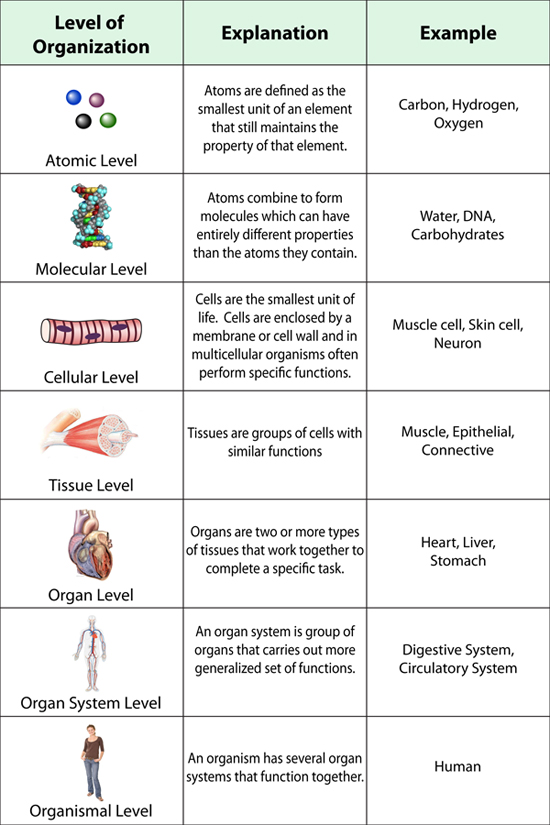
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| **Topic 2: Cells and the Organization of Life**  **Introduction**   |  |  | | --- | --- | | Eukaryotic cells are larger and more complex than prokaryotic cells. They include many organelles, membrane-bound structures with specialized functions. This generalized animal cell shows the prominent nucleus, extensive membrane system of the endoplasmic reticulum, mitochondria, other organelles and numerous ribosomes.   * **Eukaryotic Cells** - Cell that possesses a nucleus and the other membranous organelles characteristic of complex cells. * **Prokaryotic Cells** - Cell lacking a nucleus and the membranous organelles found in complex cells; bacteria, including cyanobacteria. * **Organelles** - Specialized structure within cells (e.g., nucleus, mitochondria, and endoplasmic reticulum). * **Nucleus** - I. The distinctive organelle of a eucaryotic cell, consisting of a membranous envelope in which the chromosomes reside; II. a cluster of neuron cell bodies within the central nervous system; III. the central body of an atom, made of protons and, usually, neutrons. * **Endoplasmic Reticulum** - Membranous system of tubules, vesicles, and sacs in cells, sometimes having attached ribosomes. Rough ER has ribosomes; smooth ER does not. * **Mitochondria** - Membranous organelle in which aerobic cellular respiration produces the energy carrier ATP. * **Ribosomes** - Minute particle that is attached to endoplasmic reticulum or occurs loose in the cytoplasm and is the site of protein synthesis. |  |   **Plant Cells**   |  |  | | --- | --- | | http://www.mhhe.com/micro_prep/cem2s3_2.jpgThis plant cell has some structures not found in animal cells. These include a cell wall outside of the plasma membrane, a large central vacuole, and chloroplasts.   * **Cell Wall** - Protective barrier outside the plasma membrane of plant and certain other cells. * **Plasma Membrane** - Membrane surrounding the cytoplasm that consists of a phospholipid bilayer with embedded proteins; functions to regulate the entrance and exit of molecules from cell. * **Vacuole** - Membranous cavity, usually filled with fluid. * **Chloroplasts** - Membranous organelle that contains chlorophyll and is the site of photosynthesis. |  |   **Animal Cell Review**   |  |  | | --- | --- | | * **Eukaryotic Cells** - Cell that possesses a nucleus and the other membranous organelles characteristic of complex cells. * **Prokaryotic Cells** - Cell lacking a nucleus and the membranous organelles found in complex cells; bacteria, including cyanobacteria. * **Organelles** - Specialized structure within cells (e.g., nucleus, mitochondria, and endoplasmic reticulum). * **Nucleus** - I. The distinctive organelle of a eucaryotic cell, consisting of a membranous envelope in which the chromosomes reside; II. a cluster of neuron cell bodies within the central nervous system; III. the central body of an atom, made of protons and, usually, neutrons. * **Endoplasmic Reticulum** - Membranous system of tubules, vesicles, and sacs in cells, sometimes having attached ribosomes. Rough ER has ribosomes; smooth ER does not. * **Mitochondria** - Membranous organelle in which aerobic cellular respiration produces the energy carrier ATP. * **Ribosomes** - Minute particle that is attached to endoplasmic reticulum or occurs loose in the cytoplasm and is the site of protein synthesis. * http://www.mhhe.com/micro_prep/cem2s3_1.jpg**Golgi apparatus** – Stacked set of membranes that modifies, transports, and packages materials for export |  | |



**Organization of Life**

Life is organized in ways from the simplest to the complex. At the multicellular level, specialized cells develop in such a manner where they structure (shape) helps them better perform a specific function (their job).