

LC Biology – Key Definitions

Cell Ultrastructure



Ultrastructure refers to the appearance of structure as seen under the microscope.

Prokaryotic Cells



Do not have a nucleolus or cell structures that are enclosed by membranes. They are usually small, do not have mitochondria or chloroplasts, are primitive and include bacteria, which are in the kingdom of Monera.

Eukaryotic Cells



Have a membrane enclosed nucleolus and cell organelles. They are also larger and more advanced than prokaryotic cells and include plants and animal cells from the kingdoms Protocista and Fungi.

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Tissues and Tissue Culture



A tissues is a group of similar cells that carry out the same function(s). Tissue culture is the growth of cells on an artificial medium outside an organism.

Organs



An organ is a structure composed of two or more tissues that work together to carry out one or more functions. Plant organs include roots, stems, leaves and flowers. Animal organs include the brain, heart, lungs and kidneys.

Organ Systems



Consist of a group of organs working together to carry out one or more functions. E.g. the digestive system or the circulatory system.

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Enzymes



An enzyme is a protein that speeds up a reaction without being used in the reaction. They control metabolism.

Metabolism



The sum of all chemical reactions taking place in an organism. Metabolism includes catabolism and anabolism.

Respiration



The release of energy from food using enzymes. Respiration normally involves the breakdown of glucose.

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Aerobic
Respiration

REVISE
WISE

Controlled release of energy from food using oxygen.

Anaerobic
Respiration

REVISE
WISE

Controlled release of energy from food without the use of oxygen.

Bioprocessing

REVISE
WISE

Bioprocessing or biotechnology is the production of useful products by living things or their products.

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Bioreactor



A vessel in which cells or enzymes produce useful products. Industrial fermentations are carried out in bioreactors.

Diffusion



Is the movement of molecules of a liquid or a gas from a region of high concentration to a region of low concentration. Diffusion is a passive process, it does not need an external source of energy.

Osmosis



Movement of water molecules from a high water concentration to a low water concentration across a semi-permeable membrane.

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Cell Continuity



The way in which cells give rise to new cells as a result of cell division.

Mitosis



A form of nuclear division in which a nucleus forms two nuclei containing identical sets of chromosomes.

Cancer



A group of disorders in which certain cells lose their ability to control their rate of mitosis and the number of times mitosis takes place.

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Meiosis



A form of nuclear division in which the daughter nuclei contain half the number of chromosomes of the parent nucleus.

Species



A group of organisms capable of naturally interbreeding with each other to produce fertile offspring. All humans form a single species.

Variation



Means that there are differences between members of the same species. Acquired variations are learned through life. Inherited variations are controlled by genes and passed on from generation to generation.

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Mendel's First Law



Or the law of segregation, states that inherited characteristics are controlled by pairs of factors. These factors segregate at gamete formation so that only one factor is carried in each gamete.

Mendel's Second Law



Or the law of independent assortment, states that at gamete formation either member of a pair of factors is equally likely to recombine with either of another pair of factors.

Linkage



Means that genes are located on the same chromosome. Linked genes are passed on together to the next generation. The locus is the position of a gene on a chromosome.

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Genetic Engineering



Is the artificial alteration or manipulation of genes. The process involves removing a gene from one organism and inserting it into the DNA of another organism.

Ligation



Is the process by which the exposed ends of the human DNA and the plasmid DNA are joined or spliced together.

Expression



Is the production of the desired products from the GMO (in this case the bacteria).