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| **Topic 2: Cells and the Organization of Life****Introduction**

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| 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.
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**Plant Cells**

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| 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.
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**Animal Cell Review**

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* http://www.mhhe.com/micro_prep/cem2s3_1.jpg**Golgi apparatus** – Stacked set of membranes that modifies, transports, and packages materials for export
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**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).