): Fertilization procedure that generally involve the surgical removal of eggs (secondary oocyte) from a woman's ovaries after hormonal stimulation, fertilizing the egg and returning them to the woman's body.

associative learning: The acquired ability to associate one stimulus with another, also called classical conditioning.

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atrial natriuretic factor: A peptide hormone that opposes the renin-angiotensin aldosterone system(RAAS).

autonomic nervous system: A subdivision of the motor nervous system of vertebrates that regulates the internal environment; consists of the sympathetic, parasympathetic and enteric divisions.

autopolyploid: An individual that has more than two chromosome sets, all derived from a single species.

autosome: A chromosome that is not directly involved in determining sex, as opposed to sex chromosome.

axon: A typically long extension, or process, from a neuron that carries nerve impulses away from the cell body toward target cell.

B

Bartholins gland: Glands near the vaginal opening in a human female that secrete lubricating fluid during sexual arousal.

base pair substitution: A type of point mutation; the replacement of one nucleotide and its partner in the complementary DNA strand by another pair of nucleotides.

behaviour: Everything an animal does and how it does, including muscular activities such as chasing prey, certain nonmuscular processes such as secreting a hormone that attracts a mate and learning.

biogeochemical cycle: Any of the various nutrient circuits, which involve both biotic and abiotic components of ecosystems.

biogeography: The study of the past and present distribution of species.

biological clock: An internal time keeper that controls an organism's biological rhythms. The biological clock marks time with or without environmental cues but often requires signals from environment to remain tuned to an appropriate period.

biomass: The dry weight of organic matter comprising a group of organisms in a particular habitat.

biotechnology: The manipulation of living organisms or their components to produce useful products.

biotic: Pertaining to the living organisms in the environment.

bipolar cell: A neuron that synapses with the axon of a rod or cone in the retina of the eye.

blastocoel: The fluid-filled cavity that forms in the centre of the blastula embryo.

blastocyst: An embryonic stage in mammals; a hollow ball of cells produced one week after fertilization in humans.

blastoderm: An embryonic cap of dividing cells resting on a large undivided yolk.

blastomere: A small cell of an early embryo.

blastopore: The opening of the archenteron in the gastrula that develops into the mouth in protostomes and the anus in deuterostomes.

blastula: The hollow ball of cells marking the end stage of cleavage during early embryonic development.

blotting: A hybridization technique that enables researchers to determine the presence of certain nucleotide sequences in a sample of DNA.

body cavity: A fluid-containing space between the digestive tract and the body wall.

bone: A type of connective tissue, consisting of living cells held in a rigid matrix of collagen fibres embedded in calcium salts.

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bottleneck effect: Genetic drift resulting from the reduction of a population, typically by a natural disaster, such that the surviving population is no longer genetically representative of the original population.

Bowmans capsule: A cup-shaped receptacle in the vertebrate kidney that is the initial, expanded segment of the nephron where filtrate enters from the blood.

brainstem: Collection of structures in the adult brain, including the midbrain, the pons, and the medulla oblongata; functions in homeostasis, coordination of movement, and conduction of information to higher brain centres.

breathing: The process involving alternate inhalation and exhalation of air that ventilates the lungs.

breathing control centre: A brain centre that directs the activity of organs involved in breathing.

bronchiole: One of the fine branches of the bronchus that transport air to alveoli.

bronchus: One of a pair of breathing tubes that branch from the trachea into the lungs.

bulbourethral gland: One of a pair of glands near the base of the penis in the human male that secretes fluid that lubricates and neutralizes acids in the urethra during sexual arousal.

C

calcitonin: A hormone secreted by the thyroid gland that lowers blood calcium levels by promoting calcium deposition in bone and calcium excretion from the kidneys.

callus: A mass of dividing, undifferentiated cells at the cut end of a shoot.

carrier: In genetics, an individual who is heterozygous at a given genetic locus, with one normal allele and one potentially harmful recessive allele. The heterozygote is phenotypically normal for the character determined by the gene but can pass on the harmful allele to offspring.

carrying capacity: The maximum population size that can be supported by the available resources, symbolized as K.

cartilage: A type of flexible connective tissue with an abundance of collagenous fibres embedded in chondroitin sulphate.

catastrophism: The hypothesis by Georges Cuvier that each boundary between strata corresponded in time to a catastrophe, such as a flood or drought, that had destroyed many of the species living there at that time.

cDNA library: A limited gene library using complementary DNA. The library includes only the genes that were transcribed in the cells examined.

cellular respiration: The most prevalent and efficient catabolic pathway for the production of ATP, in which oxygen is consumed as a reactant along with the organic fuel.

central canal: The narrow cavity in the centre of the spinal cord that is continuous with the fluid-filled ventricles of the brain.

central nervous system (CNS): In vertebrate animals, the brain and spinal cord.

cerebellum: Part of the vertebrate hindbrain located dorsally; functions in unconscious coordination of movement and balance.

cerebral cortex: The surface of the cerebrum; the largest and most complex part of the mammalian brain, containing sensory and motor nerve cell bodies of the cerebrum; the part of the vertebrate brain most changed through evolution.

cerebral hemisphere: The right or left side of the vertebrate brain.

cerebrospinal fluid: Blood-derived fluid that surrounds, protects against infection, nourishes, and cushions the brain and spinal cord.

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cerebrum: The dorsal portion of the vertebrate forebrain, composed of right and left hemispheres; the integrating centre for memory, learning, -emotions, and other highly complex functions of the central nervous system.

cervix: The neck of the uterus, which opens into the vagina.

chondrocyte: Cartilage cell that secretes collagen and chondroitin sulphate.

chorion: The outermost of four extraembryonic membranes; contributes to the formation of the mammalian placenta.

chorionic villus sampling (CVS): A technique of prenatal diagnosis in which a small sample of the foetal portion of the placenta is removed and analyzed to detect certain genetic and congenital defects in the foetus.

chromatin: The complex of DNA and proteins that makes up a eukaryotic chromosome. When the cell is not dividing, chromatin exists as a mass of very long, thin fibres that are not visible with a light microscope.

chromosome theory of inheritance: A basic principle in biology stating that genes are located on chromosomes and that the behavior of chromosomes during meiosis accounts for inheritance patterns.

circadian rhythm: A physiological cycle of about 24 hours that is present in all eukaryotic organisms and that persists even in the absence of external cues.

classical conditioning: A type of associative learning; the association of a normally irrelevant stimulus with a fixed behavioral response.

cleavage: The process of cytokinesis in animal cells, characterized by pinching of the plasma membrane. Also, the succession of rapid cell divisions without growth during early embryonic development that converts the zygote into a ball of cells.

cleavage furrow: The first sign of cleavage in an animal cell; a shallow groove in the cell surface near the old metaphase plate.

clone: (1) A lineage of genetically identical individuals or cells. (2) In popular usage, a single individual organism that is genetically identical to another individual. (3) As a verb, to make one or more genetic replicas of an individual or cell.

cloning: Using a somatic cell from a multicellular organism to make one or more genetically identical individuals.

cloning vector: An agent used to transfer DNA in genetic engineering. A plasmid that moves recombinant DNA from a test tube back into a cell is an example of a cloning vector, as is a virus that transfers recombinant DNA by infection.

codominance: The situation in which the phenotypes of both alleles are exhibited in the heterozygote.

codon: A three-nucleotide sequence of DNA or mRNA that specifies a particular amino acid or termination signal; the basic unit of the genetic code.

Coffin - Lowry syndrome: Males with CoffinLowry syndrome typically have severe to profound intellectual disability and delayed development. Affected women may be cognitively normal, or they may have intellectual disability ranging from mild to profound. This syndrome is inherited in an X-linked dominant pattern.

community: All the organisms that inhabit a particular area; an assemblage of populations of different species living close enough together for potential interaction.

complementary DNA (cDNA): A DNA molecule made in vitro using mRNA as a template and the enzyme reverse transcriptase. A cDNA molecule therefore corresponds to a gene, but lacks the introns present in the DNA of the genome.

conception: The fertilization of the egg by a sperm cell in humans.

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corpus callosum: The thick band of nerve fibres that connect the right and left cerebral hemispheres in placental mammals, enabling the hemispheres to process information together.

cortex: Ground tissue that is between the vascular tissue and dermal tissue in a root or dicot stem.

cortical nephron: Nephrons located almost entirely in the renal cortex. These nephrons have a reduced loop of Henle.

corticosteroid: Any steroid hormone produced and secreted by the adrenal cortex.

cosmid: It is a type of hybrid plasmid that contains a Lambda, phage cos sequence. Cosmids' (cos sites + plasmid = Cosmids) DNA sequences are originally from the lambda phage. They are often used as a cloning vector in genetic engineering. Cosmids can be used to build genomic libraries. They were first described by Collins and Hohn in 1978.

countercurrent exchange: The opposite flow of adjacent fluids that maximizes transfer rates; for example, blood in the gills flows in the opposite direction in which water passes over the gills, maximizing oxygen uptake and carbon dioxide loss.

countercurrent multiplier system: A counter current system in which energy is expended in active transport to facilitate exchange of materials and create concentration gradients. For example, the loop of Henle actively transports NaCl from the filtrate in the upper part of the ascending limb of the loop, making the urine-concentrating function of the kidney more effective.

crossing over: The reciprocal exchange of genetic material between nonsister chromatids during prophase I of meiosis.

cystic fibrosis: A human genetic disorder caused by a recessive allele for a chloride channel protein; characterized by an excessive secretion of mucus and consequent vulnerability to infection; fatal if untreated.

D

Decidua: It is the term for the uterine lining (endometrium) during a pregnancy, which forms the maternal part of the placenta. It is formed under the influence of progesterone and forms highly characteristic cells. Different layers of the deciduas have been described: (a) Compact outer layer (stratum compactum) (b) Intermediate layer (stratum spongiosum) (c) Boundary layer adjacent to the myometrium (stratum basalis). That part of the decidua that interacts with the trophoblast is the decidua basalis (also called decidua placentalis). The remainder of the decidua is termed the decidua parietalis or decidua vera. Also, there is the decidua capsularis, which grows over the embryo. On the luminal side, enclosing it into the endometrium and surrounding the embryo together with decidua basalis.

decidua ba-sa-lis: The area of endometrium between the implanted chorionic vesicle and the myometrium, which becomes the maternal part of the placenta. Also called decidua serotina.

deletion: (1) A deficiency in a chromosome resulting from the loss of a fragment through breakage. (2) A mutational loss of one or more nucleotide pairs from a gene.

demography: The study of statistics relating to births and deaths in populations.

dendrite: One of usually numerous, short, highly branched processes of a neuron that convey nerve impulses toward the cell body.

depolarization: An electrical state in an excitable cell whereby the inside of the cell is made less negative relative to the outside than at the resting membrane potential. A neuron membrane is depolarized if a stimulus decreases its voltage from the resting potential of -70 mV in the direction of zero voltage.

diabetes mellitus: An endocrine disorder marked by inability to maintain glucose homeostasis. The type I form results from autoimmune destruction of insulin-secreting cells; treatment usually requires

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insulin injections several times a day. The type 1 form most commonly results from reduced responsiveness of target cells to insulin; obesity and lack of exercise are risk factors.

diaphragm: A sheet of muscle that forms the bottom wall of the thoracic cavity in mammals; active in ventilating the lungs.

Digitalis lanata: is a species of foxglove. It gets its name due to the texture of the leaves. Digitalis lanata, like some other foxglove species, is highly toxic in all parts of the plant.

dihybrid: An organism that is heterozygous with respect to two genes of interest. All the offspring from a cross between parents doubly homozygous for different alleles are dihybrids. For example, parents of genotypes AABB and aabb produce a dihybrid of genotype AaBb.

distal tubule: In the vertebrate kidney, the portion of a nephron that helps refine filtrate and empties it into a collecting duct.

DNA fingerprint: An individual's unique collection of DNA restriction fragments, detected by electrophoresis and nucleic acid probes.

DNA ligase: A linking enzyme essential for DNA replication; catalyzes the covalent bonding of the 3' end of a new DNA fragment to the 5' end of a growing chain.

DNA polymerase: An enzyme that catalyzes the elongation of new DNA at a replication fork by the addition of nucleotides to the existing chain.

dominant allele: An allele that is fully expressed in the phenotype of a heterozygote.

dopamine: A biogenic amine closely related to epinephrine and norepinephrine.

dorsal lip: The dorsal side of the blastopore.

double helix: The form of native DNA, referring to its two adjacent polynucleotide strands wound into a spiral shape.

Down syndrome: A human genetic disease caused by presence of an extra chromosome 21; characterized by mental retardation and heart and respiratory defects.

Duchenne muscular dystrophy: A human genetic disease caused by a sex-linked recessive allele; characterized by progressive weakening and a loss of muscle tissue.

duplication: An aberration in chromosome structure due to fusion with a fragment from a homologous chromosome, such that a portion of a chromosome is duplicated.

E

E-site: One of ribosome's three binding sites for tRNA during translation. The E site is the place where discharged tRNAs leave the ribosome. (E stands for exit.)

ecological succession: Transition in the species composition of a biological community, often following ecological disturbance of the community; the establishment of a biological community in an area virtually barren of life.

ecology: The study of how organisms interact with their environment.

ecosystem: All the organisms in a given area as well as abiotic factors with which they interact; community and its physical environment.

ectotherm: An animal such as a reptile (other than birds), fish, or amphibian, that must use environmental energy and behavioural adaptations to regulate its body temperature.

ectothermic: Referring to organisms that do not produce enough metabolic heat to have much effect on body temperature.

ejaculatory duct: The short section of the ejaculatory route in mammals formed by the convergence of the vas deferens and a duct from the seminal vesicle. The ejaculatory duct transports sperm from the vas deferens to the urethra.

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electrocardiogram (ECG): A record of the electrical impulses that travel through cardiac muscle during the heart cycle.

electroporation: A technique to introduce recombinant DNA into cells by applying a brief electrical pulse to a solution containing cells. The electricity creates temporary holes in the cells' plasma membranes, through which DNA can enter.

Embryo sac: The female gametophyte of angiosperms, formed from the growth and division of the megaspore into a multicellular structure with eight haploid nuclei.

emigration: The movement of individuals out of a population.

endocrine gland: A ductless gland that secretes hormones directly into the interstitial fluid, from which they diffuse into the bloodstream.

endocrine system: The internal system of chemical communication involving hormones, the ductless glands that secrete hormones, and the molecular receptors on or in target cells that respond to hormones; functions in concert with the nervous system to effect internal regulation and maintain homeostasis.

endometrium: The inner lining of the uterus, which is richly supplied with blood vessels.

endorphin: Any of several hormones produced in the brain and anterior pituitary that inhibits pain perception.

endotherm: An animal, such as a bird or mammal, that uses metabolic heat to regulate body temperature.

endothermic: Referring to organisms with bodies that are warmed by heat generated by metabolism. This heat is usually used to maintain a relatively stable body temperature higher than that of the external environment.

epididymis: A coiled tubule located adjacent to the testes where sperm are stored.

epinephrine: A catecholamine hormone secreted from the adrenal medulla that mediates fight-or-flight responses to short-term stress; also functions as a neurotransmitter.

epistasis: A type of gene interaction in which one gene alters the phenotypic effects of another gene that is independently inherited.

erythropoietin: A hormone produced in the kidney when tissues of the body do not receive enough oxygen. This hormone stimulates the production of erythrocytes.

estrogen: Any steroid hormone, such as estradiol, that stimulates the development and maintenance of the female reproductive system and secondary sex characteristics.

euchromatin: The more open, unravelled form of eukaryotic chromatin that is available for transcription.

eumelanin: It is one of three basic types of melanin and the most common type. It is produced in 'black' and 'brown' subtypes.

evolution: All the changes that have transformed life on Earth from its earliest beginnings to the diversity that characterizes it today.

excretion: The disposal of nitrogen-containing waste products of metabolism.

exon: A coding region of a eukaryotic gene. Exons, which are expressed, are separated from each other by introns.

explants culture: In biology, it is a technique used for the isolation of cells from a piece or pieces of tissue.

extremembryonic membrane: Four membranes (yolk sac, amnion, chorion, allantois) that support the developing embryo in mammals, birds and reptiles.

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F

feedback inhibition: A method of metabolic control in which the end product of a metabolic pathway acts as an inhibitor of an enzyme within that pathway.

fermentation: A catabolic process that makes a limited amount of ATP from glucose without an electron transport chain and that produces a characteristic end product, such as ethyl alcohol or lactic acid.

fertilization: The union of haploid gametes to produce a diploid zygote.

filtration: The extraction of water and small solutes, including metabolic wastes, from the body fluid into excretory system.

foetus: A developing human from the ninth week of gestation until birth; has all the major structures of an adult.

follicle: A microscopic structure in the ovary that contains the developing ovum and secret estrogens.

follicle-stimulating hormone (FSH): tropic hormone produced and secreted by the anterior pituitary that stimulates the production of eggs by the ovaries and sperm by the testes.

follicular phase: The part of the ovarian cycle during which follicles are growing and oocyte maturing.

forebrain: one of three ancestral and embryonic regions of the vertebrate brain; develops into the thalamus, hypothalamus, and cerebrum.

fossil: A preserved remnant or impression of an organism that lived in the past.

fragile X syndrome: It is an X-linked dominant condition. Fragile X syndrome is caused by a mutation in the fragile X mental retardation 1 gene (FMR1) on the X chromosome. Moderate to severe learning difficulties in males with the condition and mild learning difficulties in some females who are carriers. Behavioural problems, including autistic spectrum disorder, are common.

G

gadolinium: a metallic element of the rare earth; symbol Gd; atomic no 64; from the French chemist Gadolin 1760-1852)

gamete: A haploid cell, such as an egg or sperm. Gametes unite during sexual reproduction to produce a diploid zygote.

gametogenesis: The process by which gametes are produced in the mammalian body.

ganglion (plural, ganglia): A cluster (functional group) of nerve cell bodies in a centralized nervous system.

gas exchange: The uptake of molecular oxygen from the environment and the discharge of carbon dioxide to the environment.

gastrula: The three-layered, cup-shaped embryonic stage.

gastrulation: The formation of a gastrula from a blastula.

gate ion channel: A gated channel for a specific ion. When ion channels are opened or closed, the membrane potential of the cell is altered.

gel electrophoresis: The separation of nucleic acids or proteins, on the basis of their size and electrical charge, by measuring their rate of movement through an electrical field in a gel.

gene: A discrete unit of hereditary information consisting of a specific nucleotide sequence in DNA (or RNA, in some viruses).

gene cloning: The production of multiple copies of a gene.

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gene flow: Genetic additions to or subtraction from a population resulting from the movement of fertile individuals or gametes.

gene pool: The total aggregate of genes in a population at any one time.

genetic drift: Unpredictable fluctuations in allele frequencies from one generation to the next because of a population's finite size.

genetic engineering: The direct manipulation of genes for practical purposes.

genetic map: An ordered list of genetic loci (genes or other genetic markers) along a chromosome.

genome: The complete complement of an organism's genes; an organism's genetic material.

genomic library: A set of thousands of DNA segments from a genome, each carried by a plasmid, phage, or other cloning vector.

genomics: The study of whole sets of genes and their interactions.

germ layers: Three main layers that form the various tissues and organs of an animal body.

gestation: Pregnancy; the state of carrying developing young within the female reproductive tract.

glial cells: supporting cells that are essential for the structural integrity of the nervous system and for the normal functioning of neurons.

glomerulus: A ball of capillaries surrounded by Bowman's capsule in the nephron and serving as the site of filtration in the vertebrate kidney.

glucagon: A hormone secreted by pancreatic alpha cells that raises blood glucose levels. It promotes glycogen breakdown and release of glucose by the liver.

glucocorticoid: A steroid hormone secreted by the adrenal cortex that influences glucose metabolism and immune function.

gonadotropin: A hormone that stimulates the activities of the testes and ovaries. Follicle stimulating hormone and luteinizing hormone are gonadotropins.

grey matter: Regions of dendrites and clusters of neuron cell bodies within the CNS.

gross primary production: The total primary production of an ecosystem.

growth hormone (GH): A hormone produced and secreted by the pituitary.

H

habituation: A very simple type of learning that involves a loss of responsiveness to stimuli that convey little or no information.

Hardy-weinberg equilibrium: The condition describing a non-evolving population (one that is in genetic equilibrium).

Hardy-Weinberg theorem: The principle that frequencies of alleles and genotypes in a population remain constant from generation to generation provided that only Mendelian segregation and recombination of alleles are at work.

heat-shock protein: A protein that helps protect other protein during heat stress. Heat-shock proteins are found in plants, animals, and microorganisms.

heterochromatin: Nontranscribed eukaryotic chromatin that is so highly compacted that it is visible with a light microscope during interphase.

heterozygous: Having two different alleles for a given gene.

hindbrain: One of three ancestral and embryonic regions of the vertebrate brain; develops into the medulla oblongata, pons, and cerebellum.

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histone: A small protein with a high proportion of positively charged amino acids that binds to the negatively charged DNA and plays a key role in its chromatin structure.

homeostasis: The steady-state physiological condition of the body.

homologous chromosomes: Chromosome pairs of the same length, centromere position, and staining pattern that possess genes for the same characters at corresponding loci. One homologous chromosome is inherited from the organism's father, the other from the mother.

homology: Similarity in characteristics resulting from a shared ancestry.

homozygous: Having two identical alleles for a given gene.

hormone: In multicellular organisms, one of many types of circulating chemical signals that are formed in specialized cells, travel in body fluids, and act on specific target cells to change their functioning.

human chorionic gonadotropin (HCG): A hormone secreted by the chorion that maintains the corpus luteum of the ovary during the first three months of pregnancy.

human Genome Project: An international collaborative effort to map and sequence the DNA of the entire human genome.

Hunter's disease: Hunter syndrome, or mucopolysaccharidosis Type II, is a lysosomal storage disease caused by a deficient (or absent) enzyme, iduronate-2-sulfatase. The accumulated substrate in Hunter's syndrome is heparan sulfate and dermatan sulfate. The syndrome has X-linked recessive inheritance.

hybridization: In genetics, the mating, or crossing, of two true-breeding varieties.

hymen: A dome-shaped rubber cup fitted into the upper portion of the vagina before sexual intercourse. It serves as a physical barrier to block the passage of sperm.

hyperpolarization: An electrical state in which the inside of the cell is more negative relative to the outside than at the resting membrane potential. A neuron membrane is hyperpolarised if a stimulus increases its voltage from the resting potential of -70 mV, reducing the chance that neuron will transmit a nerve impulse.

hypothalamus: The ventral part of the vertebrate forebrain; functions in maintaining homeostasis, especially in coordinating the endocrine and nervous systems; secretes hormones of the posterior pituitary and releasing factors that regulate the anterior pituitary.

hypophosphatemic rickets: It is a form of rickets that is characterized by low serum phosphate levels and resistance to treatment with ultraviolet radiation or vitamin D ingestion.

I

I band: The area near the edge of the sarcomere where there are only thin filaments.

Incontinentia pigmenti: It is a genetic disorder that affects the skin, hair, teeth, nails, and central nervous system. It is named due to its microscopic appearance.

immigration: The influx of new individuals from other areas.

immunization: The process of generating a state of immunity by artificial means. In active immunization, a nonpathogenic version of a normally pathogenic microbe is administered, inducing B and T cell responses and immunological memory. In passive immunization, antibodies specific for a particular microbe are administered, conferring immediate but temporary protection. It is also called vaccination.

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imprinting: A type of learned behaviour with a significant innate component, acquired during a limited critical period.

induction: the ability of one group embryonic cells to influence the development of another.

in vitro fertilization: Fertilization of ova in laboratory containers followed by artificial implantation of the early embryo in the mother's uterus.

Incomplete dominance: The situation in which the phenotype of heterozygote is intermediate homozygous for either allele.

innate behaviour: Behaviour that is developmentally fixed and under strong genetic control. Innate behaviour is exhibited in virtually the same form by all individuals in a population despite internal and external environmental differences during development and throughout their lifetimes.

insertion: A mutation involving the addition of one or more nucleotide pairs to a gene.

insulin: It is a peptide hormone, produced by beta cells in the pancreas, and is central to regulating carbohydrate and fat metabolism in the body. It causes cells in the skeletal muscles, and fat tissue to absorb glucose from the blood.

interneuron: An association neuron; a nerve cell within the central nervous system that forms synapses with sensory and motor neurons and integrates sensory input and motor output.

involution: Cells rolling over the edge of the lip of the blastopore into the interior of the embryo during gastrulation.

islets of Langerhans: Clusters of endocrine cells within the pancreas that produce and secrete the hormones glucagon (alpha cells) and insulin (beta cells).

J

juxtamedullary nephrons: Nephrons with well-developed loops of Henle that extend deeply into the renal medulla.

junk DNA: In genetics, "junk DNA" or noncoding DNA describes components of an organism's DNA sequences that do not encode for protein sequences.

K

karyotype: A display of the chromosome pairs of a cell arranged by size and shape.

Krause end bulbs: Nerve terminals in skin, mucosa of the oral cavity, conjunctiva, and other parts, consisting of a laminated capsule of connective tissue enclosing the terminal, branched, convoluted ending of an afferent nerve fiber; generally believed to be sensitive to touch and pressure. The end-bulbs of Krause were named after German anatomist Wilhelm Krause (1833–1910)

L

lambda phage: It also called Enterobacteria phage λ and colphage λ , is a type of temperate bacteriophage or bacterial virus that infects the *Escherichia coli* (*E. coli*) species of bacteria. The virus may be housed in the genome of its host via lysogeny.

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law of independent assortment: Mendel's second law, stating that each pair of alleles segregates independently during gamete formation; applies when genes for two characters are located on different pairs of homologous chromosomes.

law of segregation: Mendel's first law, stating that each allele in a pair separates into a different gamete during gamete formation.

leading strand: The new continuous complementary DNA strand synthesized along the template strand in the mandatory 5' (3' direction).

learning: A behavioural change resulting from experience.

Leydig cells: These are also known as interstitial cells of Leydig, are found adjacent to the seminiferous tubules in the testicle. They produce testosterone in the presence of luteinizing hormone (LH). Leydig cells are polyhedral in shape; display a large prominent nucleus, an eosinophilic cytoplasm and numerous lipid-filled vesicles.

ligament: It comes from the Latin *ligare* meaning "to bind, tie," which is precisely what a ligament does. Ligaments only connect bones to bones. Ligaments allow for range of motion.

ligand: In biochemistry and pharmacology, a ligand (from the Latin *ligandum*, binding) is a substance (usually a small molecule), that forms a complex with a biomolecule to serve a biological purpose. In protein-ligand binding, the ligand is usually a signal-triggering molecule, binding to a site on a target protein. In DNA-ligand binding studies, the ligand is usually any small molecule or ion or even a protein that binds to the DNA double helix.

limbic system: A group of nuclei (clusters of nerve cell bodies) in the lower part of the mammalian forebrain that interact with the cerebral cortex in determining emotions: includes the hippocampus and the amygdala.

linked genes: Genes located close enough together on a chromosome to be usually inherited together.

locus (plural, loci): A specific place along the length of a chromosome where a given gene is located.

loop of Henle: In the kidney the loop of Henle (or Henle's loop, nephron loop or its Latin counterpart *ansa nephroni*) is the portion of a nephron that leads from the proximal convoluted tubule to the distal convoluted tubule. Named after its discoverer F. G. J. Henle, the loop of Henle's main function is to create a concentration gradient in the medulla of the kidney.

luteal phase: That portion of the ovarian cycle during which endocrine cells of the corpus luteum secrete female hormones.

luteinizing hormone (LH): A tropic hormone produced and secreted by the anterior pituitary that stimulates ovulation in females and androgen production in males.

M

Malpighian tubule: A unique excretory organ of insects that empties into the digestive tract, removes nitrogenous wastes from the hemolymph, and functions in osmoregulation.

medulla oblongata: The lowest part of the vertebrate brain, commonly called the medulla; a swelling of the hindbrain dorsal to the anterior spinal cord that controls autonomic, homeostatic functions, including breathing, heart and blood vessel activity, swallowing, digestion, and vomiting.

2nd Year Biology Glossary Definitions Notes

menopause: The cessation of ovulation and menstruation.

menstrual cycle: A type of reproductive cycle in higher female primates, in which the nonpregnant endometrium is shed as a bloody discharge through the cervix into the vagina.

menstrual flow phase: That portion of the uterine (menstrual) cycle when menstrual bleeding occurs.

menstruation: The shedding of portions of the endometrium during a uterine (menstrual) cycle.

messenger RNA (mRNA): A type of RNA, synthesized from DNA, that attaches to ribosomes in the cytoplasm and specifies the primary structure of a protein.

midbrain: One of three ancestral and embryonic regions of the vertebrate brain; develops into sensory integrating and relay centers that send sensory information to the cerebrum.

monosomic: Referring to a cell that has only one copy of a particular chromosome, instead of the normal two.

myelin sheath: In a neuron, an insulating coat of cell membrane from Schwann cells that is interrupted by nodes of Ranvier, where saltatory conduction occurs.

myofibril: A myofibril (also known as a muscle fibril) is a basic rod-like unit of a muscle. [1] Muscles are composed of tubular cells called myocytes, also known as muscle fibers, and these, cells in turn contain many chains of myofibrils. They are created during embryo development in a process known as myogenesis. Myofibrils are composed of long proteins such as actin, myosin, and titin, and other proteins that hold them together. These proteins are organized into thin filaments and thick filaments, which repeat along the length of the myofibril in sections called sarcomeres. Muscles contract by sliding the thin (actin) and thick (myosin) filaments along each other.

myofriaments: These are the filaments of myofibrils constructed from proteins. There are three different types of myofilaments, thick, thin, and elastic filaments.

myoglobin: An oxygen-storing, pigmented protein in muscle cells.

myosin: A type of protein filament that interacts with actin filaments to cause cell contraction.

N

natural selection: Differential success in the reproduction of different phenotypes resulting from the interaction of organisms with their environment. Evolution occurs when natural selection causes changes in relative frequencies of alleles in the gene pool.

negative feedback: A primary mechanism of homeostasis, whereby a change in a physiological variable that is being monitored triggers a response that counteracts the initial fluctuation.

nephron: The tubular excretory unit of the vertebrate kidney.

nerve: A ropelike bundle of neuron fibers (axons and dendrites) tightly wrapped in connective tissue.

net primary production (NPP): The gross primary production of an ecosystem minus the energy used by the producers for respiration.

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neural crest: A band of cells along the border where the neural tube pinches off from the ectoderm. The cells migrate to various parts of the body embryo and form the pigment cell in the skin, bones of the skull, the teeth, the adrenal glands and parts of the peripheral nervous system.

neural tube: A tube of cells running along the dorsal axis of the body, just dorsal to the notochord. It will give rise to the central nervous system.

neuron: A nerve cell; the fundamental unit of the nervous system, having structure and properties that allow it to conduct signals by taking advantage of the electrical charge across its cell membrane.

neurosecretory cells: These are specialized nerve cells that produce and secrete hormones. Well-known examples of neurosecretory cells are oxytocin- and vasopressin-secreting neurons in the hypothalamus and cells in the adrenal medulla. These cells are found in vertebrates and invertebrates.

neurotransmitter: A chemical messenger released from the synaptic terminal of a neuron at a chemical synapse that diffuses across the synaptic cleft and binds to and stimulates the postsynaptic cell.

Nissl body: also known as Nissl or tigroid substance is a large granular body found in neurons. These granules are rough endoplasmic reticulum (RER) with rosettes of free ribosomes, and are the site of protein synthesis. It was named after Franz Nissl, a German psychiatrist who invented the Nissl staining method.

nociceptor: A class of naked dendrites in the epidermis of the skin.

nondisjunction: It is the failure of chromosome pairs or sister chromatids to separate properly during cell division. Nondisjunction ("not coming apart") is an erroneous chromosomal segregation that results in an abnormal number of chromosomes (aneuploidy). There are three forms of nondisjunction involving segregation during the cell cycle: failure of a pair of homologous chromosomes to separate in meiosis I, or the failure of sister chromatids to separate during meiosis II or mitosis. Calvin Bridges and Thomas Hunt Morgan are credited with discovering nondisjunction in *Drosophila* sex chromosomes in the spring of 1910, while working in the Zoological Laboratory of Columbia University.

norepinephrine: also called noradrenaline or 4,5-p-trihydroxy phenethylamine is a catecholamine with multiple roles including those as a hormone and a neurotransmitter.

notochord: A longitudinal, flexible rod that runs along the dorsal axis of an animal's body in the future position of the vertebral column.

nucleic acid probe: In DNA technology, a labeled single-stranded nucleic acid molecule used to tag a specific nucleotide sequence in a nucleic acid sample. Molecules of the probe hydrogen-bond to the complementary sequence wherever it occurs; radioactive or other labeling of the probe allows its location to be detected.

nucleoid: A dense region of DNA in a prokaryotic cell.

nucleosome: The basic, bead-like unit of DNA packaging in eukaryotes, consisting of a segment of DNA wound around a protein core composed of two copies of each of four types of histone.

2nd Year Biology Glossary Definitions Notes

O

Okazaki fragment: A short segment of DNA synthesized on a template strand during DNA replication. Many Okazaki fragments make up the lagging strand of newly synthesized DNA.

oogenesis: The process in the ovary that results in the production of female gametes.

oogonia: Ovary-specific stem cells.

organogenesis: The development of organ rudiments from the three germ layers.

operant conditioning: A type of associative learning in which an animal learns to associate one of its own behaviours with a reward or punishment and then tends to repeat or avoid that behaviour: also called trial-and-error learning.

operon: In genetics, an operon is a functioning unit of genomic DNA containing a cluster of genes under the control of a single promoter. The genes are transcribed together into an mRNA strand and either translated together in the cytoplasm, or undergo trans-splicing to create monocistronic mRNAs that are translated separately, i.e. several strands of mRNA that each encode a single gene product. The result of this is that the genes contained in the operon are either expressed together or not at all. Several genes must be co-transcribed to define an operon.

organogenesis: The development of organ rudiments from the three germ layers.

osteoblast: A bone-forming cell that deposits collagen.

osteon: The repeating organizational unit forming the microscopic structure of hard mammalian bone.

ovarian cycle: The cyclic recurrence of the follicular phase, ovulation, and the luteal phase in the mammalian ovary, regulated by hormones.

ovary: (1) In flowers, the portion of a carpel in which the egg-containing ovules develop. (2) In animals, the structure that produces female gametes and reproductive hormones.

oviduct: A tube passing from the ovary to the vagina in invertebrates or to the uterus in vertebrates.

ovulation: The release of an egg from ovaries. In humans, an ovarian follicle releases an egg during each uterine (menstrual) cycle.

ovum: The female gamete; the haploid, unfertilized egg, which is usually a relatively large, nonmotile cell.

oxytocin: It is a mammalian neurohypophysial hormone. Produced by the hypothalamus and stored and secreted by the posterior pituitary gland, oxytocin acts primarily as a neuromodulator in the brain. It is released in large amounts after distension of the cervix and uterus during labour, facilitating birth, maternal bonding, and, after stimulation of the nipples, lactation. Childbirth and milk ejection result from positive feedback mechanisms.

P

P generation: The parent individuals from which offspring are derived in studies of inheritance; P stands for parental.

P site: One of a ribosome's three binding sites for tRNA during translation. The P site holds the tRNA carrying the growing polypeptide chain. (P stands for peptidyl tRNA).

pain receptor: A kind of interoceptor that detects pain; also called a nociceptor.

2nd Year Biology Glossary Definitions Notes

parathyroid gland: Any of four small endocrine glands, embedded in the surface of the thyroid gland, that secrete parathyroid hormone.

parathyroid hormone (PTH): A hormone secreted by the parathyroid glands that raises blood calcium level by promoting calcium release from bone and calcium retention by the kidneys.

parthenogenesis: A type of reproduction in which females produce offspring from unfertilized eggs.

parturition: The expulsion of a baby from the mother; also called birth.

pedigree: A diagram of a family tree showing the occurrence of heritable characters in parents and offspring over multiple generations.

peripheral nervous system (PNS): The sensory and motor neuron that connect to the central nervous system.

peritubular capillaries: The network of tiny blood vessels that surrounds the proximal and distal tubules in the kidney.

perennial: A flowering plant that lives for many years.

primary succession: A type of ecological succession that occurs in a virtually lifeless area, where there were originally no organisms and where soil has not yet formed.

pheomelanin: It is one of three basic types of melanin. It is a cysteine containing red-brown polymer of benzothiazine units largely responsible for red hair and freckles.

pheromone: In animals and fungi, small, volatile chemical that functions in communication and that in animals acts much like a hormone in influencing physiology and behaviour.

pineal gland: A small gland on the dorsal surface of the vertebrate forebrain that secretes the hormone melatonin.

pituitary gland: An endocrine gland at the base of the hypothalamus: consists of a posterior lobe (neurohypophysis), which stores and releases two hormones produced by the hypothalamus, and an anterior lobe (adenohypophysis), which produces and secretes many hormones that regulate diverse body functions.

placenta: A structure in the pregnant uterus for nourishing a viviparous foetus with the mother's blood supply; formed from the uterine lining and embryonic membranes.

plankton: Mostly microscopic organisms that drift passively or swim weakly near the surface of oceans, ponds, and lakes.

plasmid: A small ring of DNA that carries accessory genes separate from those of a bacterial chromosome; also found in some eukaryotes, such as yeast.

poly-A tail: the modified end of the 3' end of an mRNA molecule consisting of the addition of some 50 to 250 adenine nucleotide.

polygenic inheritance: An additive effect of two or more gene loci on a single phenotypic character.

polymerase chain reaction (PCR): A technique for amplifying DNA in vitro by incubating with special primers, DNA polymerase molecules, and nucleotides.

polyploidy: A chromosomal alteration in which the organism possesses more than two complete chromosome sets.

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pons: Portion of the brain that participates in certain automatic, homeostatic functions, such as regulating the breathing centers in the medulla.

population: A localized group of individuals that belong to the same biological species (that are capable of interbreeding and producing fertile offspring).

positive feedback: A physiological control mechanism in which a change in some variable triggers mechanisms that amplify the change.

posterior pituitary: Also called the neurohypophysis; an extension of the hypothalamus composed of nervous tissue that secretes oxytocin and antidiuretic hormone made in the hypothalamus; a temporary storage site for these hormones.

postsynaptic cell: The target cell at a synapse.

presynaptic cell: The transmitting cell at a synapse.

Protenor bugs: These are plant-feeding bugs that mainly suck the juices out of grasses and sedges.

primary succession: A type of ecological succession that occurs in a virtually lifeless area, where there were originally no organisms and where soil has not yet formed.

primer: A polynucleotide with a free 3' end, bound by complementary base pairing to the template strand, that is elongated during DNA replication.

prolactin (PRL): A hormone produced and secreted by the anterior pituitary with a great diversity of effects in different vertebrate species. In mammals, it stimulates growth of and milk production by the mammary glands.

proliferative phase: That portion of the uterine (menstrual) cycle when the endometrium regenerates and thickens.

promoter: A specific nucleotide sequence in DNA that binds RNA polymerase and indicates where to start transcribing RNA.

prostaglandin (PG): One of a group of modified fatty acids secreted by virtually all tissues and performing a wide variety of functions as local regulators.

proximal tubule: In the vertebrate kidney, the portion of a nephron immediately downstream from Bowman's capsule that conveys and helps refine filtrate.

Punnet square: A diagram used in the study of inheritance to show the results of random fertilization in genetic cross.

R

recessive allele: An allele whose phenotypic effect is not observed in a heterozygote.

refractory periods: The short time immediately after an action potential in which the neuron cannot respond to another stimulus, owing to an increase in potential permeability.

renal artery: The blood vessel bringing blood to the kidney.

renal cortex: The outer portion of the vertebrate kidney.

renal medulla: The inner portion of the vertebrate kidney, beneath the renal cortex.

renal pelvis: Funnel-shaped chamber that receives processed filtrate from the vertebrate kidney's collecting ducts and is drained by the ureter.

renal vein: The blood vessel draining the kidney.

réplication fork : A Y-shaped region on a replicating DNA molecule where new strands are

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growing.

residual volume: The amount of air that remains in the lungs after forcefully exhaling.

respiratory pigment: A protein that transports most of the oxygen in blood.

respiratory surface: The part of an animal where gases are exchanged with the environment.

resting potential: The membrane potential characteristic of a nonconducting, excitable cell, with the inside of the cell more negative than the outside.

restriction enzyme: A degradative enzyme that recognizes and cuts up DNA (including that of certain phages) that is foreign to a bacterium.

restriction fragment: DNA segment resulting from cutting of DNA by a restriction enzyme.

restriction fragment length polymorphisms (RFLPs): Differences in DNA sequence on homologous chromosomes that can result in different patterns of restriction fragment lengths (DNA segments resulting from treatment with restriction enzymes); useful as genetic markers for making linkage maps.

restriction site: A specific sequence on a DNA strand that is recognized as a cut site by a restriction enzyme.

Rh factor: A protein antigen on the surface of red blood cells designated Rh-positive. If an Rh-negative mother is exposed to blood from an Rh-positive fetus, she produces anti-Rh antibodies of the IgG class.

rigor mortis: The stiffness of joints and muscular rigidity of a dead body, caused by depletion of ATP in the tissues. It begins two to four hours after death and lasts up to about four days, after which the muscles and joints relax.

RNA polymerase: An enzyme that links together the growing chain of ribonucleotides during transcription.

RNA processing: Modification of RNA before it leaves the nucleus, a process unique to eukaryotes.

RNA splicing: The removal of noncoding portions (introns) of the RNA molecule after initial synthesis.

S

saltatory conduction: Rapid transmission of a nerve impulse along an axon, resulting from the action potential jumping from one node of Ranvier to another, skipping the myelin-sheathed regions of membrane.

sarcomere: The fundamental repeating unit of striated muscle, delimited by the Z lines.

sarcoplasmic reticulum: A specialized endoplasmic reticulum that regulates the calcium concentration in the cytosol.

Schwann cell: A type of filial cell that forms insulating myelin sheaths around the axons of neurons in the peripheral nervous system.

scrotum: A pouch of skin outside the abdomen that houses a testis; functions in cooling sperm, thereby keeping them viable.

secondary succession: A type of succession that occurs where an existing community has been cleared by some disturbance that leaves the soil intact.

semen: The fluid that is ejaculated by the male during orgasm; contains sperm and secretions from several glands of the male reproductive tract.

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second messenger: A small, nonprotein, water soluble molecule or ion such as calcium ion or cyclic AMP, that relays a signal to a cell's interior in response to a signal received by a signal protein.

semiconservative model: Type of DNA replication in which the replicated double helix consists of one old strand, derived from the old molecule, and one newly made strand.

seminal vesicle: A gland in males that secretes a fluid component of semen that lubricates and nourishes sperm.

seminiferous tubule: A highly coiled tube in the testis in which sperm are produced.

sensory neuron: A nerve cell that receives information from the internal and external environments and transmits the signals to the central nervous system.

Serotonin: It is a neurotransmitter found in the digestive tract, the central nervous system, blood platelets and the pineal gland (deep at the center of the brain). It is also known as 5-hydroxytryptamine, which is often abbreviated to 5-HT.

sex chromosome: One of the pair of chromosome responsible for determining the sex of an individual.

sex-linked gene: A gene located on a sex chromosome.

skeletal muscle (striated muscle): Muscle generally responsible for the voluntary movements of the body.

sliding-filament model: The theory explaining how muscle contracts, based on change within a sarcomere, the basic unit of muscle organization, stating that thin (actin) filaments slide across thick (myosin) filaments, shortening the sarcomere. The shortening of all sarcomeres in a myofibril shortens the entire myofibril.

sodium-potassium pump: A special transport protein in the plasma membrane of animal cells that transports sodium out of the cell and potassium into the cell against their concentration gradients.

somatic nervous system: The branch of the motor division of the vertebrate peripheral nervous system composed of motor neurons that carry signals to skeletal muscles in response to external stimuli.

speciation: The origin of new species in evolution.

species: A group whose members possess similar anatomical characteristics and have the ability to interbreed.

sperm: The male gamete.

spermatogenesis: The continuous and prolific production of mature sperm cells in the testis.

stem cell: Any relatively unspecialized cell that can divide during a single division into one identical daughter cell and one more specialized daughter cell, which can undergo further differentiation.

steroid: A type of lipid, characterized by a carbon skeleton consisting of four rings with various functional groups attached.

stratum basalis: Boundary layer adjacent to the myometrium in the deciduas is called *stratum basalis*.

synapse (sin-apse): The locus where one neuron communicates with another neuron in a neural pathway; a narrow gap between a synaptic terminal of an - axon and a signal-receiving

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portion (dendrite or cell body) of another neuron or effector cell. Neurotransmitter molecules released by synaptic terminals diffuse across the synapse, relaying messages to the dendrite or effector.

synaptic cleft: A narrow gap separating the synaptic knob of a transmitting neuron from a receiving neuron or an effector cell.

synaptic terminal: A bulb at the end of an axon in which neurotransmitter molecules are stored and released.

synaptic vesicle: Membranous sac containing neurotransmitter molecules at the tip of the presynaptic axon.

T

TATA box: A promoter DNA sequence crucial informing the transcription initiation complex.

taxis: Movement toward or away from a stimulus.

telomere: The protective structure at each end of a eukaryotic chromosome. Specifically, the tandem repetitive DNA at the end of the chromosome's DNA molecule. See also repetitive DNA.

tendon: A type of fibrous connective tissue that attaches muscle to bone.

territoriality: A behaviour in which an animal defends a bounded physical space against encroachment by other individuals, usually of its own species. Territory defence may involve direct aggression or indirect mechanisms such as scent marking or singing.

test cross: In genetics, a test cross, first introduced by Mendel, involves the breeding of a dominant trait individual with a recessive individual, in order to determine the zygosity of the former by analysing proportions of offspring with the recessive phenotype.

testis: (plural testes). The male reproductive organ or gonad in which sperms and reproductive hormones are produced.

testosterone: The most abundant androgen hormone in the male body.

tetanus: The maximal, sustained contraction of a skeletal muscle, caused by a very fast frequency of action potentials elicited by continual stimulation.

thalamus: One of two integrating centres of the vertebrate forebrain. Neurons with cell bodies in the thalamus relay neural input to specific areas in the cerebral cortex and regulate what information goes to the cerebral cortex.

threshold: The potential an excitable cell membrane must reach for an action potential to be initiated.

thrombus: A clump of platelets and fibrin that blocks the flow of blood through a blood vessel.

thymus: A small organ in the thoracic cavity of vertebrates where maturation of T cells is completed.

thyroid gland: An endocrine gland, located on the ventral surface of the trachea, that secretes two iodine-containing hormones, triiodothyronine (T3) and thyroxine (T4), and calcitonin.

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thyroid-stimulating; hormone (TSH): A tropic hormone produced and secreted by the anterior pituitary that regulates the release of thyroid hormones.

thyroxine (T4) : One of the two iodine - containing hormones that are secreted by the thyroid gland and help regulate metabolism, development and maturation in vertebrates.

trachea: The windpipe; that portion of the respiratory tube that has C-shaped cartilaginous rings and passes from the larynx to two bronchi.

transcription: The synthesis of RNA on a DNA template.

transgenic: Pertaining to an individual plant or animal whose genome contains a gene introduced from another organism, either from the same or a different species.

translation: The synthesis of a polypeptide using the genetic information encoded in an mRNA molecule. There is a change of language from nucleotides to amino acids.

translocation: (1) An aberration in chromosome structure resulting from attachment of a chromosomal fragment to a nonhomologous chromosome. (2) During protein synthesis, the third stage in the elongation cycle when the RNA carrying the growing polypeptide moves from the A site to the P site on the ribosome. (3) The transport of organic nutrients in the phloem of vascular plants.

triiodothyronine (T3): One of the two iodine - containing hormones that are secreted by the thyroid gland and help regulate metabolism, development and maturation in vertebrates.

trisomic: Referring to a cell that has three copies of a particular chromosome, instead of the normal two.

triplet code: A set of three-nucleotide-long words that specify the amino acids for polypeptide chains.

tropic hormone: A hormone that has another endocrine gland as a target.

trophoblast: The outer epithelium of the blastocyst, which forms the foetal part of the placenta.

U

uniformitarianism: Charles Lyell's idea that geologic processes have not changed throughout Earth's history.

urea: A soluble nitrogenous waste produced in the liver by a metabolic cycle that combines ammonia with carbon dioxide.

ureter: A duct leading from the kidney to the urinary bladder.

urethra: A tube that releases urine from the body near the vagina in females and through the penis in males; also serves in males as the exit tube for the reproductive system.

uric acid: An insoluble precipitate nitrogenous waste excreted by land snails, insects and many reptiles and birds.

urinary bladder: The pouch where urine is stored prior to elimination.

uterine cycle: The changes that occur in the uterus during the reproductive cycle of the human female; also called the menstrual cycle.

uterus: A female organ where eggs are fertilized and/or development of the young occurs.

2nd Year Biology Glossary Definitions Notes

V

vaccine: A harmless variant or derivative of a pathogen that stimulates a host's immune system to mount defenses against the pathogen.

vagina: Part of the female reproductive system between the uterus and the outside opening; the birth canal in mammals; also accommodates the male's penis and receives sperm during copulation.

vasa recta: In the blood supply of the kidney, the vasa recta renis (or straight arteries of kidney, or straight arterioles of kidney) are a series of straight capillaries in the medulla (Latin: vasa, "vessels"; recta, "straight"). They lie parallel to the loop of Henle.

vasoconstriction: A decrease in the diameter of superficial blood vessels triggered by nerve signals that contract the muscles of the vessel walls.

vasodilation: An increase in the diameter of superficial blood vessels triggered by nerve signals that relax the muscles of the vessel walls.

ventilation: Any method of increasing contact between the respiratory medium and the respiratory surface.

ventricle: (1) A heart chamber that pumps blood out of a heart. (2) A space in the vertebrate brain, filled with cerebrospinal fluid.

vestigial organ: A structure of marginal, if any, importance to an organism. Vestigial organs are historical remains of structures that had important functions in ancestors.

villi of chorion frondosum: In the early weeks of development, villi cover the entire surface of the chorion . As pregnancy advances, villi on the embryonic pole continue to grow and expand, giving rise to the chorion frondosum (bushy chorion). The chorion frondosum forms up the placenta together with the decidual plate.

vital capacity: The maximum volume of air that a respiratory system can inhale and exhale.

vitamin D resistant rickets: It is defined by its resistance to the vitamin D treatment generally used in deficiency rickets.

vocal cord: One of two small bands of muscle within the larynx. These muscles vibrate to produce the voice. The vocal cords form a "V" inside the larynx, a 2-inch-long, tube-shaped organ in the neck. When we talk, the vocal cords tighten up and move closer together. Air from the lungs is forced between them and makes them vibrate, producing the sound of our voice. The tongue, lips, and teeth form this sound into words.

vulva: Collective term for the female external genitalia.

W

white matter: Tracts of axons within the CNS.

wild type: An individual with the normal (most common) phenotype.

Xerosere: It is a plant succession which is limited by water availability. It includes the different stages in a xerarch succession. Xerarch succession of ecological communities originated in extremely dry situation such as sand deserts, sand dunes, ail deserts, rock deserts etc..

2nd Year Biology Glossary Definitions Notes

Y

yeast artificial chromosome (YAC): A vector that combines the essentials of a eukaryotic chromosome--an origin for DNA replication, a centromere and two telomeres-with foreign DNA.

Z

Z lines: The border of a sarcomere.

zero population growth (ZPG): A period of stability in population size, when the per capita birth rate and death rate are equal.

zygote: The diploid product of the union of haploid gametes in conception; a fertilized egg.

The End

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