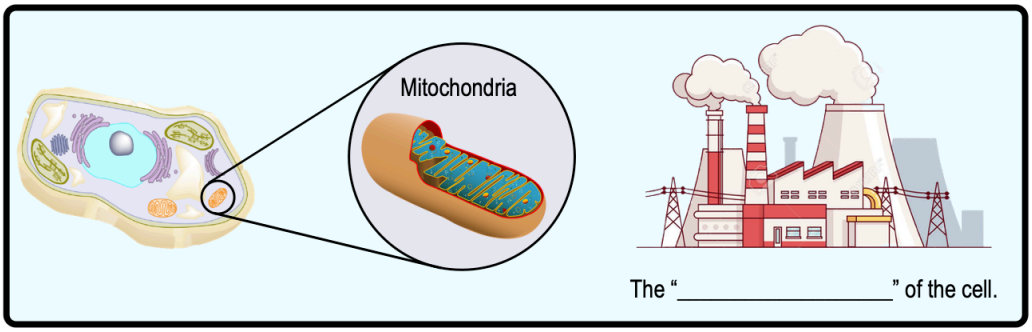
CONCEPT: MITOCHONDRIA & CHLOROPLASTS

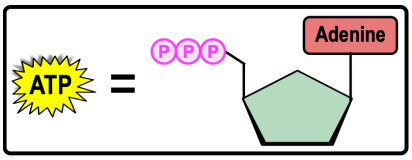
Mitochondria

●**Mitochondria** ("The *Powerhouse* of the Cell"): organelles that synthesize lots of _____ for the cell.

□ **A**denosine **Tri**phosphate (_____): *high energy molecule* used to "power" cellular reactions.

□ **Cellular Respiration**: mitochondrial process that breaks down food sources like *sugars* & *lipids* to make ATP.





EXAMPLE: Which of the following processes is highly associated with mitochondria?

a) Photosynthesis. b) Plasmolysis. c) Cellular Respiration. d) Crenation.

Mitochondria Structure

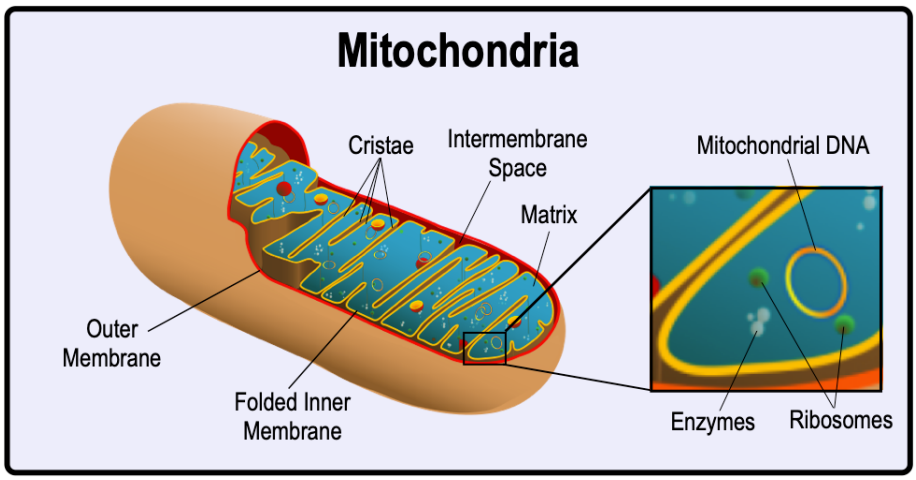
●Mitochondria vary in shape & have their own *ribosomes* & _____ that is *independent* of the nuclear DNA.

□ Mitochondria have _____ membranes:

1) _____ membrane & 2) *Folded* _____ membrane (**cristae** ≈ folds).

□ _____-**membrane Space***:* region *in-between* the two membranes.

□ _____: region within the *inner* membrane containing *enzymes*, *ribosomes*, & *mitochondrial DNA*.



PRACTICE: Which part of a mitochondria contains the mitochondrial DNA, ribosomes, and enzymes?

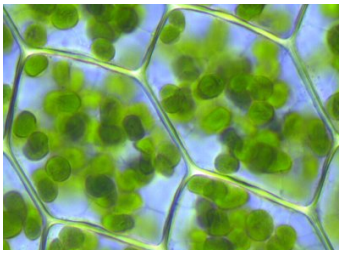
a) Cristae. b) Matrix. c) Inter-membrane space. d) Cytoplasm.

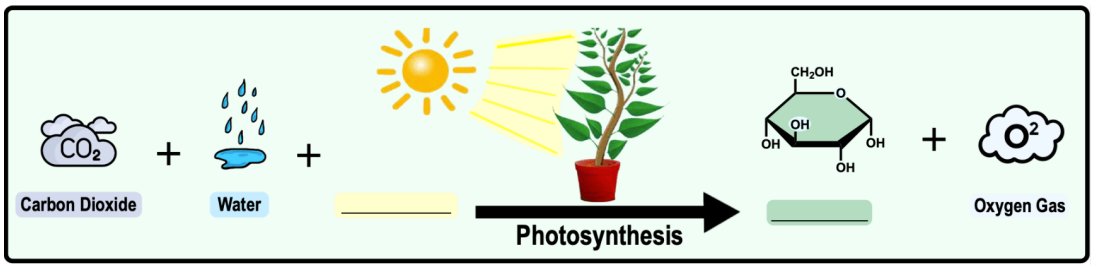
CONCEPT: MITOCHONDRIA & CHLOROPLASTS

Chloroplasts

●**Chloroplasts**: *green* organelles that function as the *site of* _____ in many plant cells.

□ **Photosynthesis**: process that uses energy from _____ to synthesize sugars (*glucose*).





PRACTICE: The products of photosynthesis are:

a) Water & Carbon Dioxide. b) Oxygen & Water. c) Sugar & Water. d) Oxygen & Sugar.

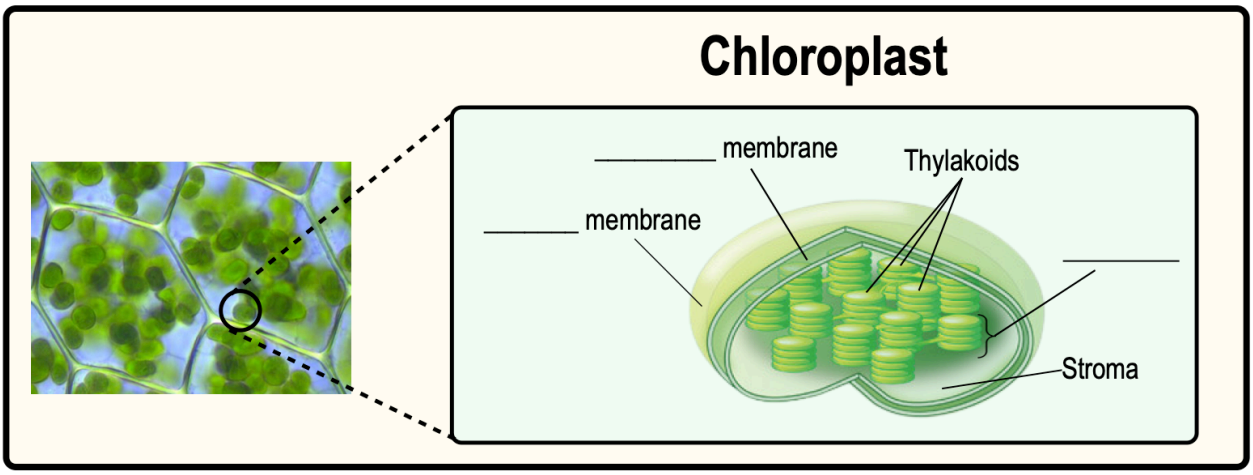
Chloroplast Structure

●*Chloroplasts* have _____ membranes (outer & inner), but unlike mitochondria, *neither* have folds/cristae.

□ **Thylakoids**: interconnected _____-shaped sacs within the chloroplast.

□ **Grana**: _____ of *thylakoids* (or "green pancake stacks").

□ _____: innermost region of the *chloroplast* containing *enzymes*, *ribosomes*, & *chloroplast DNA*.



PRACTICE: Thylakoids, DNA, and ribosomes are all components found in _____.

a) Chloroplasts. b) Mitochondria. c) Lysosomes. d). Vacuoles. e) Nuclear Envelopes.