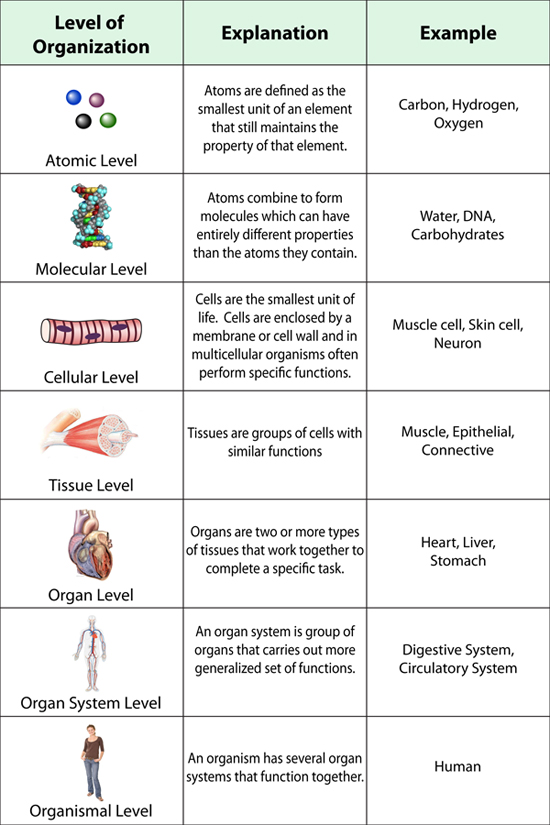
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| --- | --- | --- | --- | --- | --- | --- |
| **Topic 1: Cells and the Organization of Life**  **Introduction**   |  |  | | --- | --- | | Eukaryotic cells are larger and more complex than prokaryotic cells. Both include many organelles.   * **Eukaryotic 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).   **What do they have in common**:   * **Cell Wall** – only found in Plant Cells and Prokaryotic Cells. Shapes, supports and protects the cell * **Cell Membrane** – found in both Plant and Animal Cells and Prokaryotic Cells. Regulates materials entering and leaving cells. Also protects and supports the cell. * **Ribosomes** – found in both Plants and Animal Cells and Prokaryotic Cells. Synthesizes proteins |  |   **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. * **Cell 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**   |  |  | | --- | --- | | * **http://www.mhhe.com/micro_prep/cem2s3_1.jpgNucleus** - The distinctive organelle of a eukaryotic cell, consisting of a membranous envelope in which the chromosomes reside * **Endoplasmic Reticulum** - Membranous system of tubules, vesicles, and sacs in cells, sometimes having attached ribosomes. Rough ER has ribosomes; smooth ER does not. Assembles proteins * **Mitochondria** - Membranous organelle in which aerobic cellular respiration produces the energy carrier ATP. * **Golgi apparatus** – Stacked set of membranes that modifies, transports, and packages materials for export * **Lysosomes** – breakdown and recycles macromolecules |  |   http://classes.midlandstech.edu/carterp/Courses/bio101/labquiz2/prokaryote.jpg |

**Prokaryotic Cell**

* **Flagella** – Whip-like tails that allow bacteria to move quickly through liquid surroundings
* **Nucleoid** – Region that contains the DNA. Not enclosed in a membrane
* **Plasmid** – Small circular piece of DNA

**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).