

Eukaryotic Cell Structure

Chapter 7.2

The Factory Cell

- The cell is made of several different structures (organelles) that work together to carry out the function of the cell.
- 2 Major parts of the cell
 - Nucleus:** Contains genetic material (the instructions)
 - Cytoplasm:** The portion of the cell outside the nucleus (the machinery)

Animal Cell Organelles

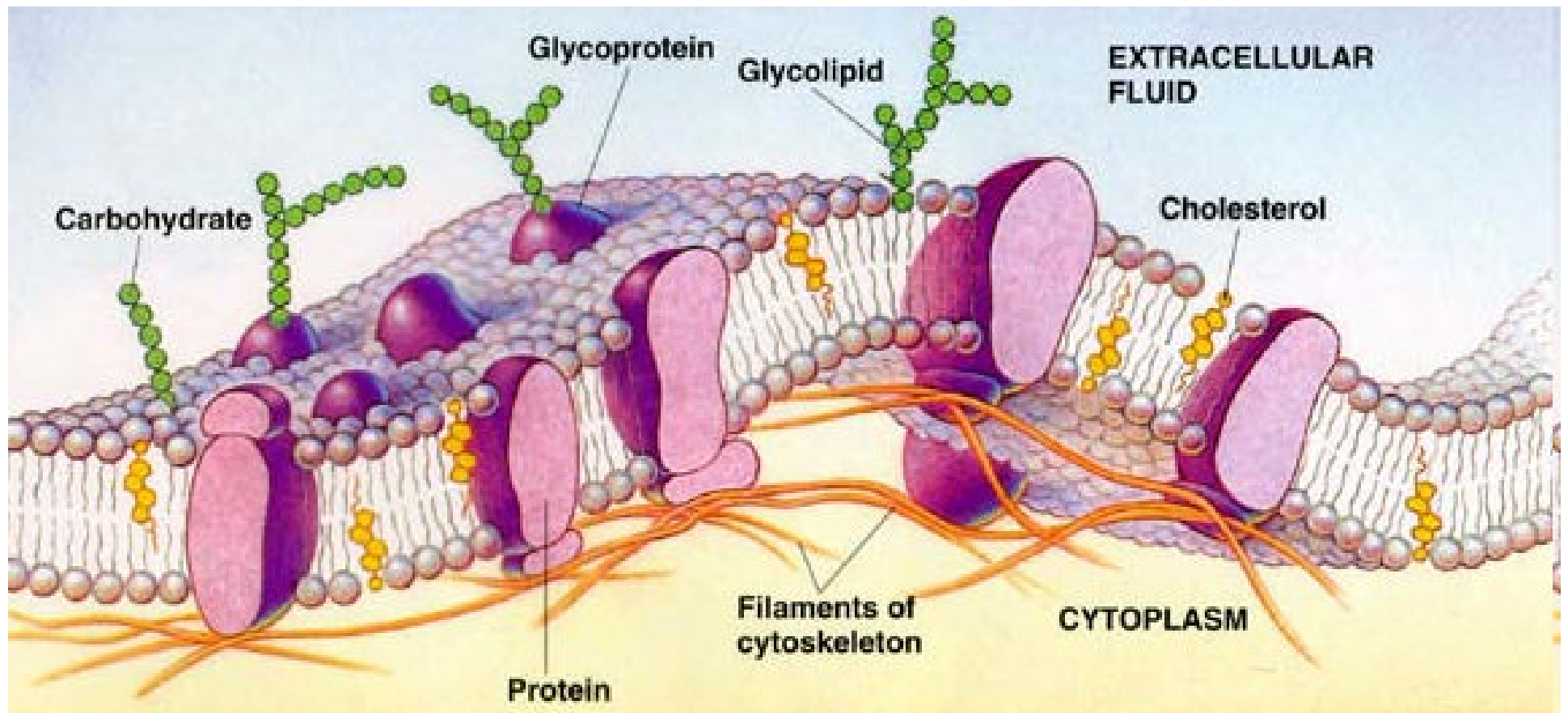
Organelle: Structures that carry out specific functions in a cell.

“Little Organs”

1. Cell (Plasma) Membrane

Structure: Phospholipid bilayer

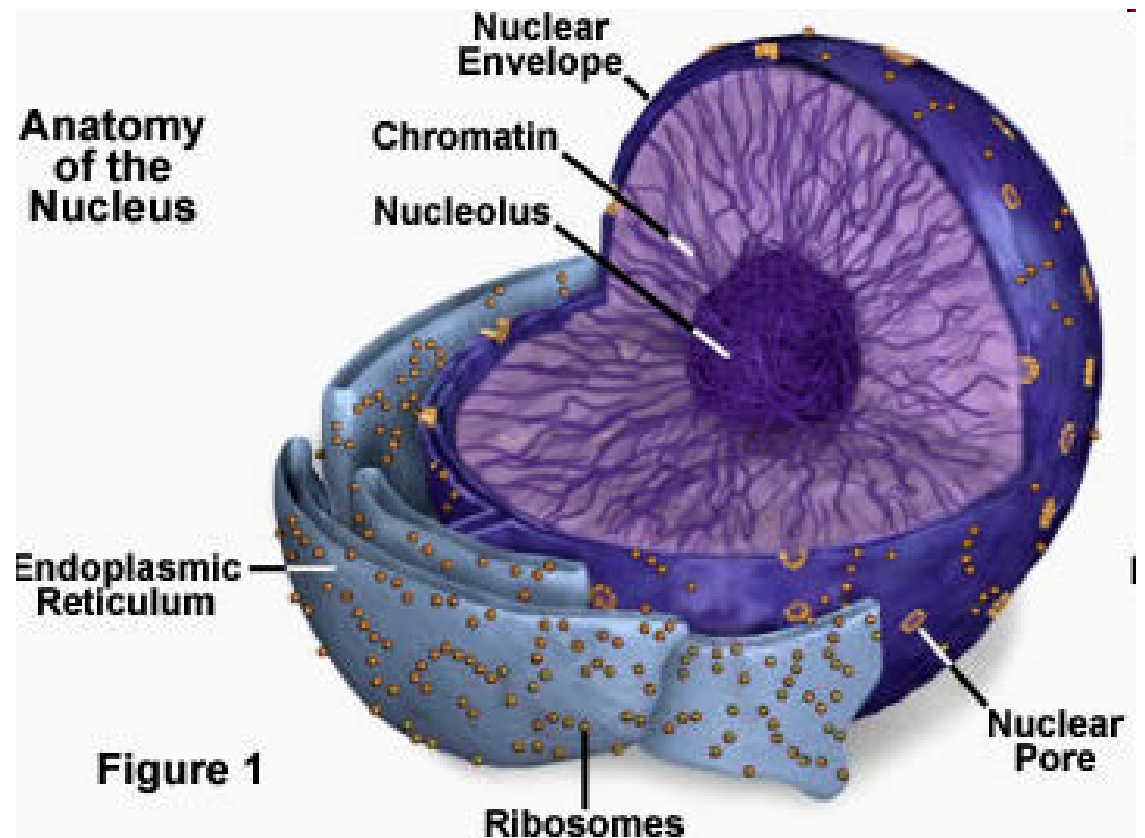
Function: Controls what enters and leaves the cell



10. Nucleus

Structure: Surrounded by a double-membrane (nuclear envelope) with pores (nuclear pores).

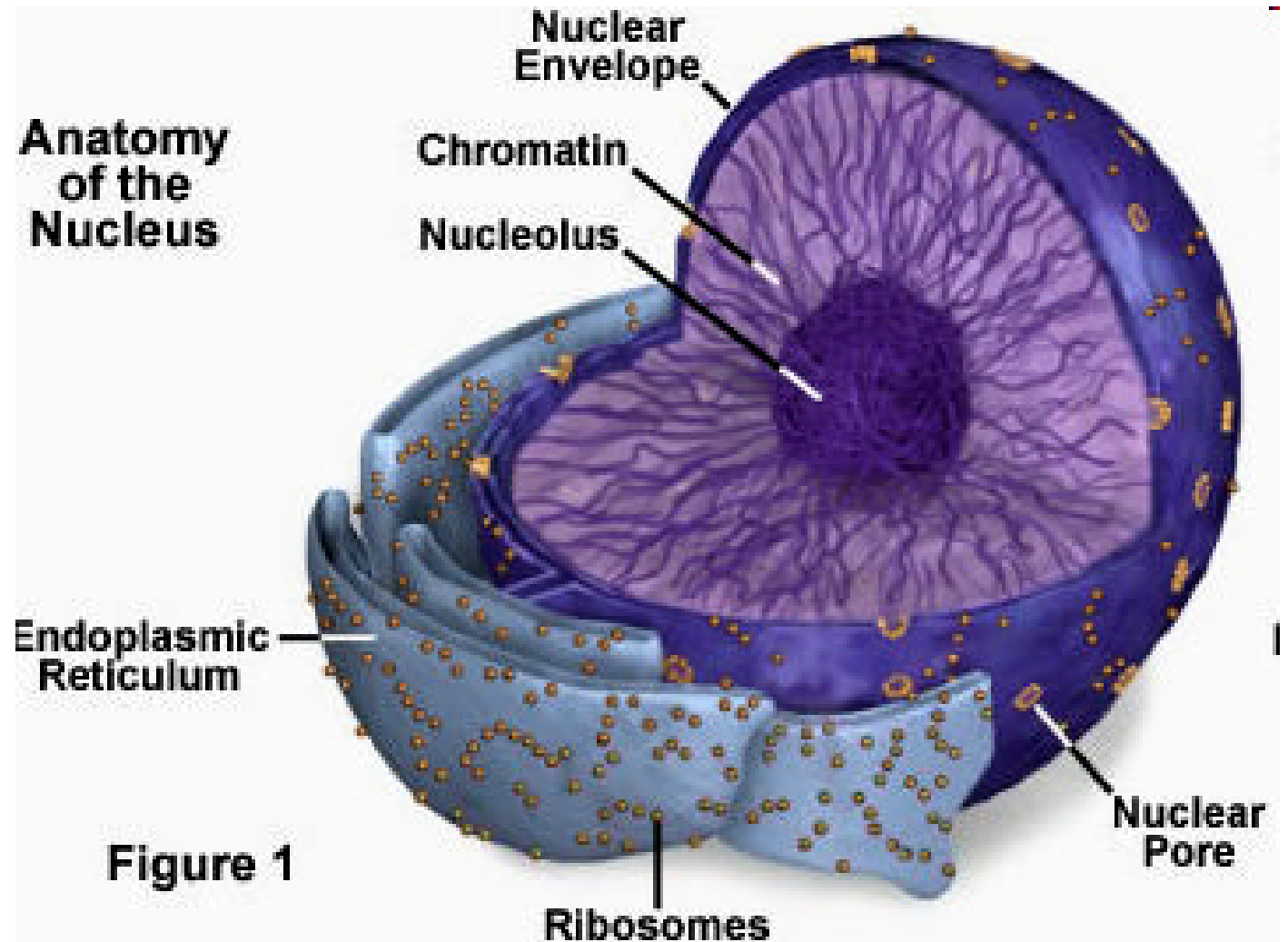
Function: Contains the cells genetic information (chromosomes/DNA)



8. Nucleolus

Structure: Dark area inside nucleus

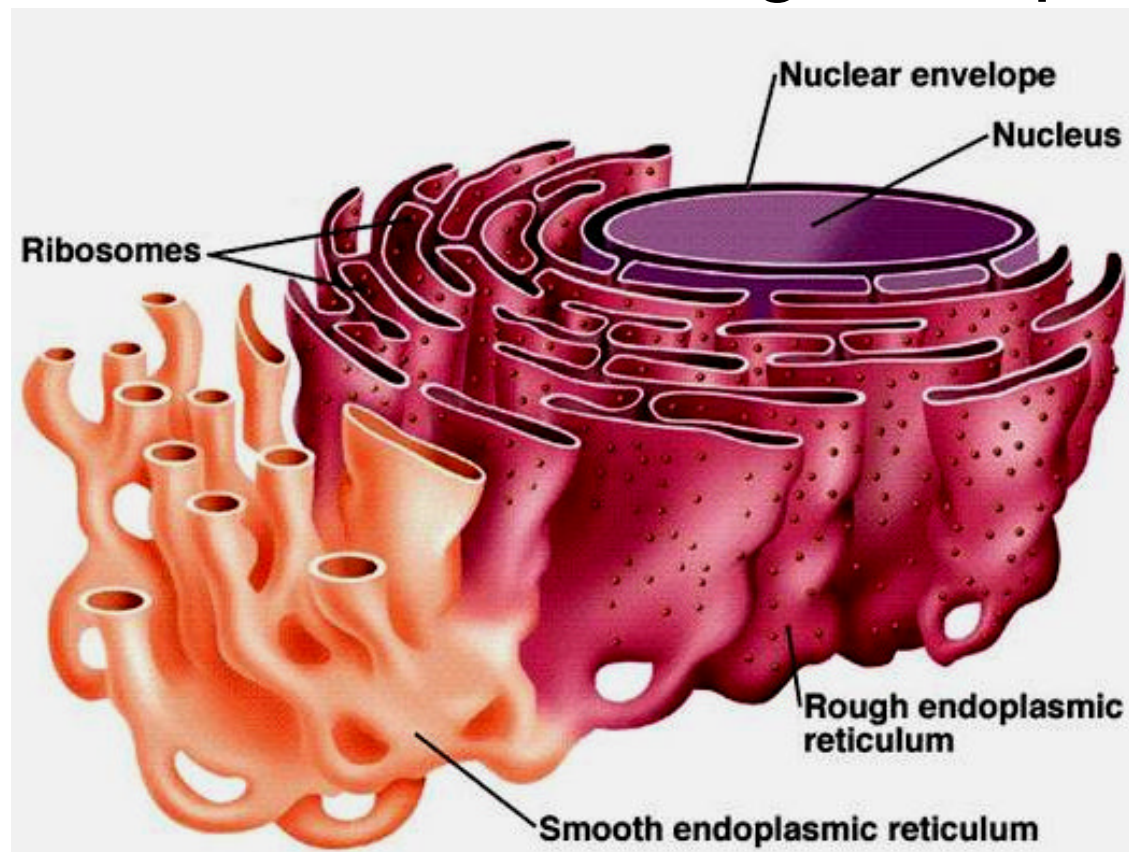
Function: Place where ribosomes are assembled



3. Smooth Endoplasmic Reticulum

Structure: Network of sac-like membranes lacking ribosomes.

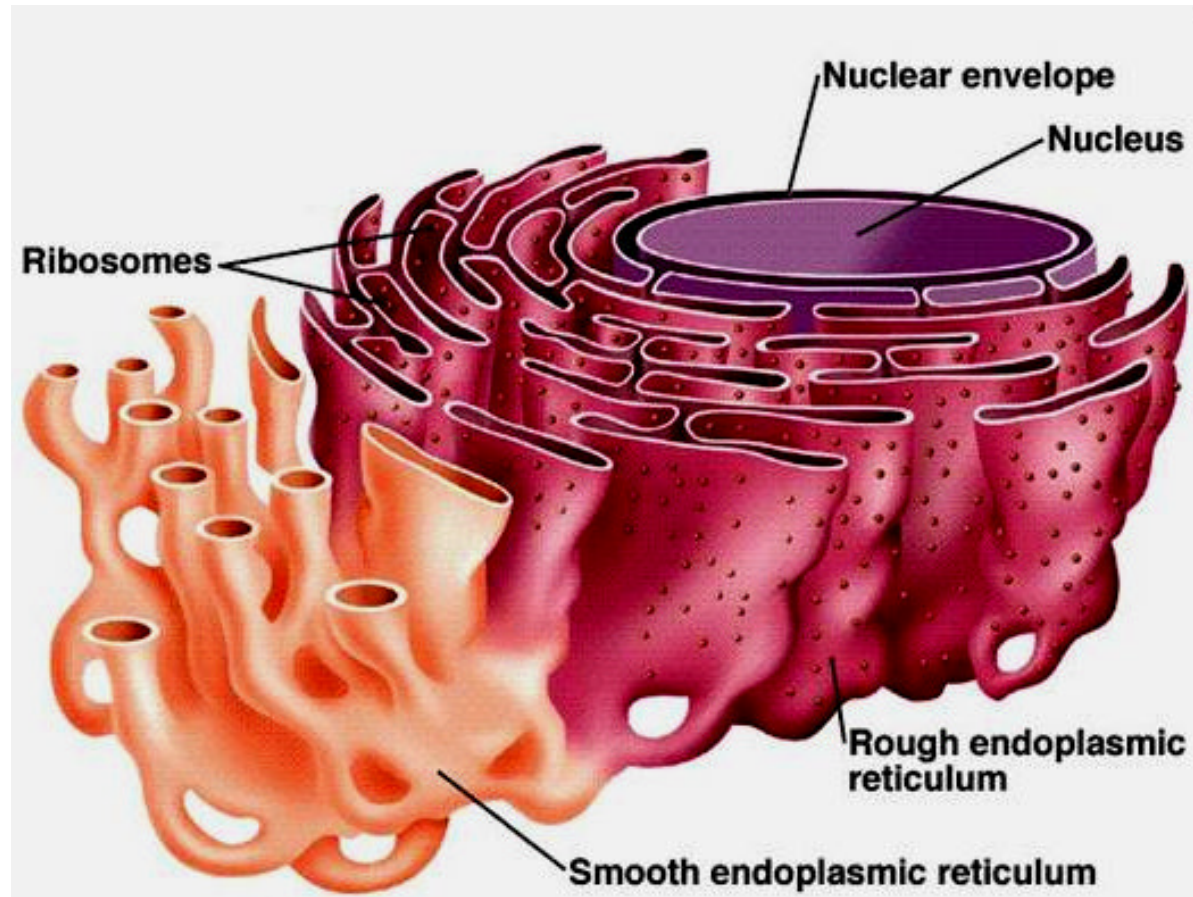
Function: Synthesis of lipids, hormones, and steroids; detoxification of drugs and poisons.



5. Rough Endoplasmic Reticulum

Structure: Similar to Smooth ER, but with ribosomes

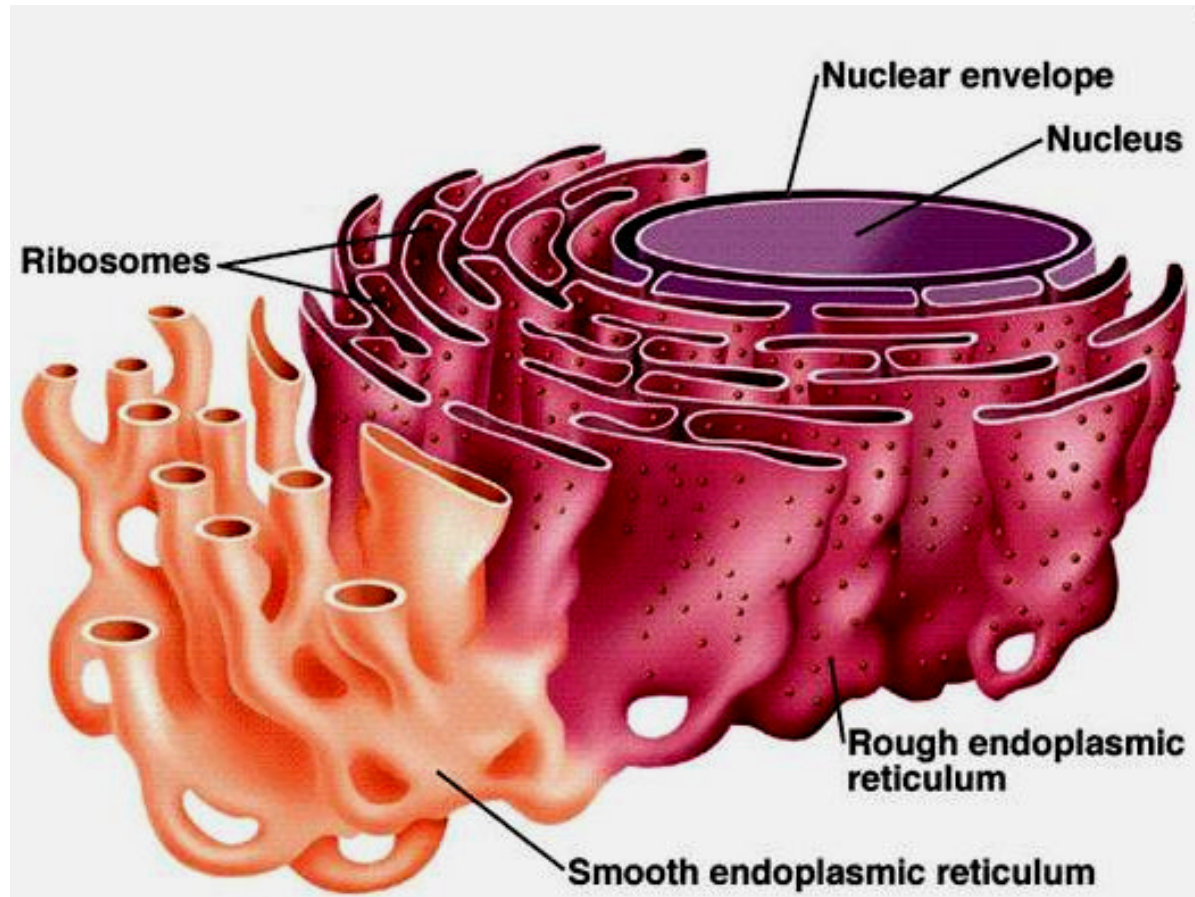
Function: Produce proteins used outside of cell.



6. Rough ER Ribosomes

Structure: Large molecules of RNA and protein

Function: Constructs proteins from amino acids for use outside cell.



9. Free Ribosome

Structure: Ribosome not attached to ER

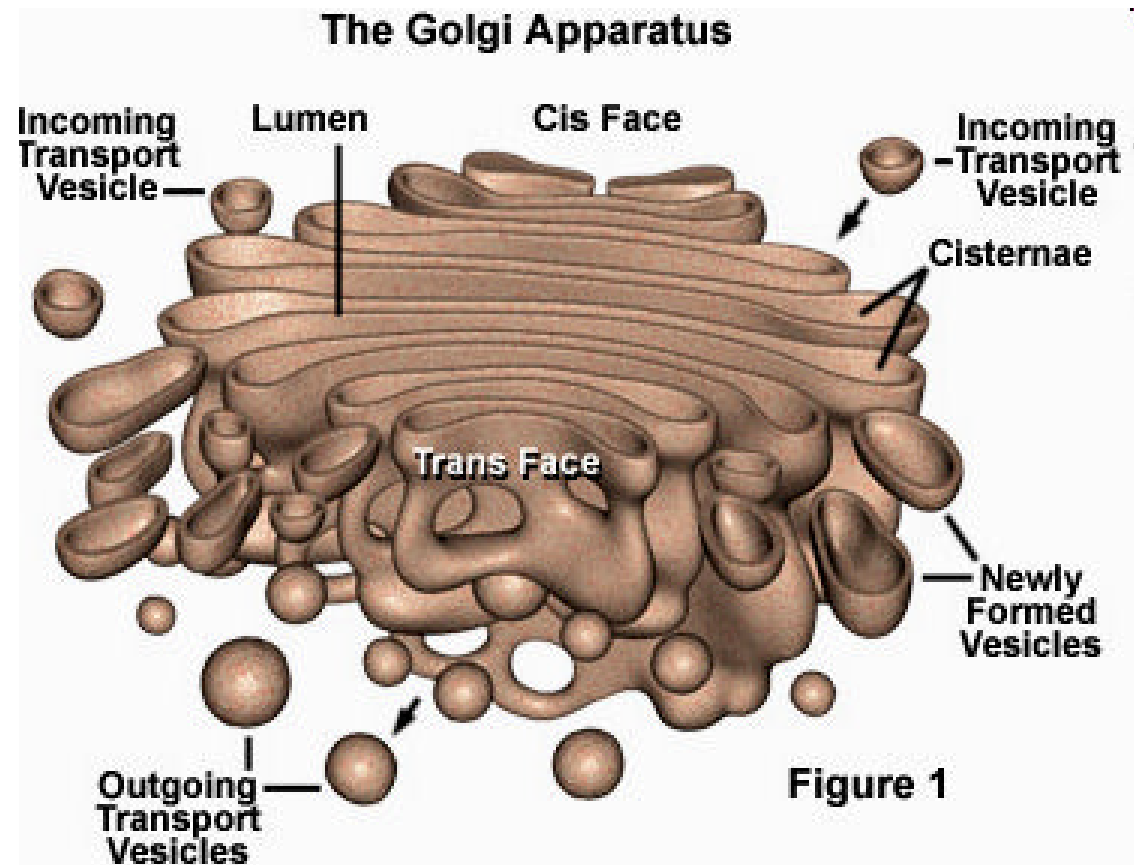
Function: Constructs proteins for use inside cell.



14. Golgi Apparatus

Structure: Stack of membrane enclosures

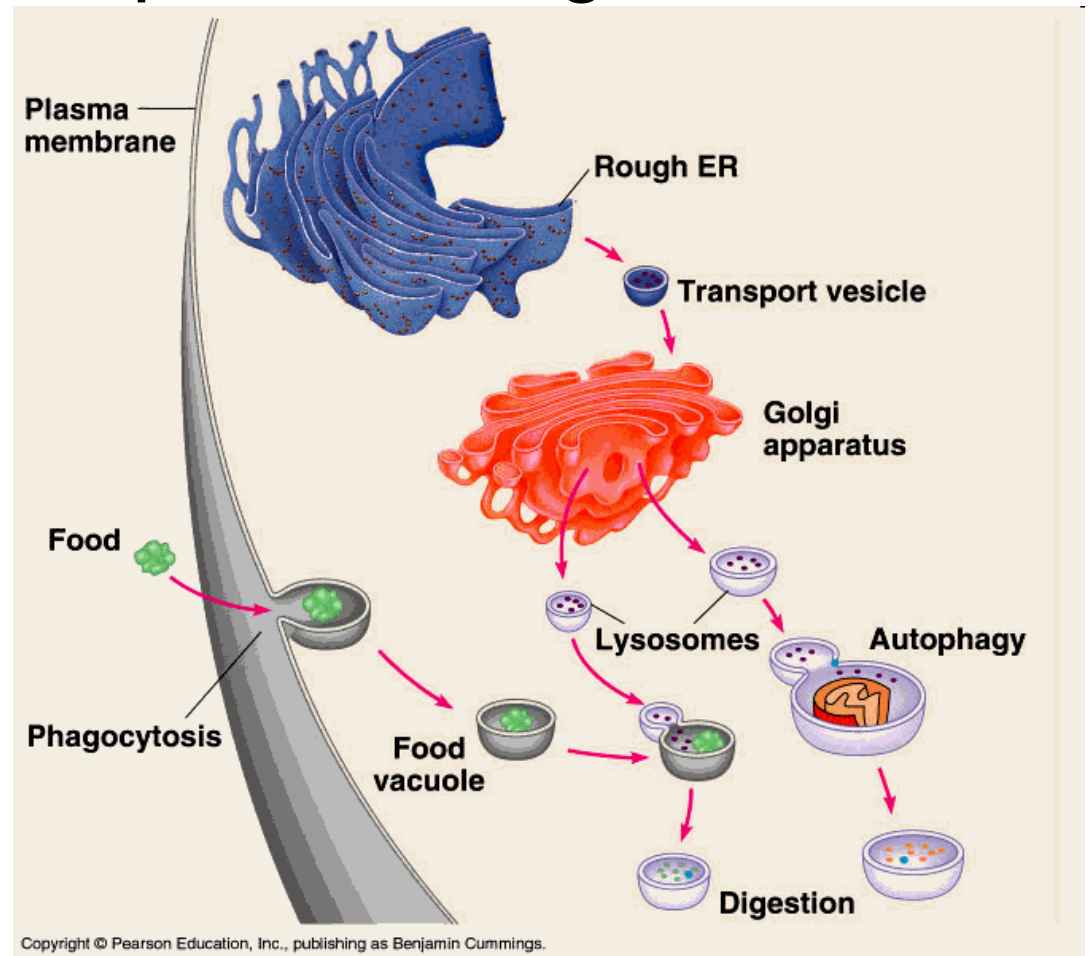
Function: Modifies, sorts, and packages proteins and other materials into vesicles for use inside or outside the cell.



4. Lysosome

Structure: Small and spherical

Function: Contain enzymes to break down lipids, carbohydrates, proteins, organelles and “junk”

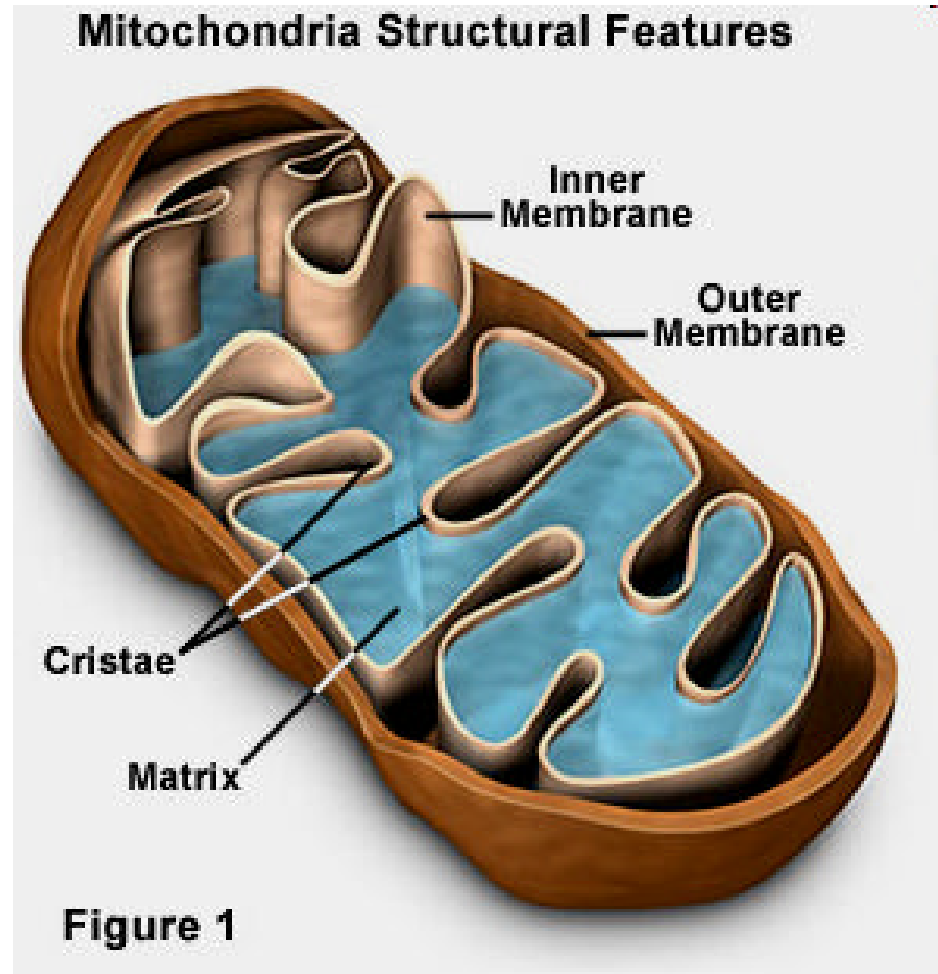


2. Mitochondrion

Structure: Double-membrane

Function:

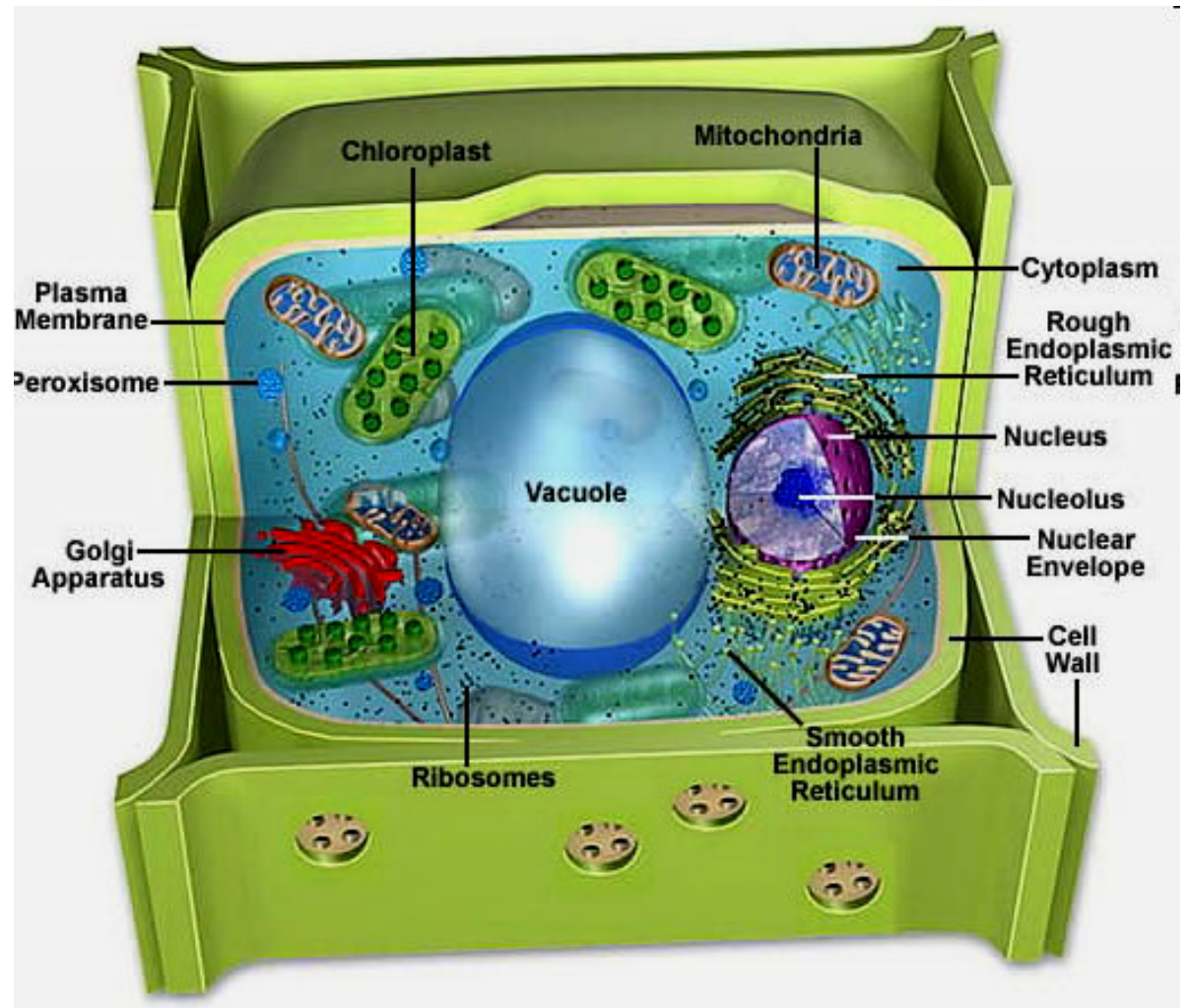
- The “powerhouse” of the cell.
- Converts chemical energy in food into ATP.
- ATP is the “energy currency” of the cell.



11. Vacuole

Structure: Often large in plant cells.

Function: Used for storage (e.g. water, starch)



13. Centrioles

Structure: Gear-like structures

Function: Used to separate chromosomes during cell division.

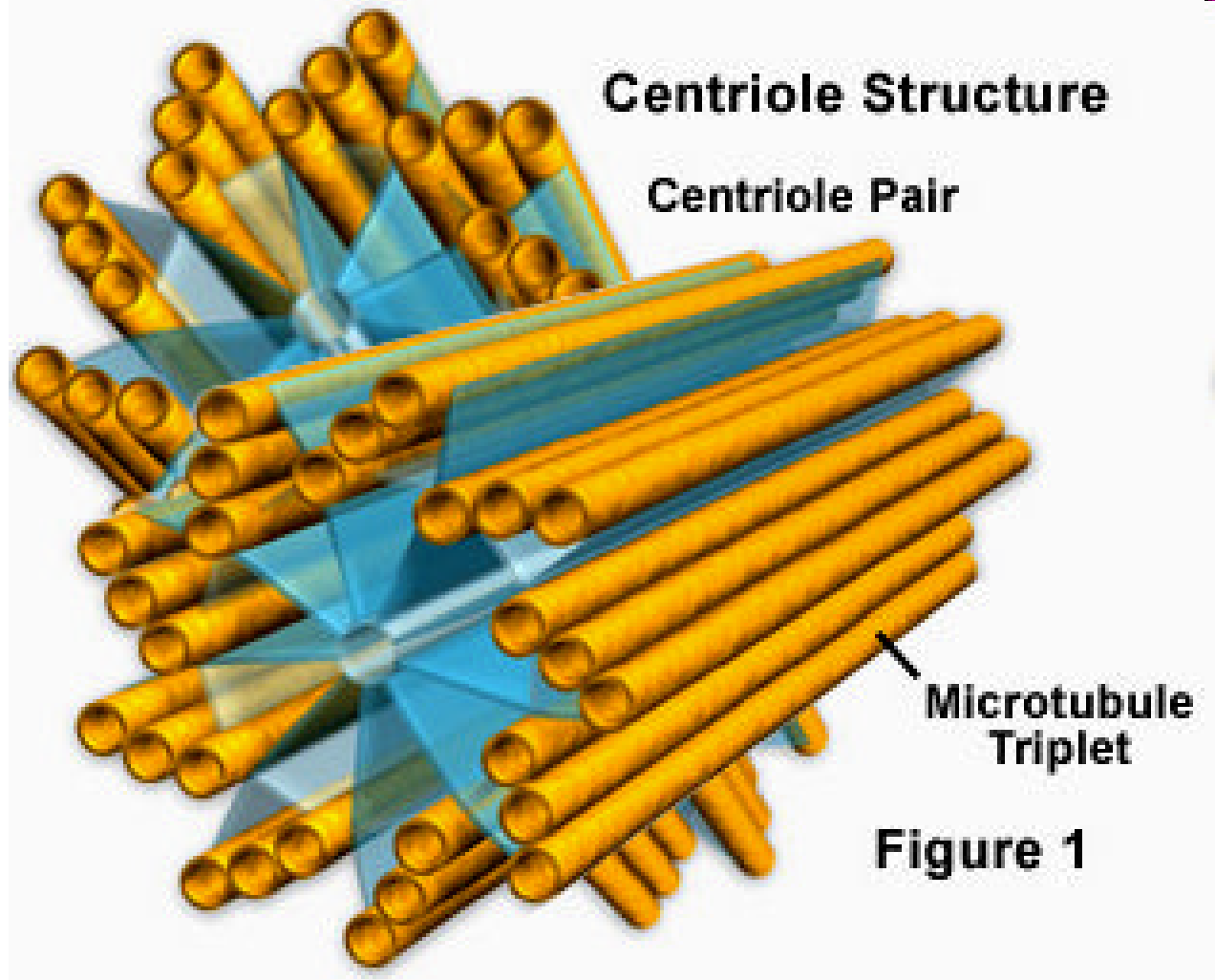


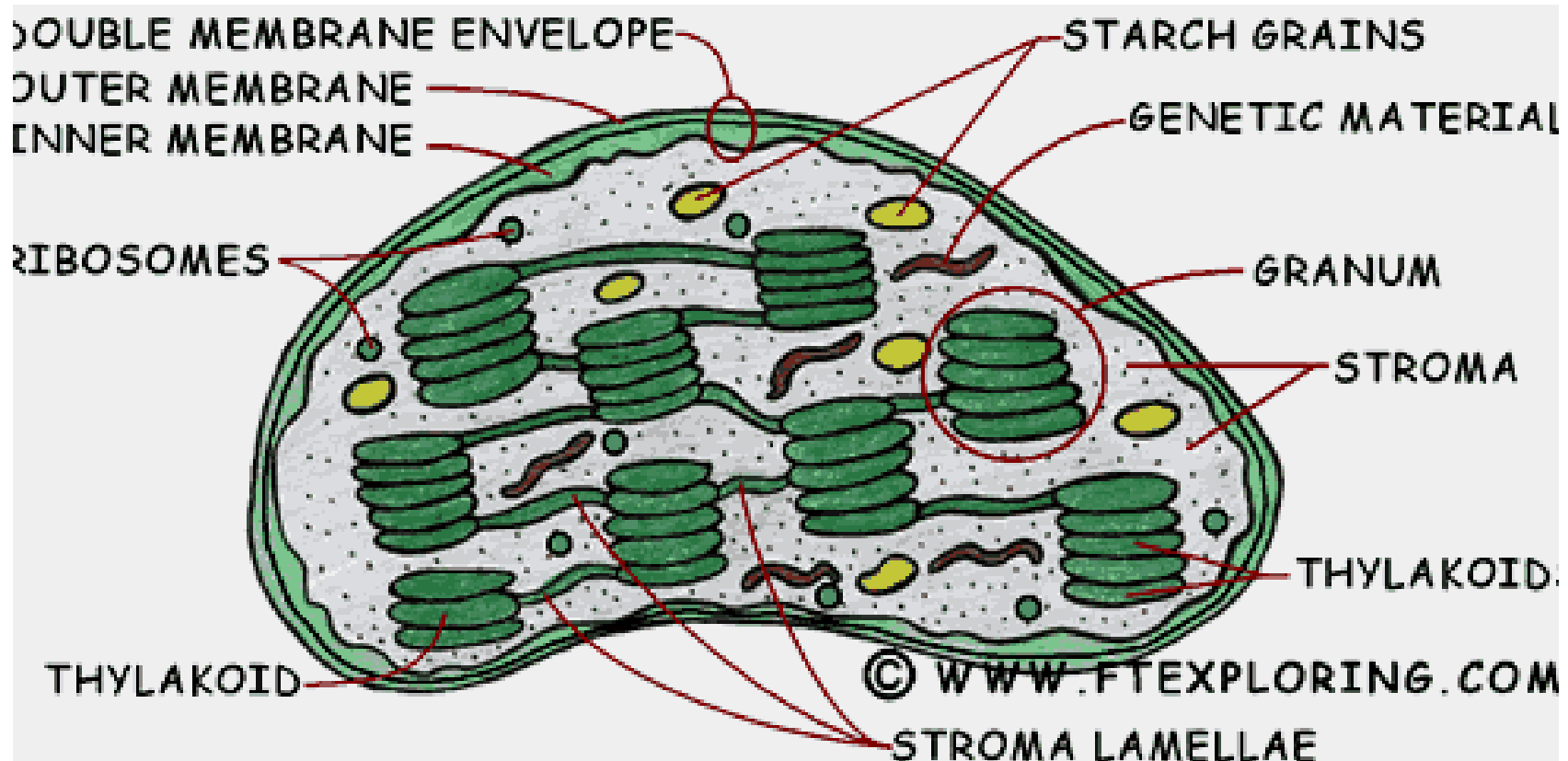
Figure 1

Plant Organelles

3. Chloroplasts

Structure: Double membrane structure with stacks of granna. Similar to mitochondrion.

Function: Produces ATP and sugar ($C_6H_{12}O_6$) from sunlight.



Other cell parts are the same as animal cells.
Here are the functions. What are the names?

- #2. Protection, allows thing into and out of the cell
- #4. Releases energy from food (ATP)
- #5. Protects the nucleus, has nuclear pores in it

- #6. Stores the DNA, controls the cell
- #7. Center of nucleus, makes ribosomes
- #8. Transports proteins, covered with ribosomes.
- #9. Makes protein

- #11. Breaks down dead or unusable cell parts.
- #12. Packages, and transports cell products and secretions.

Self-Check

Is this a plant or an animal cell?
What are the green organelles called?



What is the arrow pointing to?

