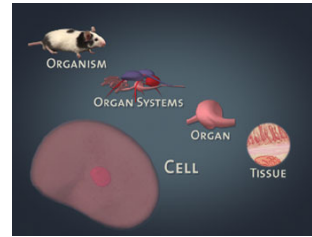
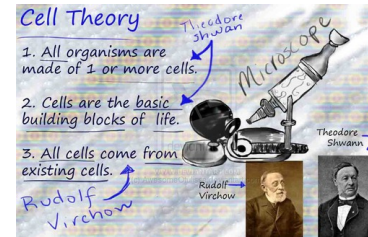


Cell



the basic unit of life

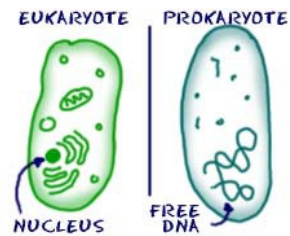
Cell Theory



States that:

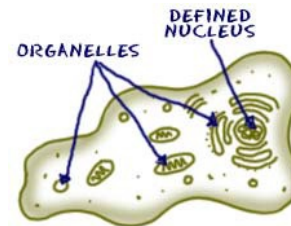
1. All living organisms are composed of cells. They may be unicellular or multicellular.
2. The cell is the basic unit of life.
3. All cells come from pre-existing cells.

Prokaryote



single-celled organism lacking a nucleus and other membrane-bound organelles; for example cyanobacteria

Eukaryote



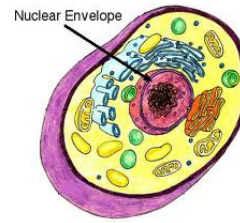
organism whose cells contain a nucleus and other membrane-bound organelles; for example ameoba

Membrane-bound organelles



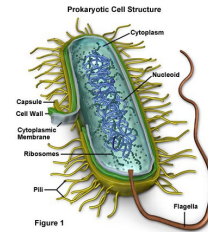
organelles in eukaryotic cells that are surrounded by a lipid bilayer membrane

Nuclear envelope (nuclear membrane)



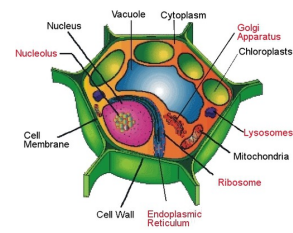
a lipid bilayer that surrounds the nucleus in eukaryotic cells

Bacteria cell



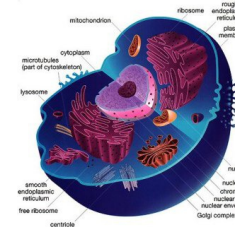
prokaryote

Plant cell



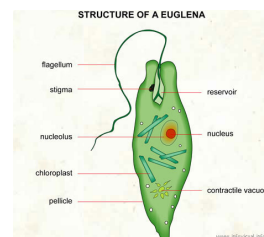
eukaryote

Animal cell



eukaryote

Protista cell



eukaryote

Fungus cell



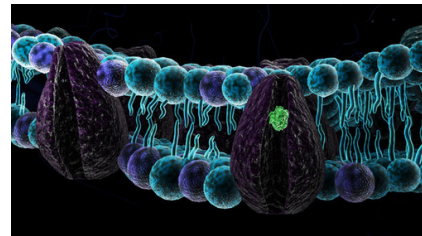
eukaryote

Homeostasis



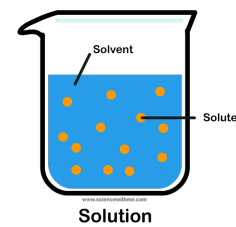
process by which organisms maintain a relatively stable internal environment

Cell membrane (plasma membrane)



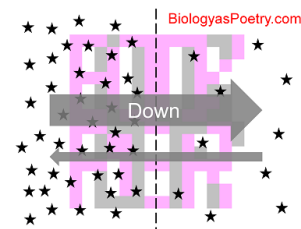
phospholipid bilayer that surrounds all cells and regulates what enters and leaves the cell

Solution



a mixture of a solute in a solvent

Concentration gradient



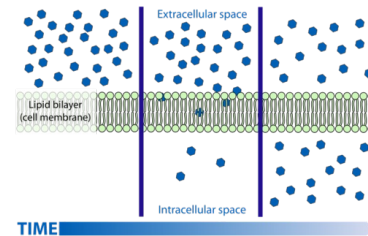
the gradual difference in the concentration of solutes in a solution between two regions

Passive Transport



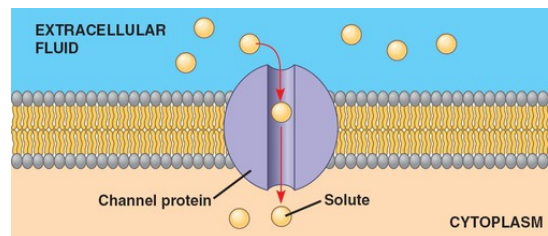
transport where molecules move down a concentration gradient from HIGH to LOW; no energy required

Diffusion



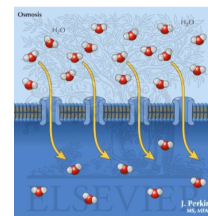
a type of passive transport of molecules from a high to low concentration; no energy required

Facilitated Diffusion



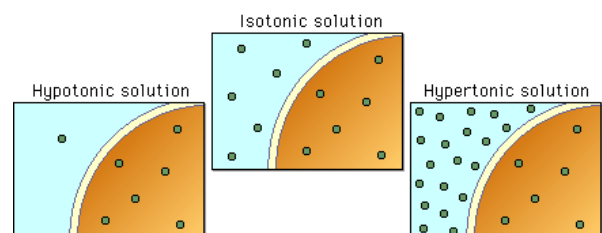
diffusion with the help of a "door" or protein CHANNEL; type of passive transport

Osmosis



facilitated diffusion of WATER through a selectively permeable membrane; a type of passive transport

Isotonic



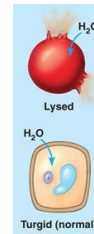
when the concentration of two solutions is the same; a cell will stay the SAME size

Hypertonic solution



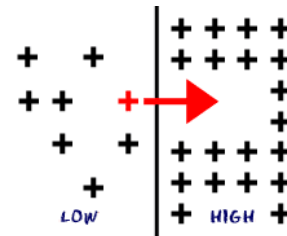
when comparing two solutions, the solution with the greater concentration of solutes; a cell will SHRINK (ex. salt water)

Hypotonic solution



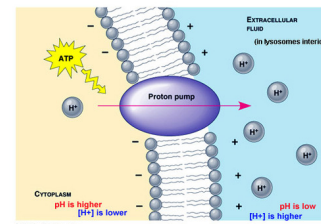
when comparing two solutions, the solution with the lesser concentration of solutes; a cell will SWELL (ex. pure distilled water)

Active Transport



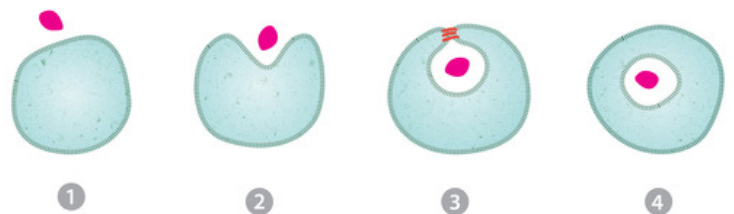
ENERGY-REQUIRING process that moves material across a cell membrane against a concentration gradient from LOW to HIGH

Protein PUMP



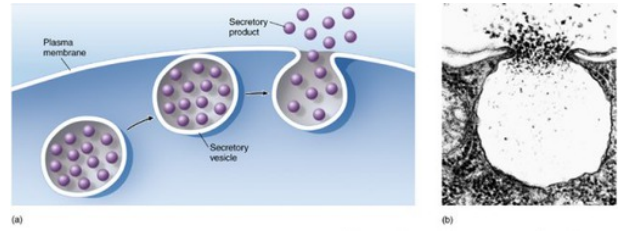
a protein in the cell membrane that pumps out or in solutes or ions from a low concentration to a high concentration; type of active transport

Endocytosis



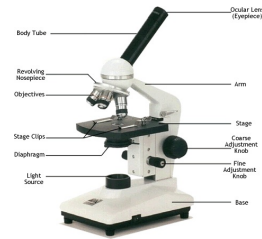
process by which a cell takes material into the cell by folding in the cell membrane; type of active transport

Exocytosis



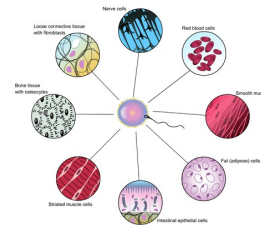
process by which a cell releases large amounts of material; type of active transport

Compound light microscope



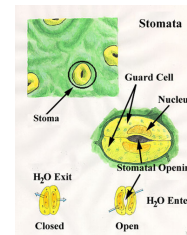
uses visible light and a system of lenses to magnify images of small samples such as plant and animal specialized cells

Cell specialization



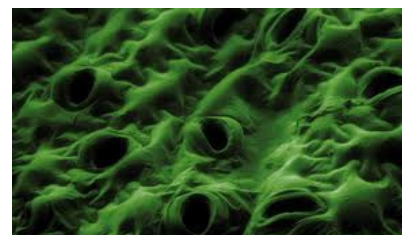
separate roles for each type of cell in multicellular organisms such as animals and plants

Guard cell



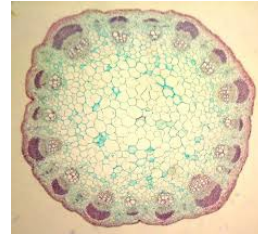
specialized plant cell; typically in the leaf

Stomata (singular Stoma)



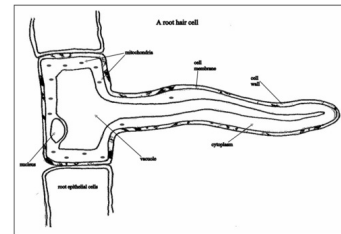
openings between guard cells that allows for gas exchange and transpiration

Plant stem cross-section



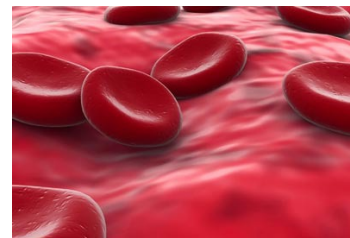
specialized plant cells

Root cell



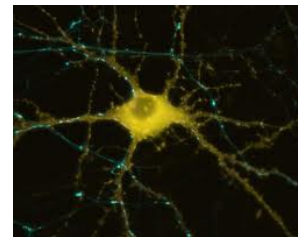
specialized plant cell

Red blood cells



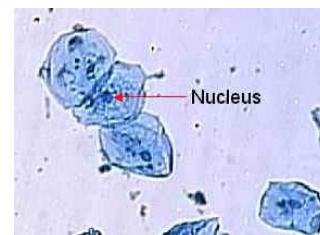
specialized animal cells

Nerve cell (neuron)



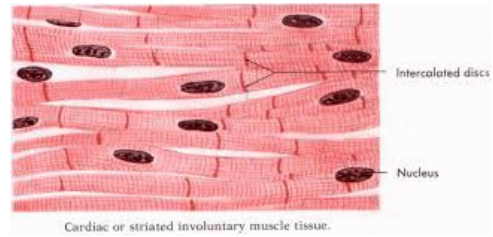
specialized animal cell

Epithelial cells



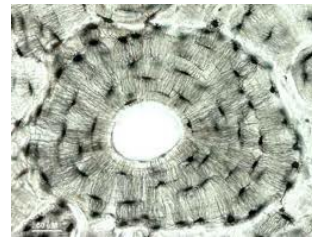
specialized animal cells; for example
cheek cell from inside mouth

Muscle cells



specialized animal cells

Bone cell



specialized animal cell

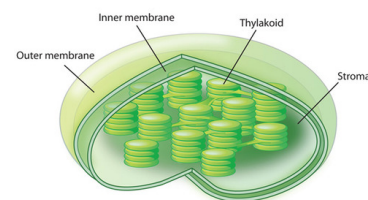
Photosynthesis

producers use light energy to convert water and carbon dioxide into oxygen and high-energy carbohydrates such as glucose

Cellular respiration

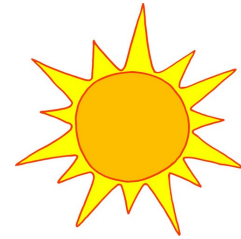
breaking down glucose and other food molecules in the presence of oxygen to make ATP (adenosine triphosphate)

Chloroplast



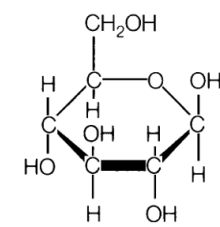
membrane-bound organelle in eukaryotic cells where photosynthesis takes place

Solar energy



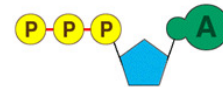
this energy is transferred into the chemical bonds of glucose during photosynthesis

Chemical bonds in glucose



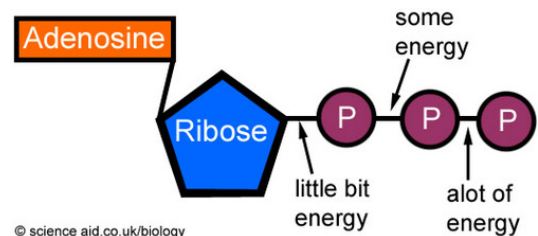
the energy in these bonds is transferred to the phosphate bonds in ATP during cellular respiration

Phosphate bonds in ATP



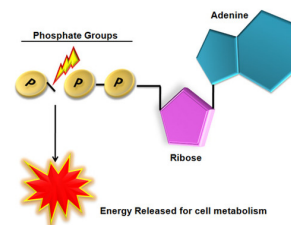
The energy in these bonds is transferred to:
1. cellular activities (chemical reactions/metabolism)
2. metabolic heat

ATP (adenosine triphosphate)



a molecule used as energy currency for the cell; the bond between the 2nd and 3rd phosphate groups is the most important for storing and releasing energy

ADP (adenosine diphosphate) + P



the product of removing the 3rd phosphate group from a molecule of ATP in order to release energy