### Organelles

<table>
<thead>
<tr>
<th>Organelle</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nucleolus</td>
<td>where rRNA &amp; ribosomes are synthesized</td>
</tr>
<tr>
<td>Ribosomes</td>
<td>protein factories</td>
</tr>
<tr>
<td>Peroxisomes</td>
<td>use converts H₂O₂ to water+O₂</td>
</tr>
<tr>
<td>Endomembrane System</td>
<td>regulates protein traffic+metabolic functions</td>
</tr>
<tr>
<td>Nucleus</td>
<td>holds chromatin, surrounded by nuclear envelope</td>
</tr>
<tr>
<td>Endoplasmic Reticulum</td>
<td>Rough: makes proteins Smooth: synthesizes lipids, stores Ca++, detoxifies drugs/poisons</td>
</tr>
<tr>
<td>Golgi Apparatus</td>
<td>processes, packages, &amp; secretes substances</td>
</tr>
<tr>
<td>Lysosomes</td>
<td>intracellular digestion</td>
</tr>
<tr>
<td>Mitochondria</td>
<td>powerhouse of the cell :) (respiration)</td>
</tr>
<tr>
<td>Vacuoles</td>
<td>storage &amp; pumping out water</td>
</tr>
<tr>
<td>Chloroplast</td>
<td>absorbs light &amp; synthesize sugar</td>
</tr>
<tr>
<td>Cytoskeleton</td>
<td>maintains cell shape, flow, positioning</td>
</tr>
<tr>
<td>Centrioles Centrosomes MTOCs</td>
<td>organize spindle fibers (cell division)</td>
</tr>
<tr>
<td>Cell Wall</td>
<td>protects, maintains shape, regulates water intake</td>
</tr>
</tbody>
</table>

### Water Potential ($\Psi = \Psi_p + \Psi_s$)

- **water potential**
- **solute potential**
- **tendency of water to move across a permeable membrane into solution** ($\Psi_s = -iCRT$)

### Types of Cell Communication

- **Quorum Sensing**
- **Autocrine Signals**
- **Juxtacrine Signals**
- **Paracrine Signals**
- **Endocrine Signals**

### Plasma Membrane Structure

**The Plasma Membrane**

### Plasma Membrane Transport

**Endocytosis & Exocytosis**

### Signal Transduction Pathways- Reception

- **Reception**
  - ligand binds to cell membrane or intracellular receptors & activates 2nd messenger

### Signal Transduction Pathways & Response

- **Signal**
  - multistep process in which extracellular signal molecules produce a cascade effect

- **Second messenger**
  - intermediate molecule (like cAMP) that distributes+amplifies signal throughout the cell

- **Response**
  - regulation of protein synthesis by turning genes on/off

### Apoptosis

- may be engulfed when no longer needed
- defense against infection
- signals trigger caspases to carry out apoptosis

### The Cell Cycle

- by hlewsey via cheatography.com/36676/cs/11547/

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By hlewsey

cheatography.com/hlewsey/

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