

EPS 210 Life in the Universe Fall 1999– Adrian Brearley

Lect 7 – Cells

Visit the website http://www.nih.gov/nigms/news/science_ed/life.html for a full review of this material and images.

Keywords and concepts

Cell - The basic subunit of any living organism; the simplest unit that can exist as an independent living system.

Prokaryotic cells – simple cells that have no nucleus – i.e. a cell that does not have a membrane around its nuclear region; for example, a bacterium.

Eukaryotic Cell - A cell that has a true nucleus surrounded by a membrane. This group includes all animal and plant cells, except cyanobacteria (blue green algae).

Components of Cells

Organelle - A specialized structure having a definite function in a cell; for example, the nucleus, a mitochondrion, a ribosome.

Cell Surface Membrane - A complex film of lipids interspersed with proteins. It covers the cell, maintains its integrity, and controls what goes in and what comes out.

Cytoplasm - All the substance inside a cell, excluding the nucleus but including the other organelles.

Nucleus - In eukaryotic cells, the membrane-bound organelle that contains the genetic material, i.e. DNA.

Ribosome- An organelle that contains RNA and protein, and is the site of protein synthesis.

Endoplasmic Reticulum - An organelle made up of membranes that form a system of tubes and flattened sacs. Some of the membranes are smooth (the smooth endoplasmic reticulum). Others are rough (the rough endoplasmic reticulum) because they are dotted with ribosomes.

Golgi Apparatus An organelle composed of membranous sacs that packages proteins into vesicles and sends them to the cell's surface or to lysosomes.

Lysosome - A small organelle containing powerful enzymes that can digest a variety of materials.

Mitochondria – Organelle responsible for taking nutrients (fuel) and converting them into energy. The energy stored in a molecule called ATP – adenosine triphosphate, a compound that can release energy extremely quickly. Mitochondria occur in animals

Chloroplast - The chlorophyll-containing organelle in green plants in which light energy is converted into sugars. Green plants also contain mitochondria.

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Course information: <http://eps.unm.edu/facstaff/brearley/brearley.htm> under courses