

Cells Unit Notes

Name: _____

DO NOT LOSE!

New Area of Focus: What does it mean to be living?

● Organism – Any _____ thing

■ Characteristics of living things

■ Made of _____ Elements

SPONCH

25 of the elements are essential for _____.

SPONCH elements are the most _____ important.

• Percentage of SPONCH elements in living things.

•	S.	Sulfur	Trace
•	P.	Phosphorus	1.0%
•	O.	_____	65.0%
•	N.	Nitrogen	3.3%
•	C.	Carbon	18.5%
•	H.	_____	9.56%
•		Other (Trace)	3.0%

■ Made of _____.

■ Moves.

- Responds to a _____.
 - Uses _____.
 - Adjusts to _____.
 - Maintains _____ body conditions.
 - Maintains homeo_____.
 - Reproduces.
 - Grows and _____.
 - Grow-To increase in _____.
 - Develop-To change in _____.
 - Adapts to _____.
 - Evolves / Inherits _____ that promote survival.
 - Has a life span.
-
- In Science theory
 - Abiogenesis explains the origin of _____.
 - _____ explains how life changes once it exists.
 - The two are different.
 - Needs of Living Things
 - Energy – Supplied by the _____ (most of the time) and stored in food. TINSTAAFL!
 - Oxygen – To burn the food in cells.
(_____)
 - Water – To keep things _____ in and out of cells. (Universal Solvent)
 - Minerals- For proper chemical _____.

NEW AREA OF FOCUS: CELLULAR BIOLOGY

- Form Follows Function: Parts of the cell are shaped to perform a particular _____.

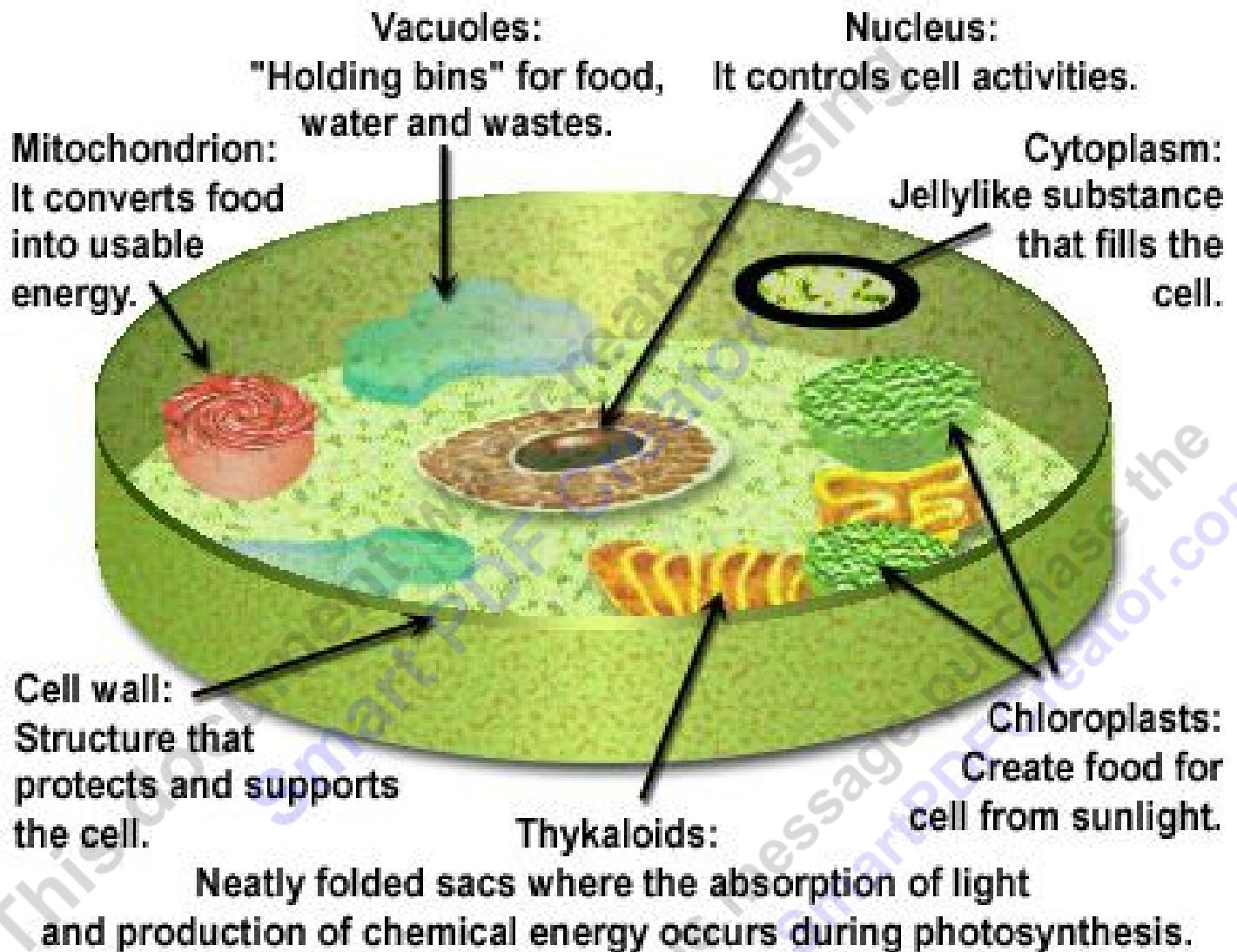


-
- Cells are the _____ and _____ units of all living organisms
 - Humans have ____ - ____ Trillion – Multicellular
 - Some Protista have 1 – Uni _____
- Modern Cell _____
 - -The _____ is basic unit of structure and function
 - -Living things are _____ of cells
 - -All cells come from _____ cells.
 - -Cells contain _____ information

- -All cells are similar in _____
- -Energy _____ of life occurs in cells
- There are two types of cells.
 - Pro _____
 - Eu _____
- Prokaryotic cells
 - - No nuclear _____
 - - Genetic materials is free in _____
 - - No membrane-bound _____.
 - - Most primitive type of cell (appeared about _____ billion years ago)
- Eukaryotic Cells
 - - Nuclear membrane _____ genetic material
 - - Numerous membrane-bound _____
 - - Appeared approximately _____ billion years ago
 - - _____ internal structure

ORGANELLES IN A CELL

Aid for Cell City Project

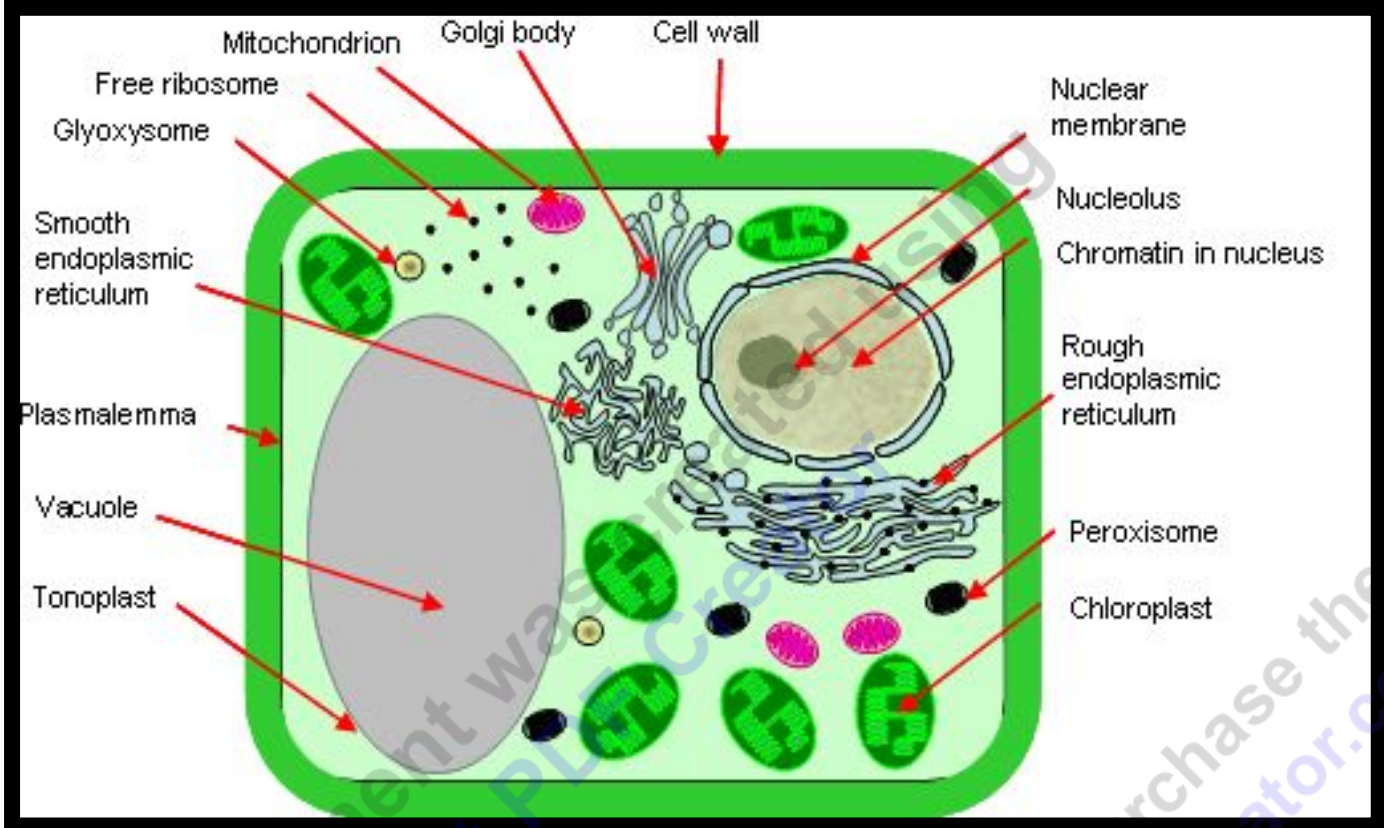


Protoplasm – All contents of the cell

Cytoplasm

- All areas outside of _____.
- Area outside of organelles is called _____.
- Rich chemical fluid that helps breakdown _____ for use.

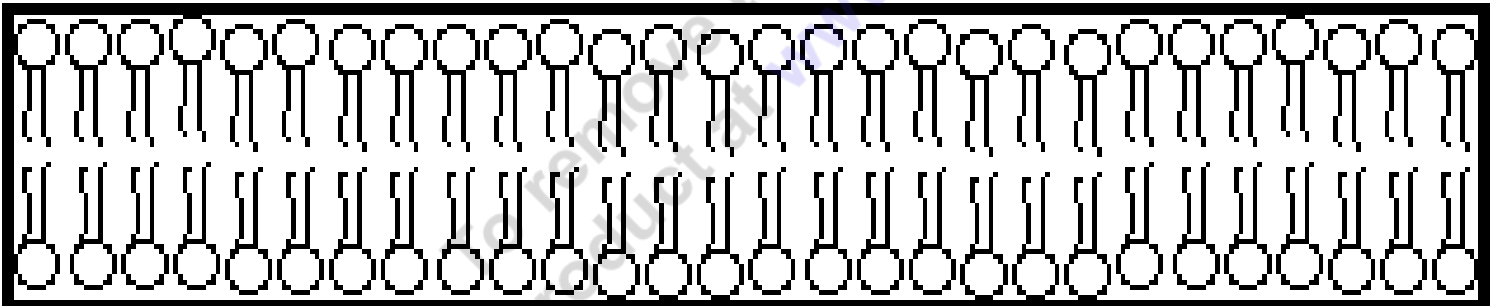
■ Moves materials through cell (food and waste)



CELL WALL

- Found in _____ and _____ and Fungi.
- Made of _____ (permeable)
- _____ plant

Plasma Membrane



- - Made of a phosphor _____ bilayer
- Phospholipids have two ends, one of which is hydro _____, or attracted to water,

and one of which is hydro_____, or repelled by water.

- - The cell membrane is selectively _____. Some things can enter some can't.
- - Cell Membrane controls _____ (cellular traffic) in and out the cell.

P _____ **transport** - movement of molecules from a _____ crowded to a _____ crowded area WITHOUT the use of energy.

Diffusion: Random _____ of molecules.

- From _____ to _____ concentrations
- Molecules are trying to reach _____.

Osmosis: the movement of water through a _____ - permeable membrane.

● **Permeable: Has large holes in it to let _____ pass through.**

- Semi-permeable – Some things can enter
- Impermeable – _____ can enter

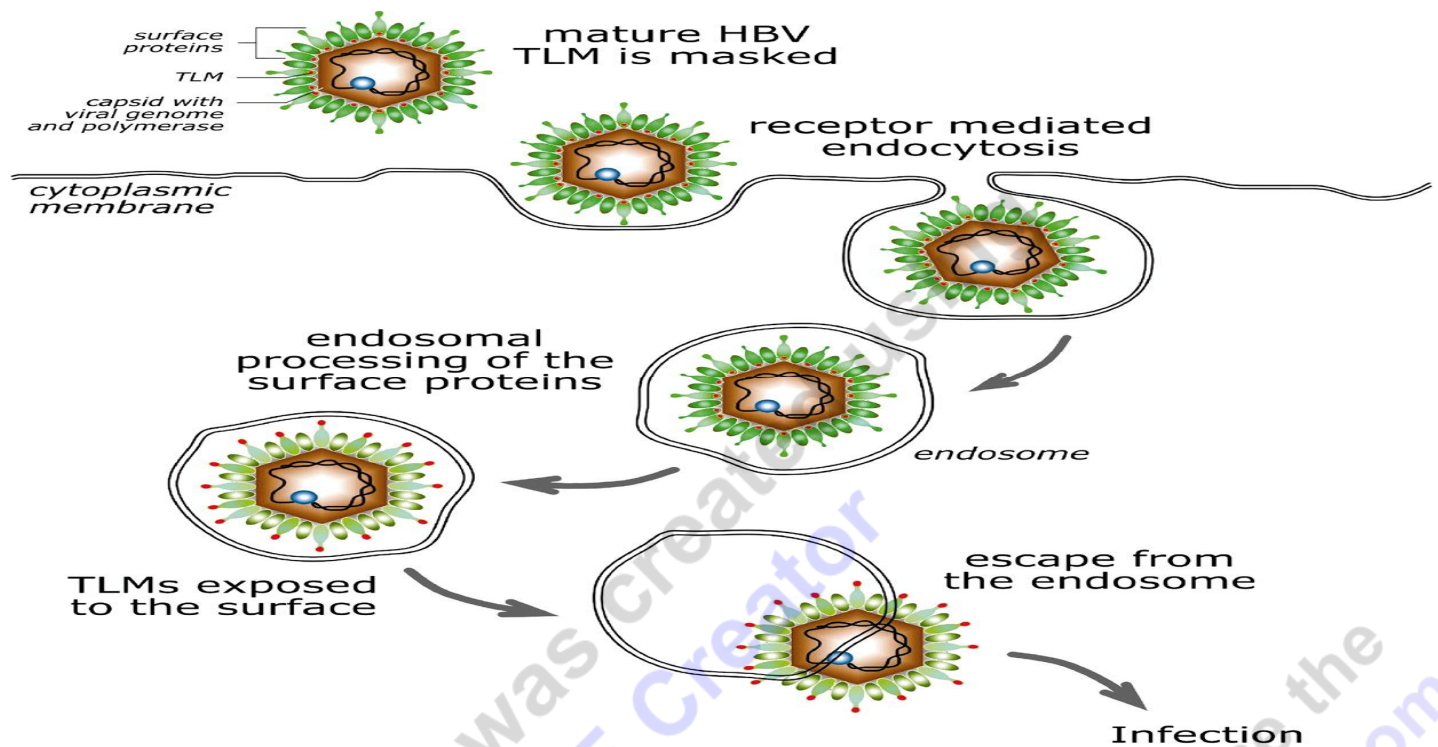
- Hypotonic Solution: A solution that contains _____ solute (more _____) compared to the cytoplasm of the cell.

- Water moves _____ the cell to equal out concentrations. The cell swells
- Hypertonic Solution: Concentration of the cell is _____ than outside of the cell.
 - Water moves _____ of the cell to try to even out the concentration. Cell Shrinks (Plasmolysis)
- Isotonic Solution: The cell has an _____ proportion of concentration with the area surrounding.
 - Water continually _____ in and out to keep concentration even.

● **Active transport –**

- - Movement of molecules from a _____ crowded to a _____ crowded area
- - Requires the use of _____
- - Proteins can do this
- - Also called reverse _____.

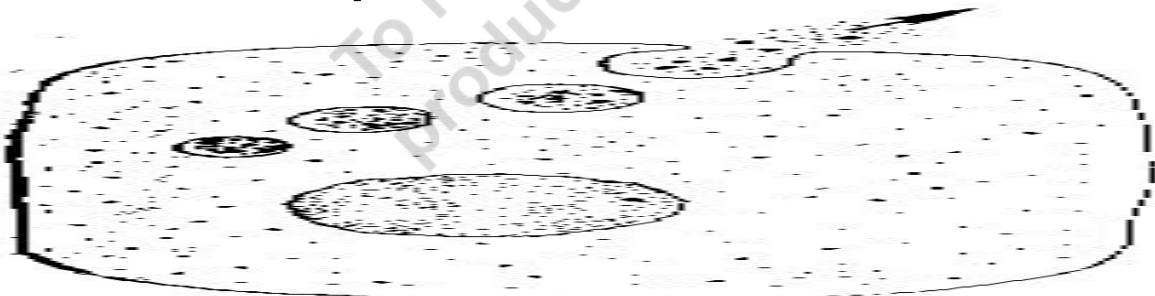
■ **Endo_____:** (Endo - means to bring in)
Energy requiring process where cell engulfs particle.

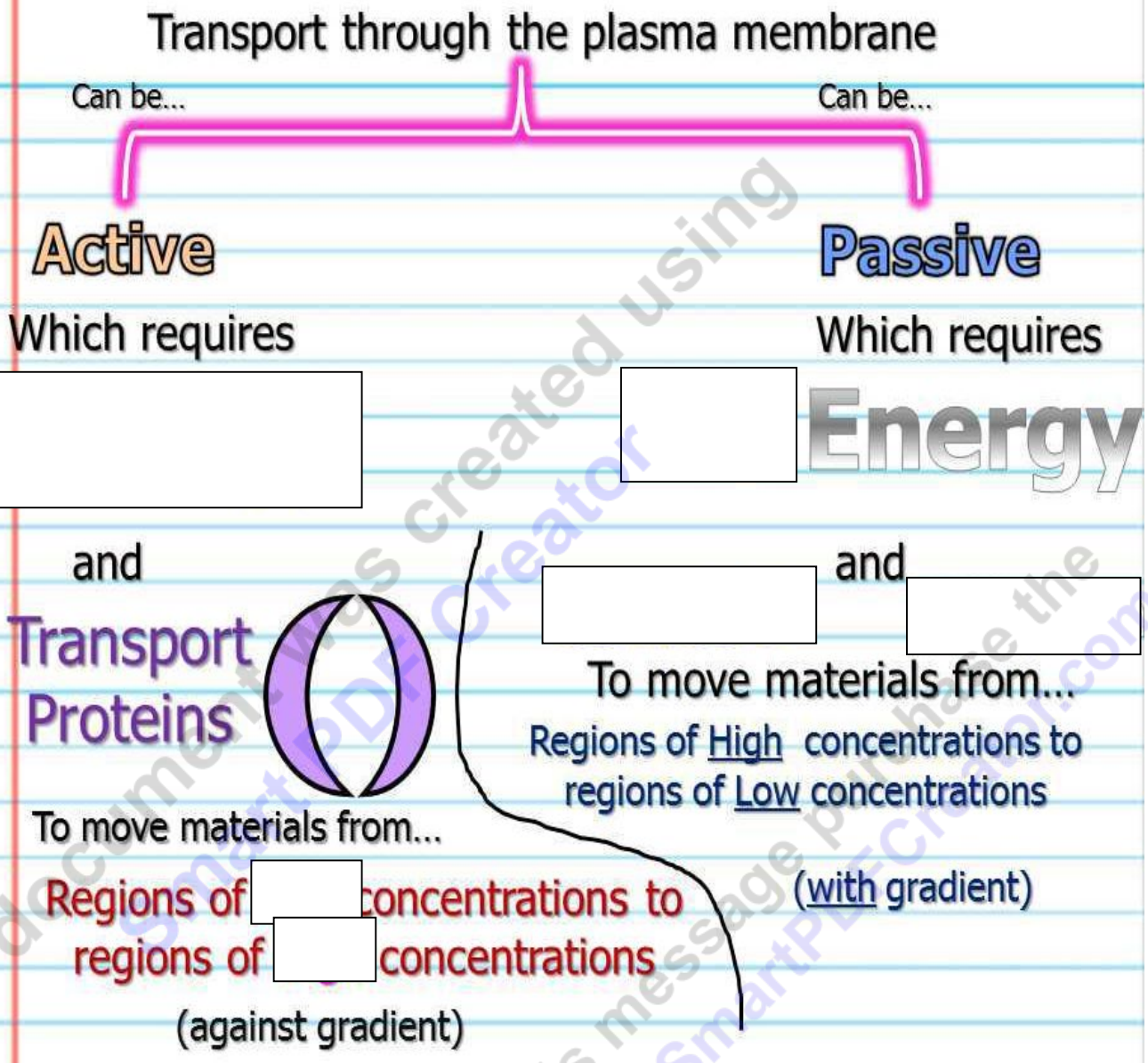


- **Phago** _____: Type of endocytosis. Membrane surrounds large particles (_____)
- **Pinocytosis**: Membrane surrounds a _____

■ **Transmembrane Protein Receptor Mediated Endocytosis**: _____ receptors facilitate endocytosis.

■ **Exocytosis**: (Exo - means to take out) Cell _____ particle. Uses _____.





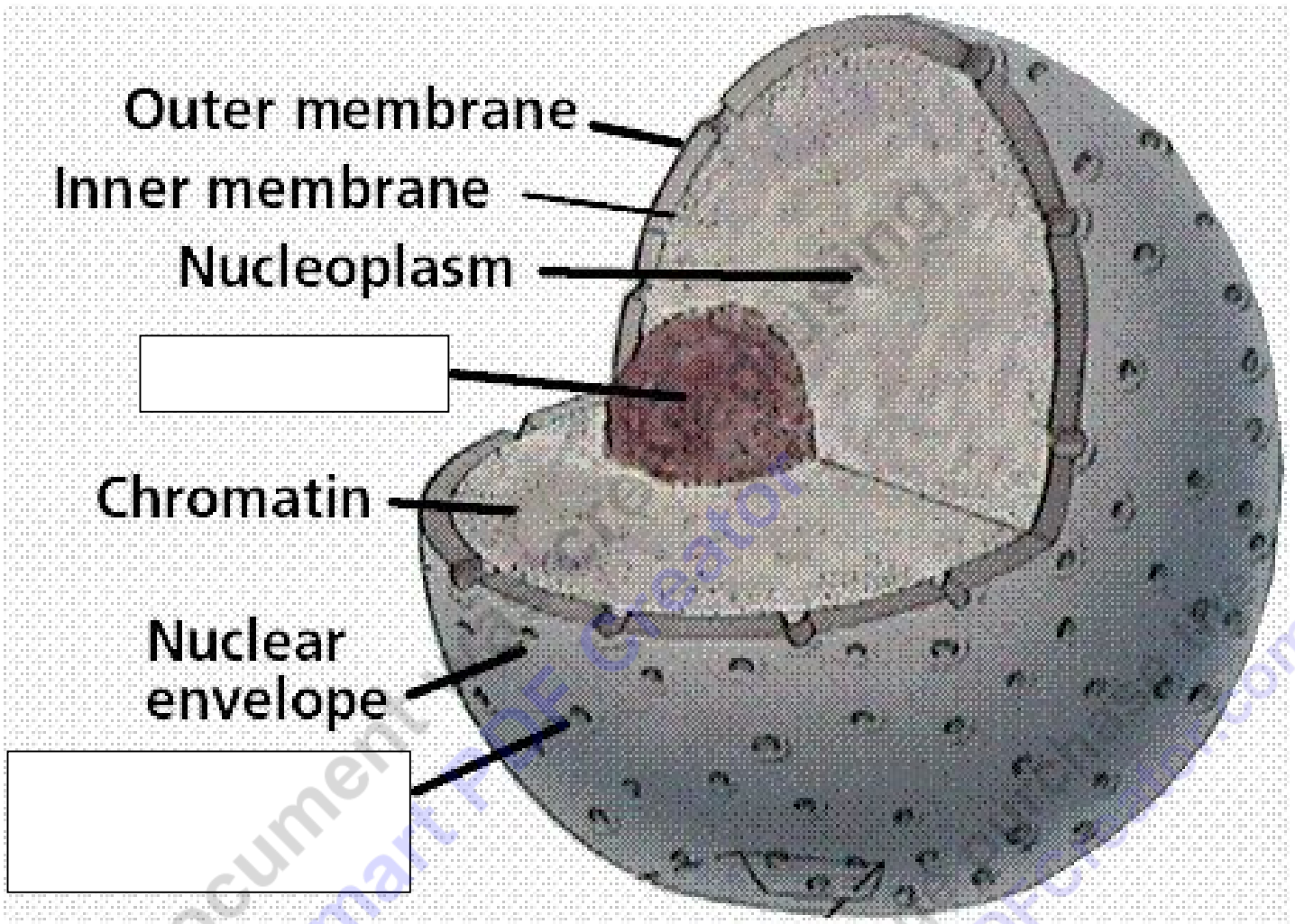
Cellular _____: A membrane-bound compartment or structure in a cell that performs a special _____.

They... Support, _____ (make materials), _____ material, communicate, and transport materials within the cell.

● The Nucleus

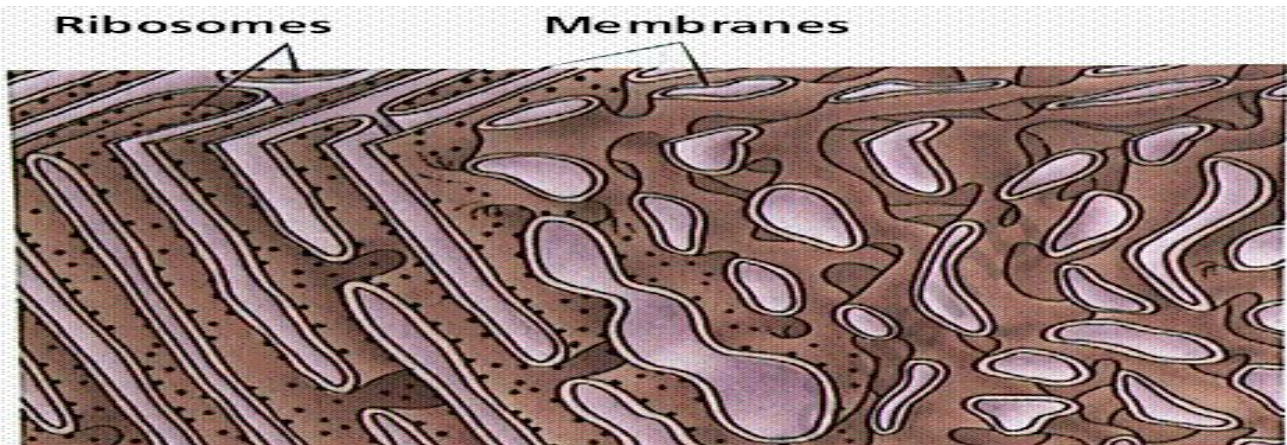
- _____ organelle in the cell (dark spot)

- Contains _____ information (DNA)
- DNA transcription to _____ Translation to Proteins
 - Chromosomes / _____
 - Composed of _____
 - Thicken for cellular _____.
 - Set number per species.
 - Humans have _____ chromosomes (23 pairs).
- Nucleolus
 - Round dark spot shape in _____.
 - Only _____ when cell is not dividing.
 - Contains _____ for protein manufacturing.
 - Makes _____ that travel out of nucleus
- Nuclear Membrane
 - Surrounds _____.
 - Composed of _____ layers
 - Numerous _____ for nuclear traffic.



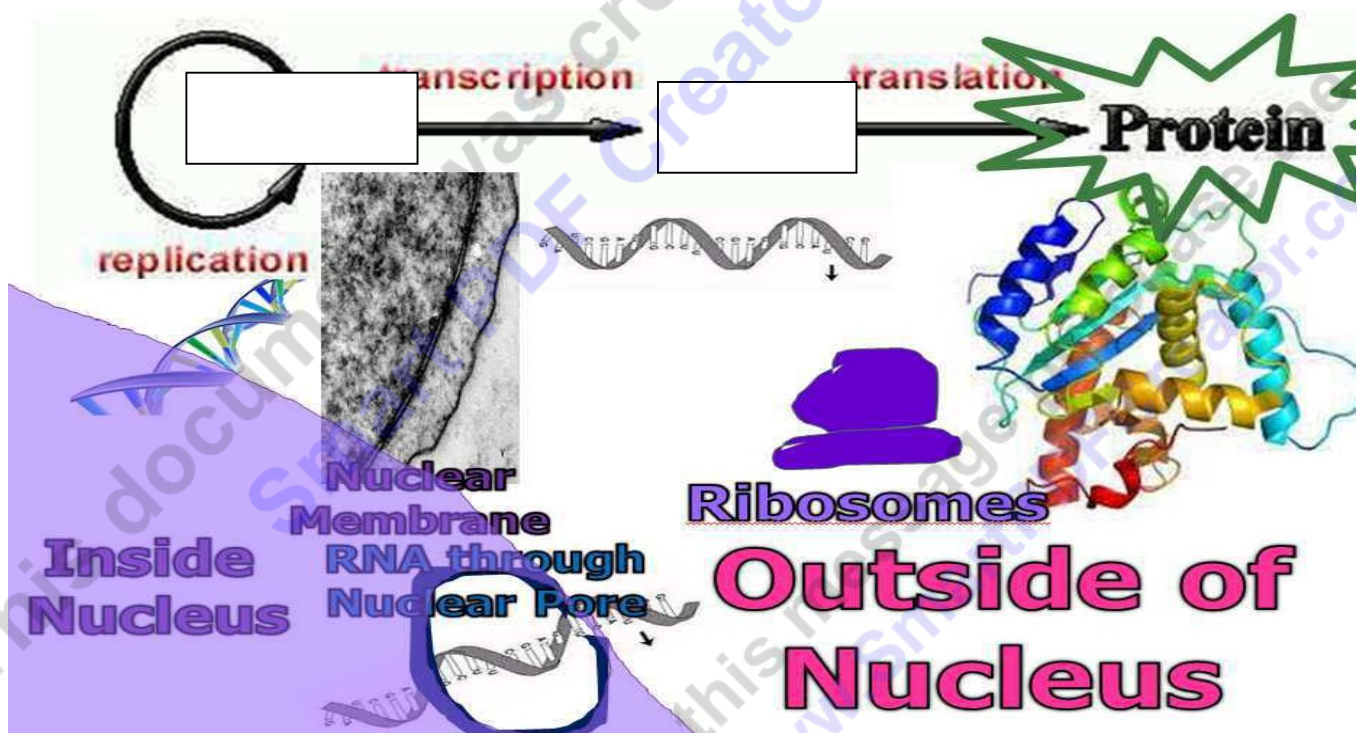
Rough _____ reticulum (E.R. for short)

- - Maze-like network fused to nuclear membrane.
- - Goes from nucleus to cell _____.
- - Stores, separates, and serves as cell's _____ system
- - Ribosomes attach to and make _____.



Rough E.R.

Smooth E.R.

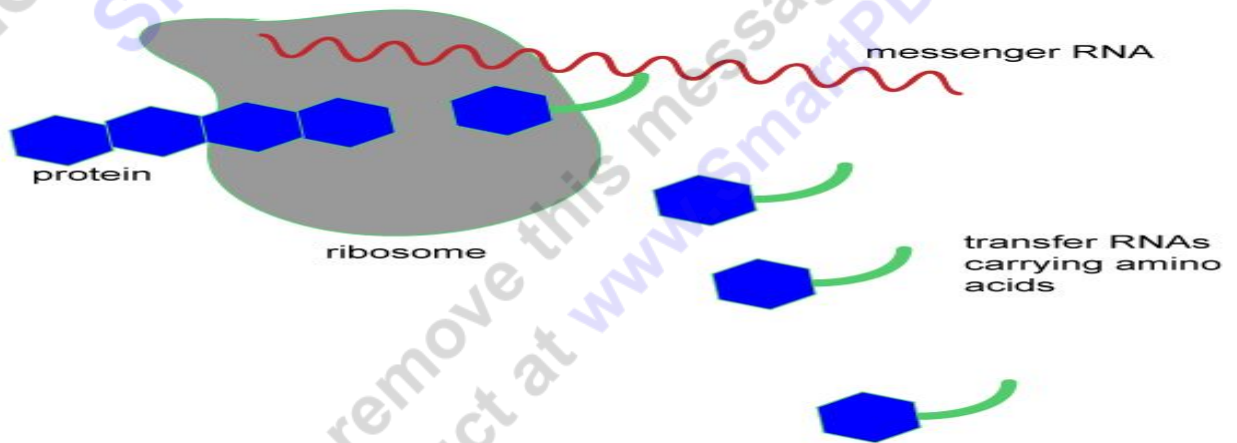


Smooth E.R.

- - Makes _____ (fats) and _____.
- - Regulates _____ production.
- - Synthesizes sugars "Gluconeogenesis"
- - Detoxifies _____
- - Stores important _____

Ribosomes

- - Each cell contains _____
- - Amino Acids: The building blocks of proteins.
20 variations
- - Composes _____% of cell's mass
- - Most are embedded in _____. Some
free in cytoplasm.
- - Site of Protein _____
- - Mini protein making factories
- - Proteins (ONCH) are very important to our cells
and body.
- - DNA makes _____, RNA has information to
make _____.
- - Ribosomes and mRNA



Protein Synthesis: The process in which the
_____ code carried by messenger RNA

directs cellular organelles called ribosomes to produce _____ from amino acids.

Proteins Synthesis Animation

- To make proteins
- R_____ are units that help read RNA
- RNA is the information code that tells the type of proteins to be made.
- Protein synthesis is the process of making

Golgi Apparatus

- _____ packaging plant and other macromolecules.
- Sends _____ of macromolecules to destination in cell.
- Composed of numerous layers forming a _____.
- Enzymes and contents of _____ are made here.



Lysosomes

- Has Digestive _____ / enzymes in a sac

- Digestive organelle, _____ old cell parts.
- _____ down proteins, lipids, and carbohydrates, and bacteria.
- _____ undigested material to cell membrane for removal.
- Cell breaks down if lysosome _____

Cytoskeleton, microtubules, microfilaments

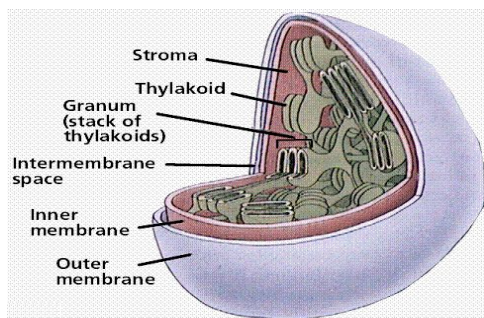
- Composed of _____
- _____ cell and provides shape
- Aids _____ of materials in and out of cells
- Flagellum is made of microtubules

Centrioles

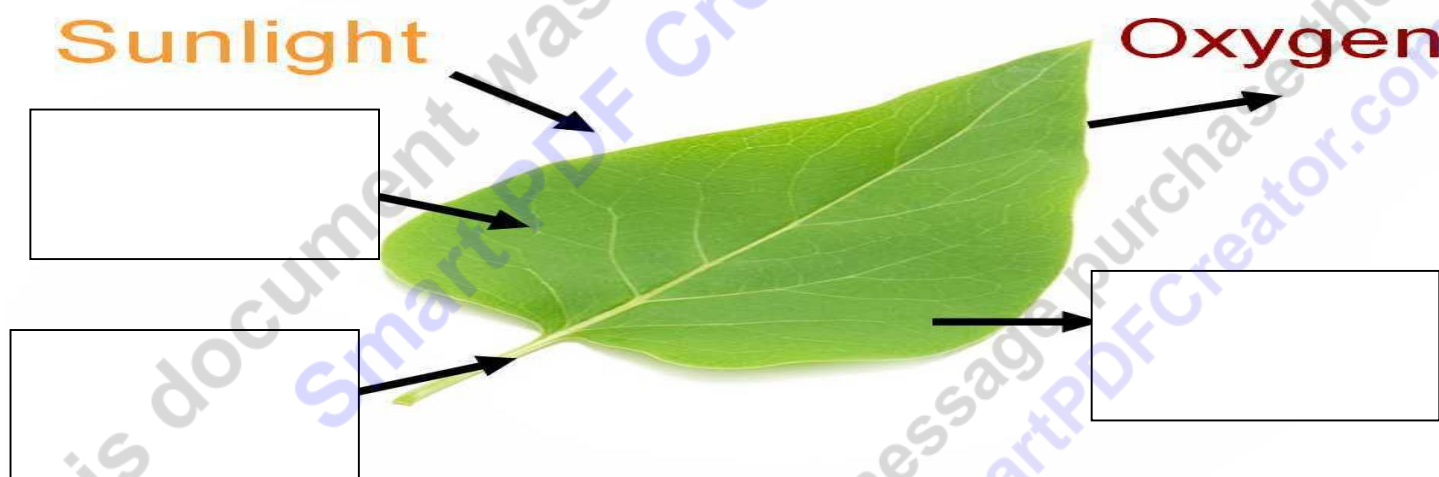
- Look like _____ nuggets (Paired)
- Made of _____ tubes
- Aid in cell division (_____)

Plastids (AKA Chloroplast)

- Organelle in _____
- Contain the _____ pigment chlorophyll
- Has stacks called Thyla _____
- Do photosynthesis (Make the _____)
- Has its own unique _____.



Photosynthesis – Plants make _____ from sunlight.
Light energy is turned into _____ energy (sugars – carbon based).

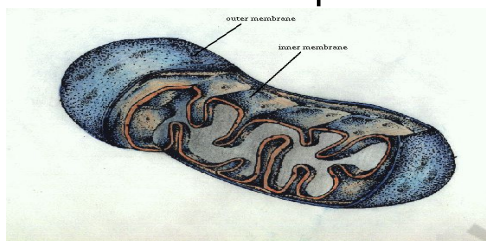


Photosynthesis

- Produces _____ from energy.
- Occurs only in cells with _____.
- _____ is produced.
- _____ is used.
- _____ dioxide is used.
- Occurs in _____.

Mitochondria

- Large organelle that makes _____ for the cell. (ATP)
- Has folds (surface area) called _____
- _____ membranes
- Recycles _____, produces urea
- Has its own _____. Reproduce independently from cell.



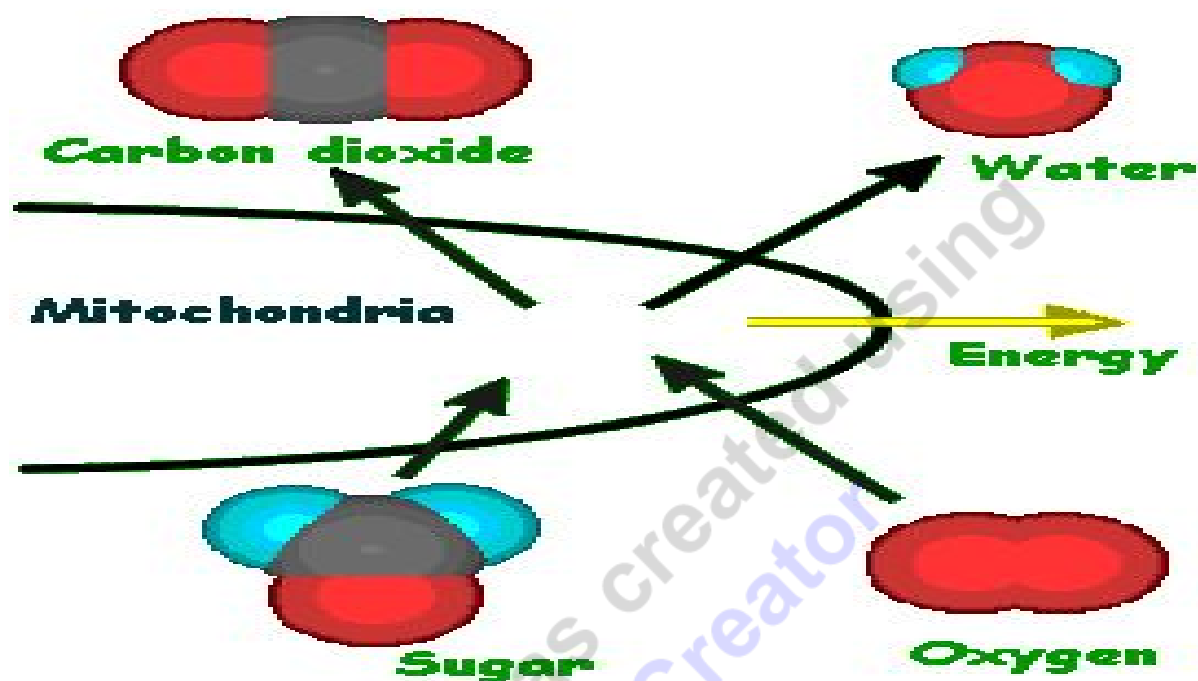
Cellular Respiration: Processes whereby certain organisms obtain _____ from organic molecules.

Cellular Respiration

- $C_6H_{12}O_6 + 6\text{_____} = 6CO_2 + 6\text{_____} + \text{released energy.}$

Respiration

- Burns _____ for energy.
- Energy is released.
- Occurs in most cells.
- _____ is used.
- _____ is produced.
- _____ dioxide produced.
- Occurs in _____ and light.

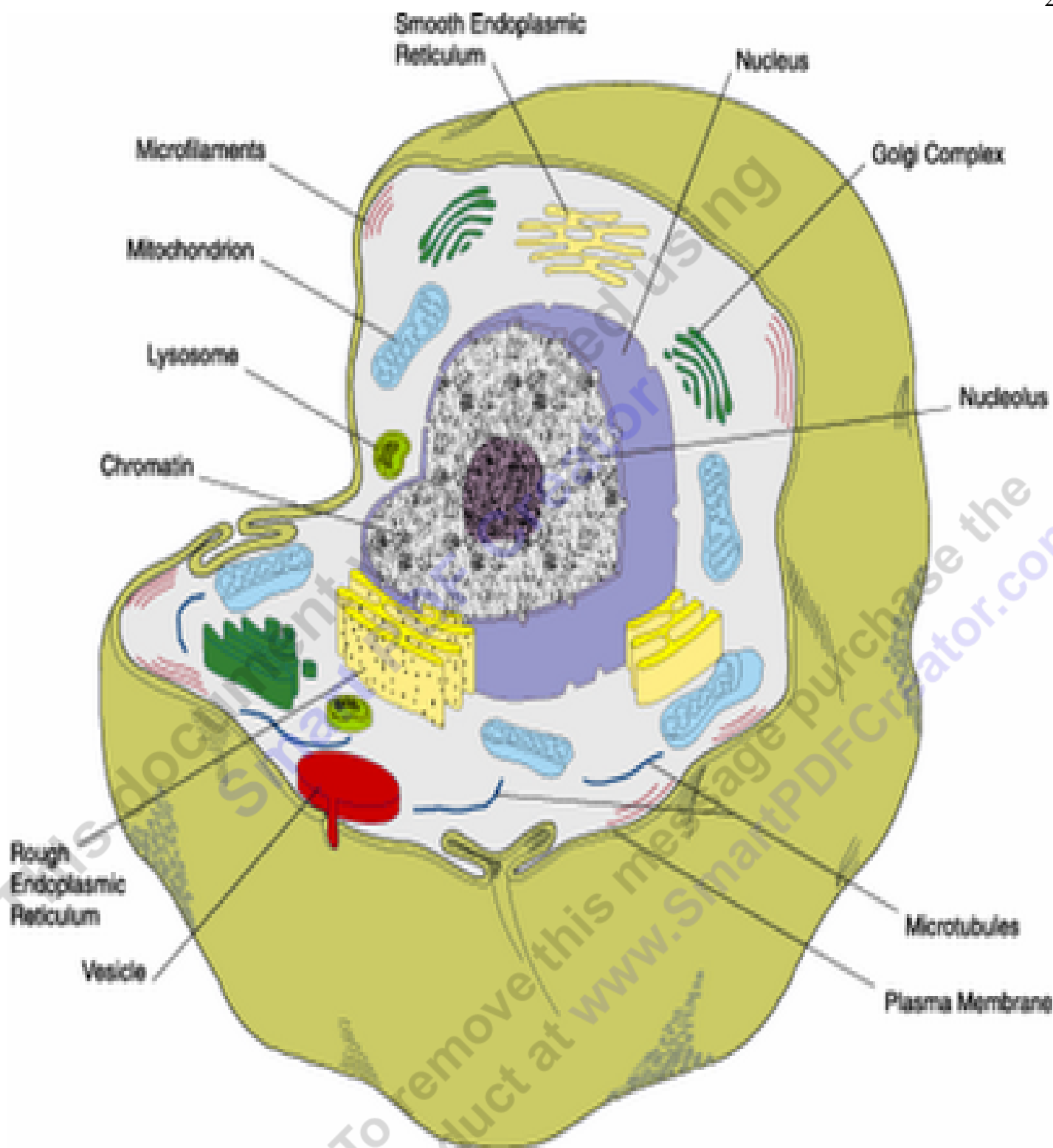


The carbon dioxide oxygen _____.

- Plant uses carbon dioxide and produces _____ (photosynthesis).
- Animal uses oxygen and produces _____ (respiration).

● Vacuoles

- Membrane-bound sacs for _____, digestion, and waste removal
- Very _____ in plant cell
- Create _____ pressure in plants
- Contains food and _____ solution
- Contractile vacuoles for water removal (in unicellular organisms) + locomotion.



SAVE THESE NOTES FOR THE HOMEWORK WHICH IS DUE SHORTLY!

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