

## Module #6: The Cell

### VOCABULARY

There are many vocabulary words in this module. Just remember to look at prefixes and suffixes ALWAYS! This will give you a little help on the meaning of the word. Here are some reminders:

For example the following words have the suffix, **-tion**, meaning a process of: absorp**tion**, diges**tion**, respira**tion**, excre**tion**, eges**tion**, secre**tion**, reproduction**tion**, secre**tion** vesicle

Look at the following words and see how they are inter-related; all of them contain **-plasm**: plasma membrane, cytop**lasm**, cytop**lasm**ic streaming, endop**lasm**ic reticulum, **plasm**olysis

To go along with that did you know the prefix **endo-**, means *within*? (You will come across that with other words in the course.) The suffix **-lysis** means *to break down*.

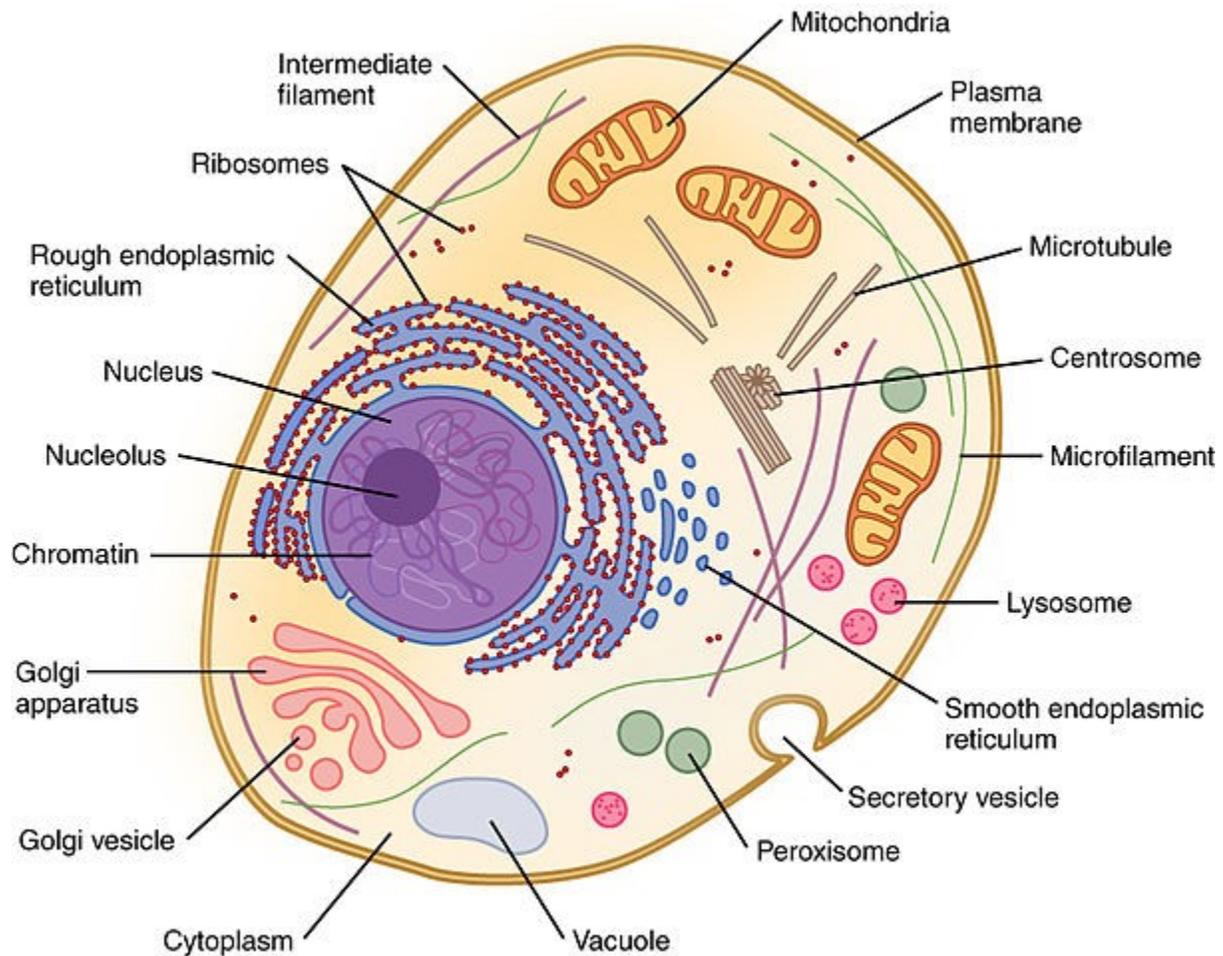
**Hyper-** means above, or in excess, where **Hypo-** means below or under (this will also come in handy throughout the book!)

Also listed in your text is the vocabulary word **Phagocytosis**.

**Phago-** means to eat or engulf; **cyto-** means cell.

This should help you remember what a **Phagocytic vacuole** is as well. (The **ic** on **-cytic** is the adjective part that means having to do w/ cells)

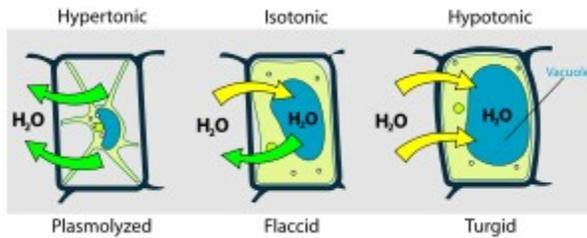
## The Cell



## The Cell

Cells must perform at least eleven main functions in order to support and maintain life: **Absorption, digestion, respiration, biosynthesis, excretion, egestion, secretion, movement, irritability, homeostasis, and reproduction.**

When a cell is placed in an isotonic solution, water diffuses back and forth across the membrane. When a cell is placed in a hypertonic solution, water leaves the cell and enters the surroundings, which can result in plasmolysis. When a cell is placed in a hypotonic solution, water enters the cell from the surroundings, which can result in cytolysis.



## ATP / ADP

Cells store energy in little "packets" by converting ADP and phosphate to ATP. A gentle release of energy occurs when the ATP is converted back to ADP and phosphate.

Aerobic cellular respiration occurs in FOUR steps:

1. Glycolysis - glucose is converted to two pyruvic acid molecules and four hydrogen atoms. This takes two ATP's of energy but it produces four ATP's of energy, for a net gain of **two ATP's**.
2. Formation of acetyl coenzyme A - two molecules of pyruvic acid with two molecules of carbon dioxide, and two hydrogen atoms. It produces **ZERO ATP**
3. Krebs cycle - reacts two molecules of acetyl coenzyme A and three molecules of Oxygen to make four molecules of carbon dioxide, two molecules of coenzyme A and six hydrogen atoms. Final production is **two ATP's**
4. Electron transport system, takes the twelve hydrogen atoms made in the previous steps and reacts them with three oxygen molecules to make six water molecules. It produces **32 ATP's**

**TOTAL PRODUCTION = 36 ATP'S FOR EACH GLUCOSE MOLECULE FOR AEROBIC**

**AND ONLY 2 ATP'S FOR ANAEROBIC**