Living Things

Chapter 2

Section 1: What is Life?

- 6 Characteristics of Living Things:
  1. _____
     - _____cellular vs. _____cellular
  2. Composed of **5** essential chemicals
     1. _____
     2. _____- main energy source
     3. _____
     4. _____ (Fats)
     5. _____- genetic material that controls cell's activities
  3. Use energy
     - Growth and Repair

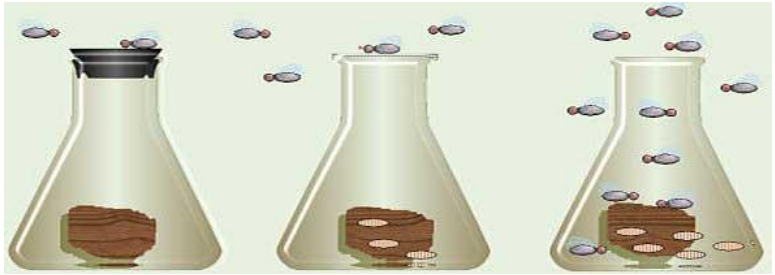
Characteristics of Living Things (cont.)

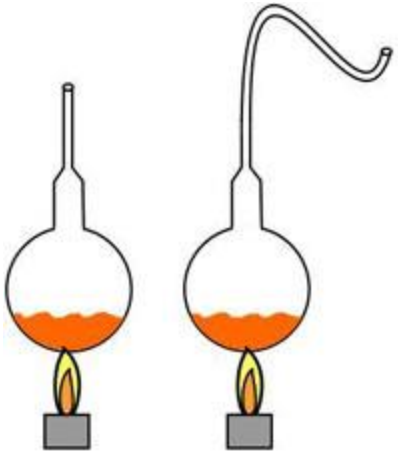
4. Respond to Surroundings
   - _____- change in the environment
     Examples- temperature, light, sound

   - _____- action as a result of the stimulus
5. Growth and Development
6. Reproduction

Life Comes from Life

- Spontaneous Generation
  - _____that life can come from nonliving things
  - Two experiments that disproved this theory:
    - Redi's Experiment- flies
    - Pasteur's Experiment- bacteria





4 Needs of Living Things

1. _____
2. _____
   - Two ways to obtain food:
     a. _____- make their own food
        a. Plants
     b. _____- cannot make their own food
        a. Animals, mushrooms, slime molds
3. Living Space
4. _____Conditions (ie., Homeostasis)
   - Temperature, blood sugar levels, water levels

Section 2: Classifying Organisms

- Classification

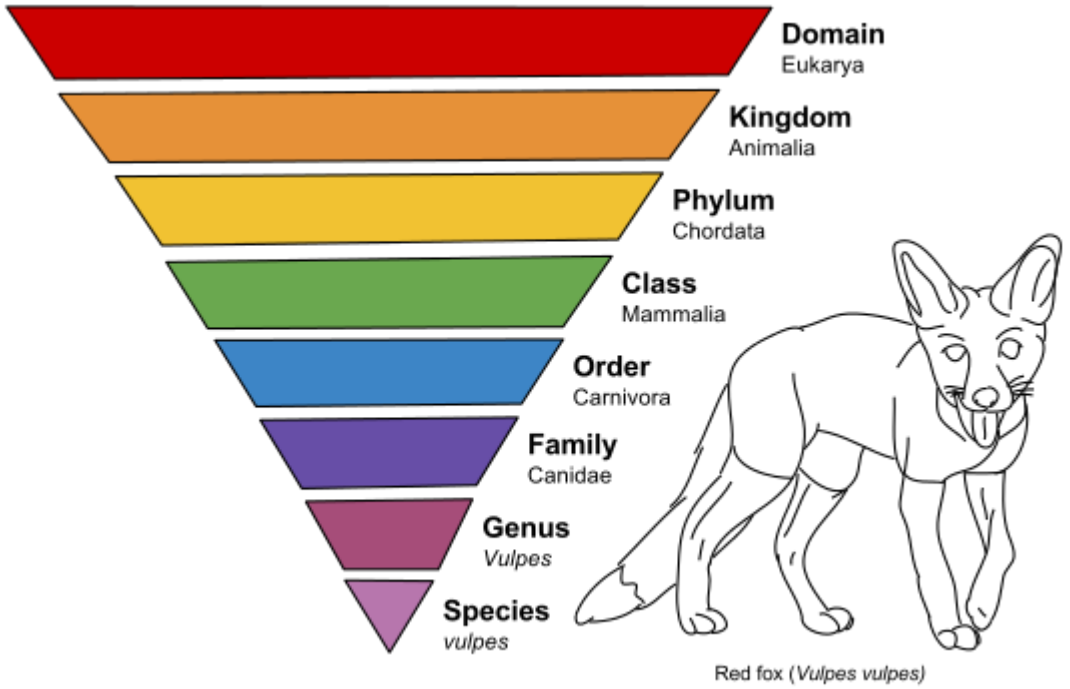
  Grouping things based on their similarities.

- Taxonomy
  - The scientific study of _____.
- Binomial Nomenclature
  - Developed by Linnaeus in the 1750s
  - Organism groups based on observable features
  - Each organism given _____ ("binomial")
    - Genus- 1st name
      - Felis- all cats (pumas, tigers, house cats)
    - Species- 2nd name
      - Refers to distinct feature
      - Example: domesticus

Felis domesticus

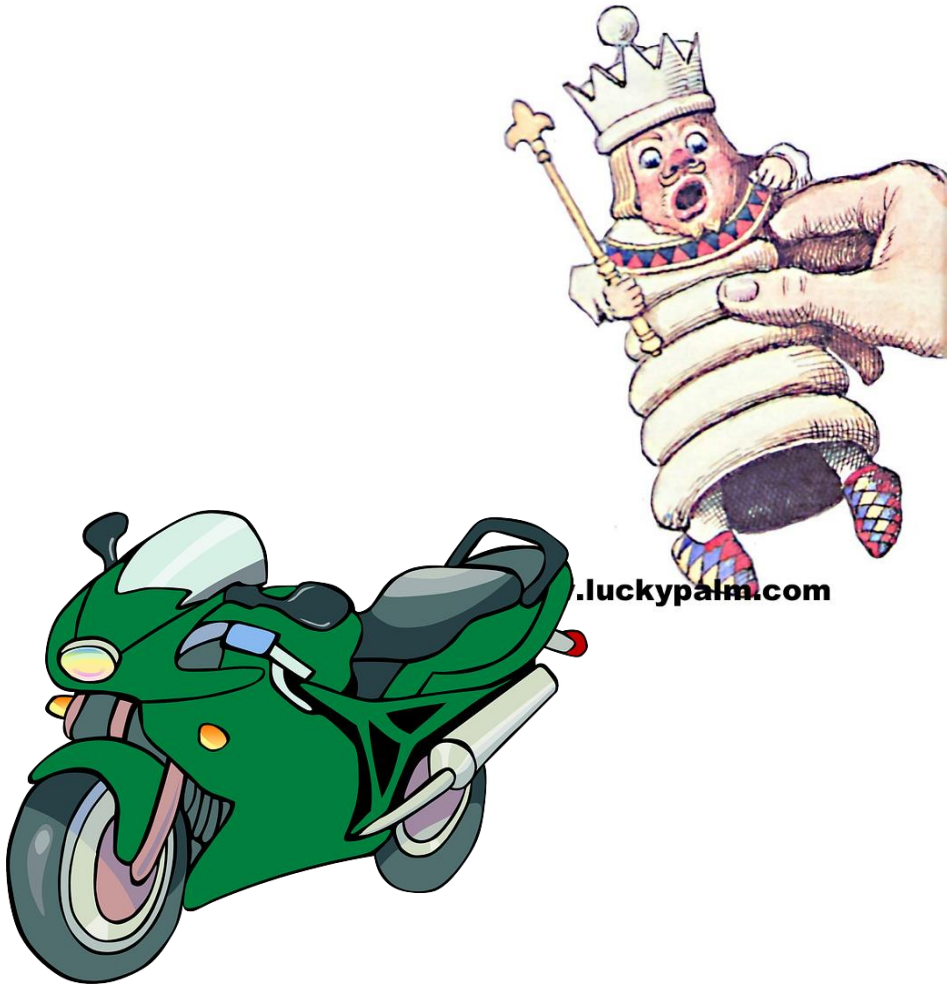
8 Levels of Classification

- 8 major levels
  - _____
  - _____
  - _____
  - Class
  - Order
  - Family
  - _____
  - _____



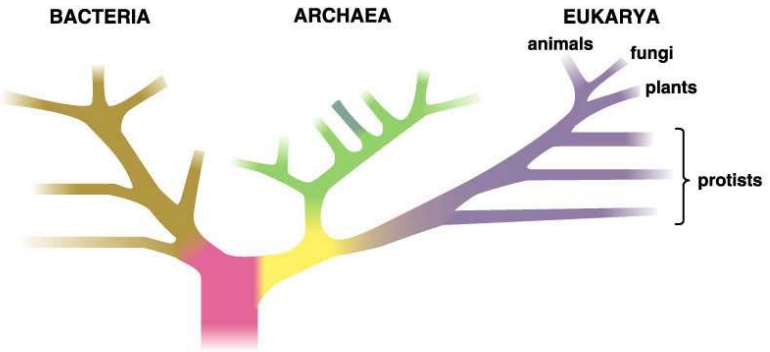
Mnemonic for Levels of Classification

- **D**aring = **D**omain
- **K**ings = **K**ingdom
- **P**lay = **P**hylum
- **C**hess = **C**lass
- **O**n = **O**rder
- **F**ast = **F**amily
- **G**reen = **G**enus
- **S**cooters = **S**pecies



Domains

- Organisms classified according to these 3 criteria:
  1. _____
  2. _____
  3. _____
- 3 domain system
  - Bacteria
    - Prokaryotes- _____
  - Archaea
    - Unicellular; similar to bacteria
    - Found in hot springs, molten gases
  - Eukarya
    - Eukaryotes- _____



Kingdoms

- Domain Eukarya split into 4 Kingdoms:

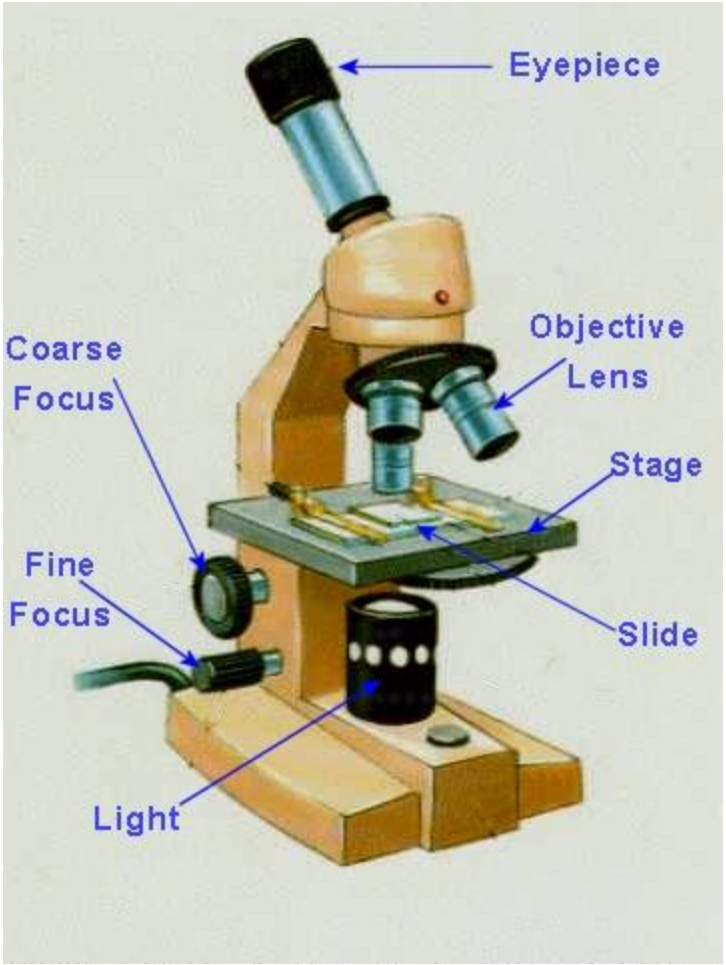
1. _____- Eukaryotes
   "odds and ends" kingdom
   Example: seaweeds
2. _____- Eukaryotes
   Feed by absorbing nutrients from dead or decaying organisms
   Examples: mushrooms, molds, fungi
3. _____- Eukaryotic autotrophs
   trees, flowers
4. _____- Eukaryotic heterotrophs
   most diverse kingdom

Section 3: Discovering Cells

- Discovery of Cells Timeline:
  - 1590- first microscope invented
  - 1663- Hooke's compound microscope w/ illumination observed cells in a thin slice of cork
  - 1674- van Leeuwenhoek's simple microscope magnified 266 times
  - 1886- Modern Compound Light Microscope (1,000 times)
  - 1965- Electron microscope (150,000 times)
  - 1981- Scanning Tunneling Microscope STM (1,000,000 times)

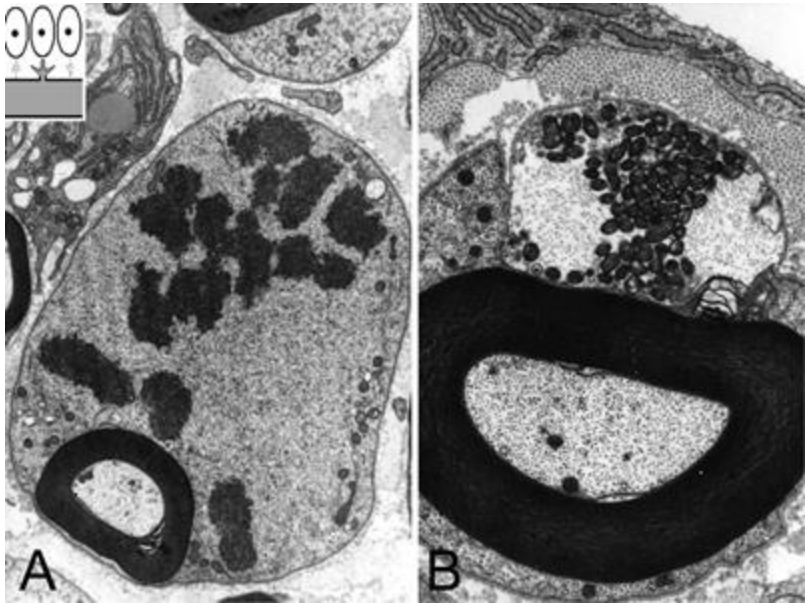
Light and Electron Microscope Terms

- _____
  - Ability to make things look larger than they are
- Lenses
  - Magnify an object by bending light
- Resolution
  - Sharpness of an image
- _____ Microscope
  - Uses more than one lens
- Electron Microscope
  - Use a beam of electrons



Development of the Cell Theory

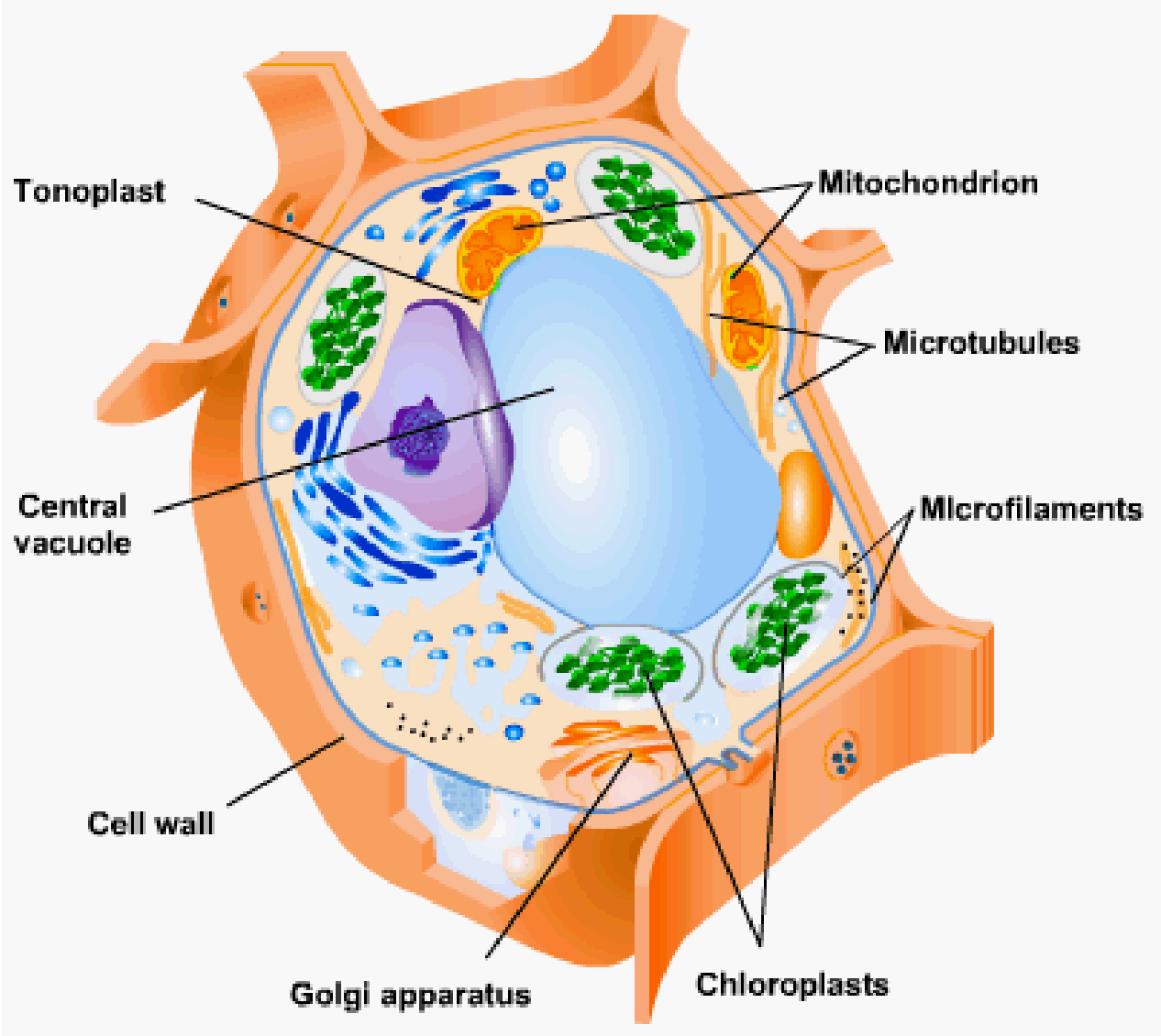
- Schleiden, Schwann, Virchow in 1855
- Cell theory says:
  1. All living things are composed of cells
  2. Cells are the basic units of structure and function in living things
  3. All cells are produced from other cells



Section 4: Looking Inside Cells

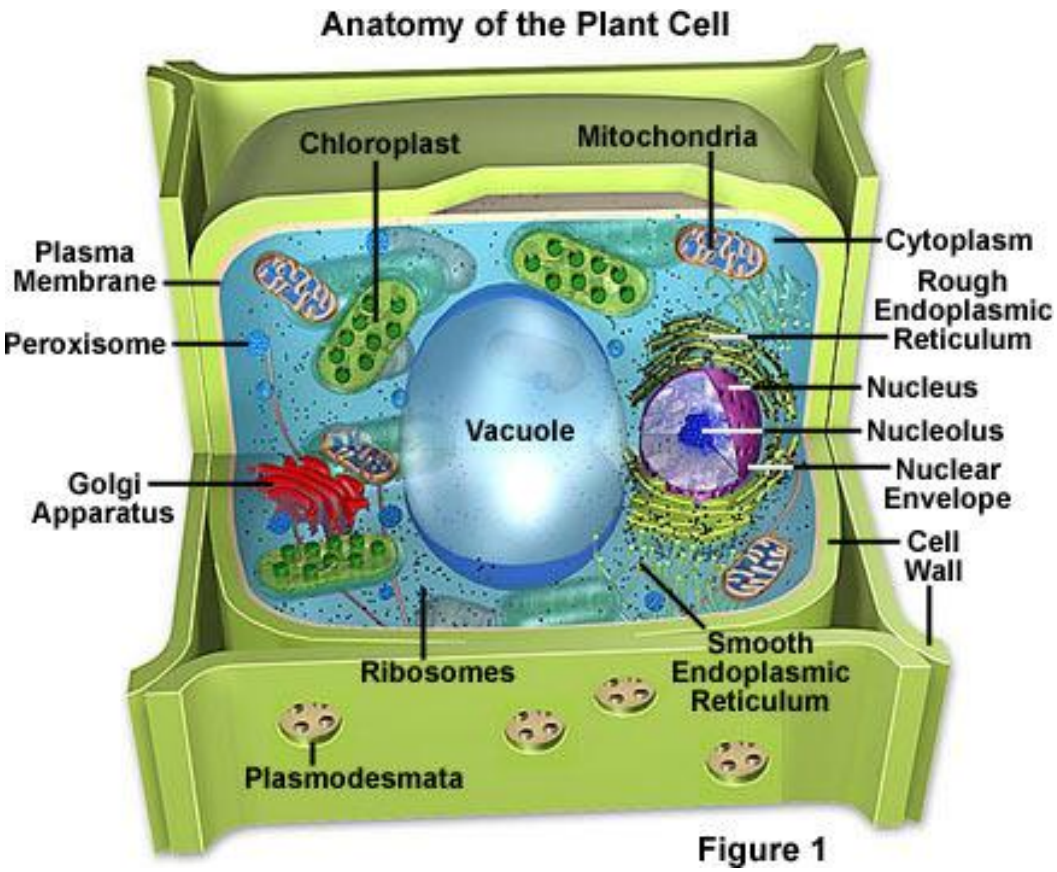
Organelles

Are tiny structures inside the cell with specific functions.



Cell Wall

- _____ for protection and support
- Found _____

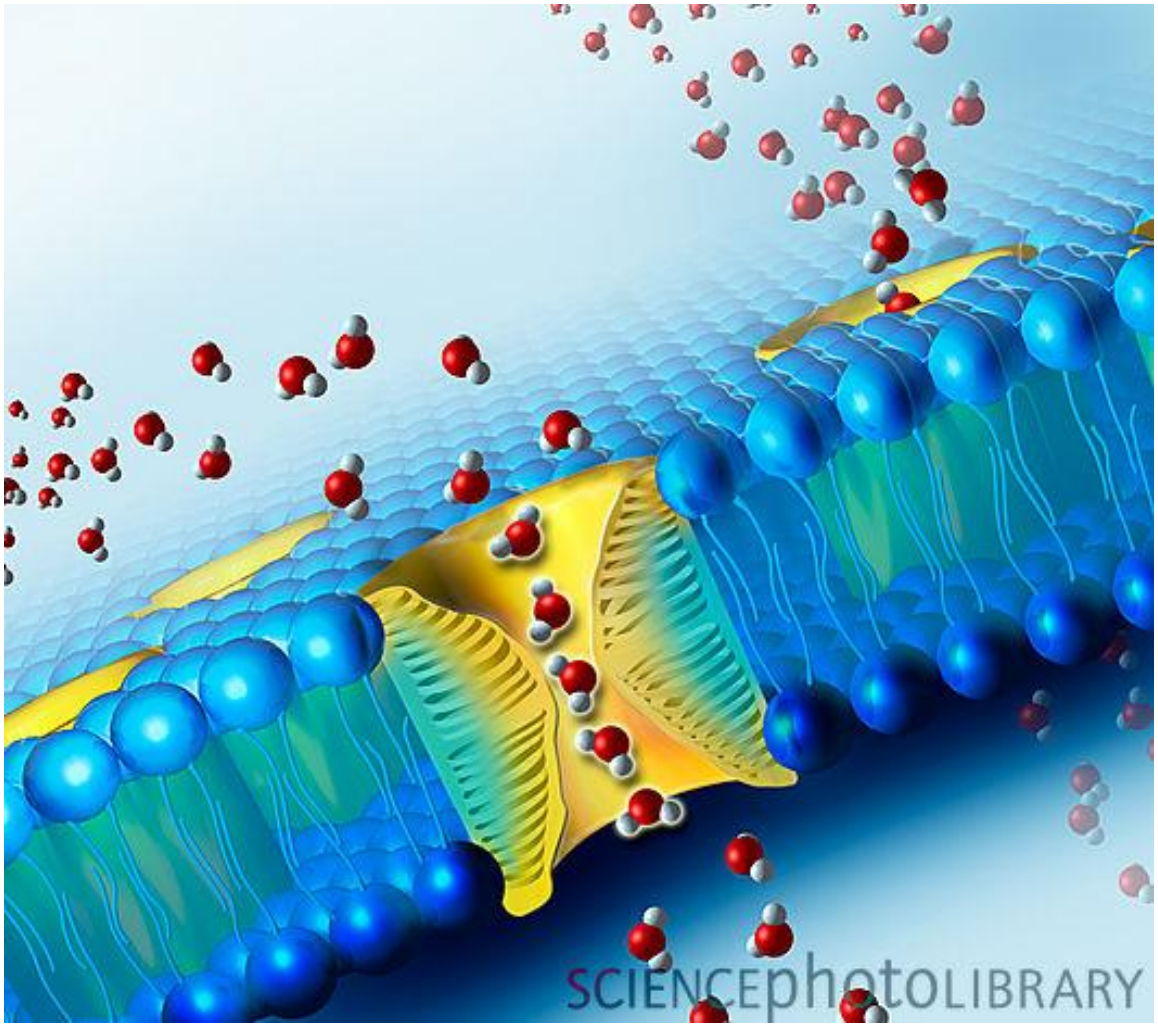


Cell Membrane

Controls

_____

_____ of the cell

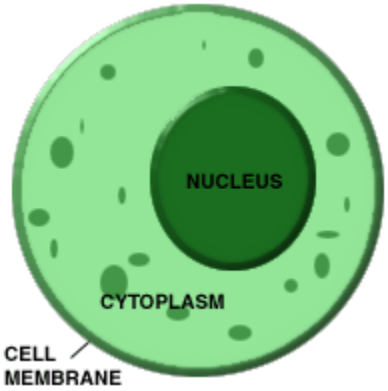


Cytoplasm

Region between

_____

_____

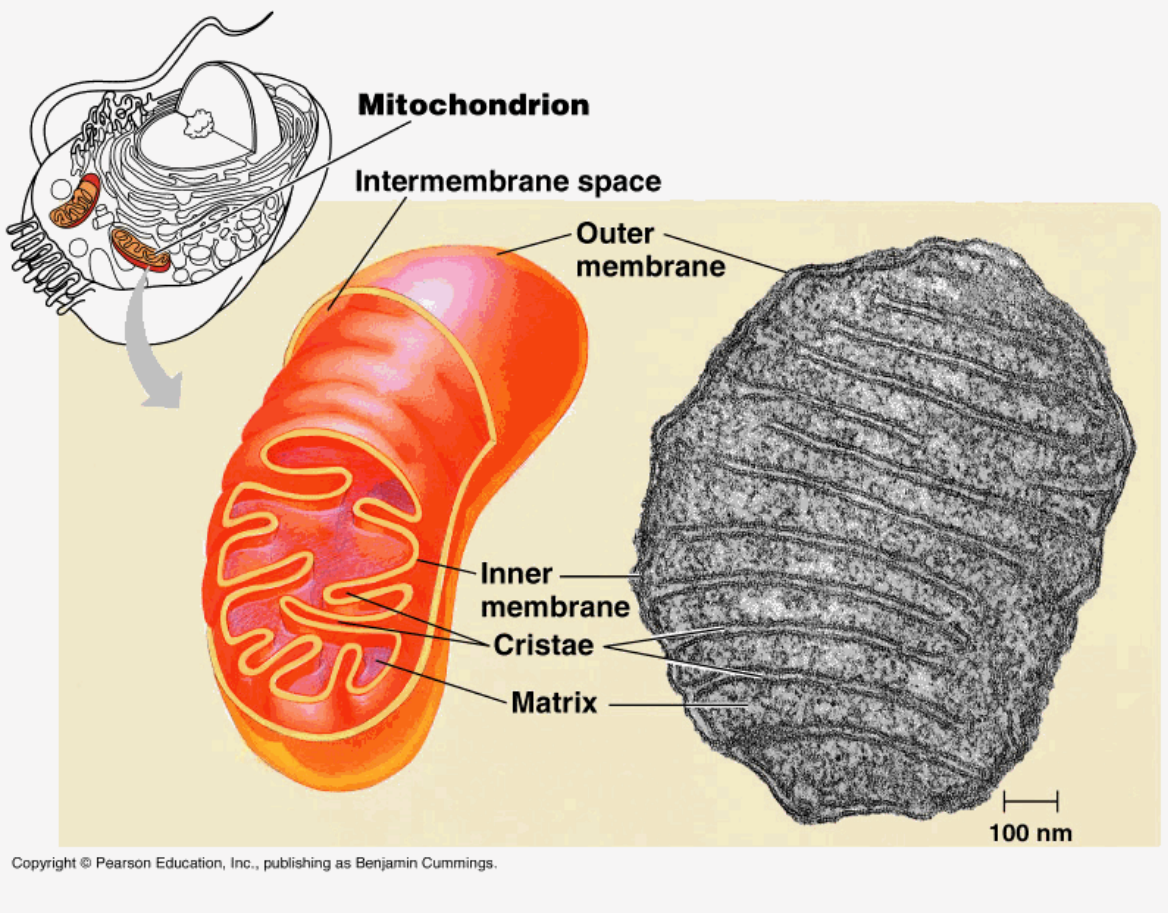


Organelles in the Cytoplasm

Mitochondria

_____

because they convert food into energy



Endoplasmic Reticulum (“ER”)

_____around cell

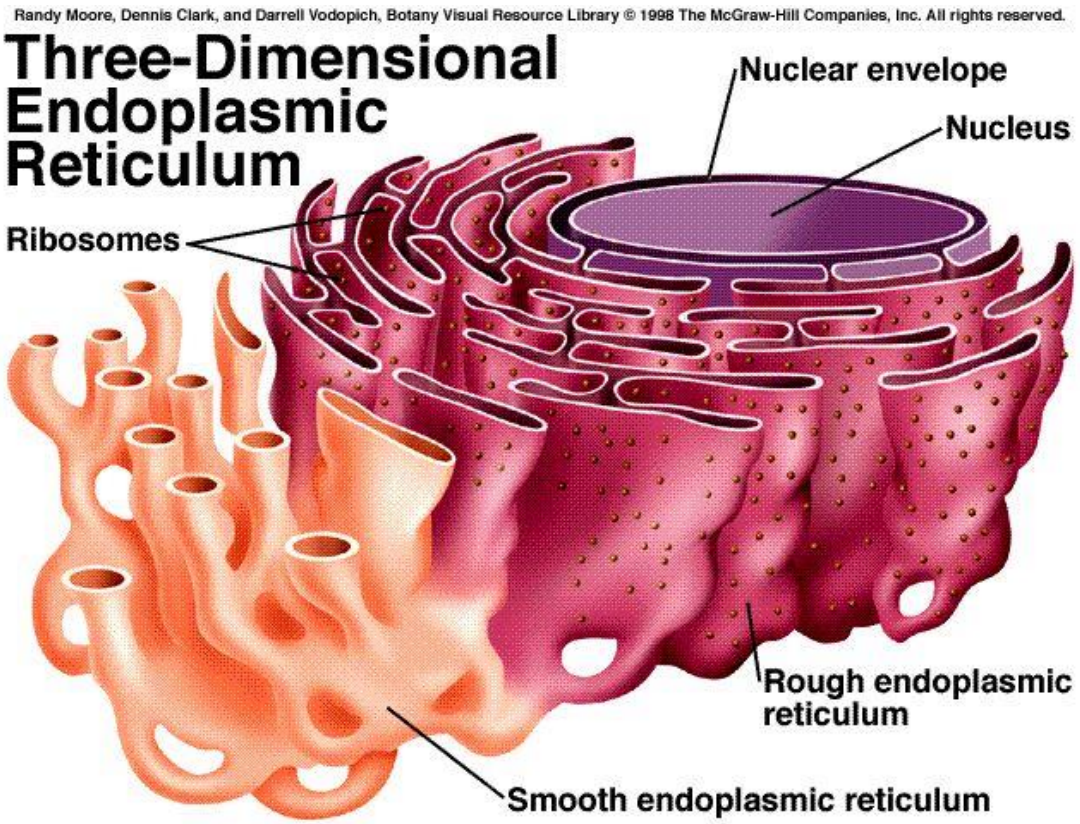
Ribosomes

Small, grain-like bodies

Some on ER and

some float in cytoplasm

_____

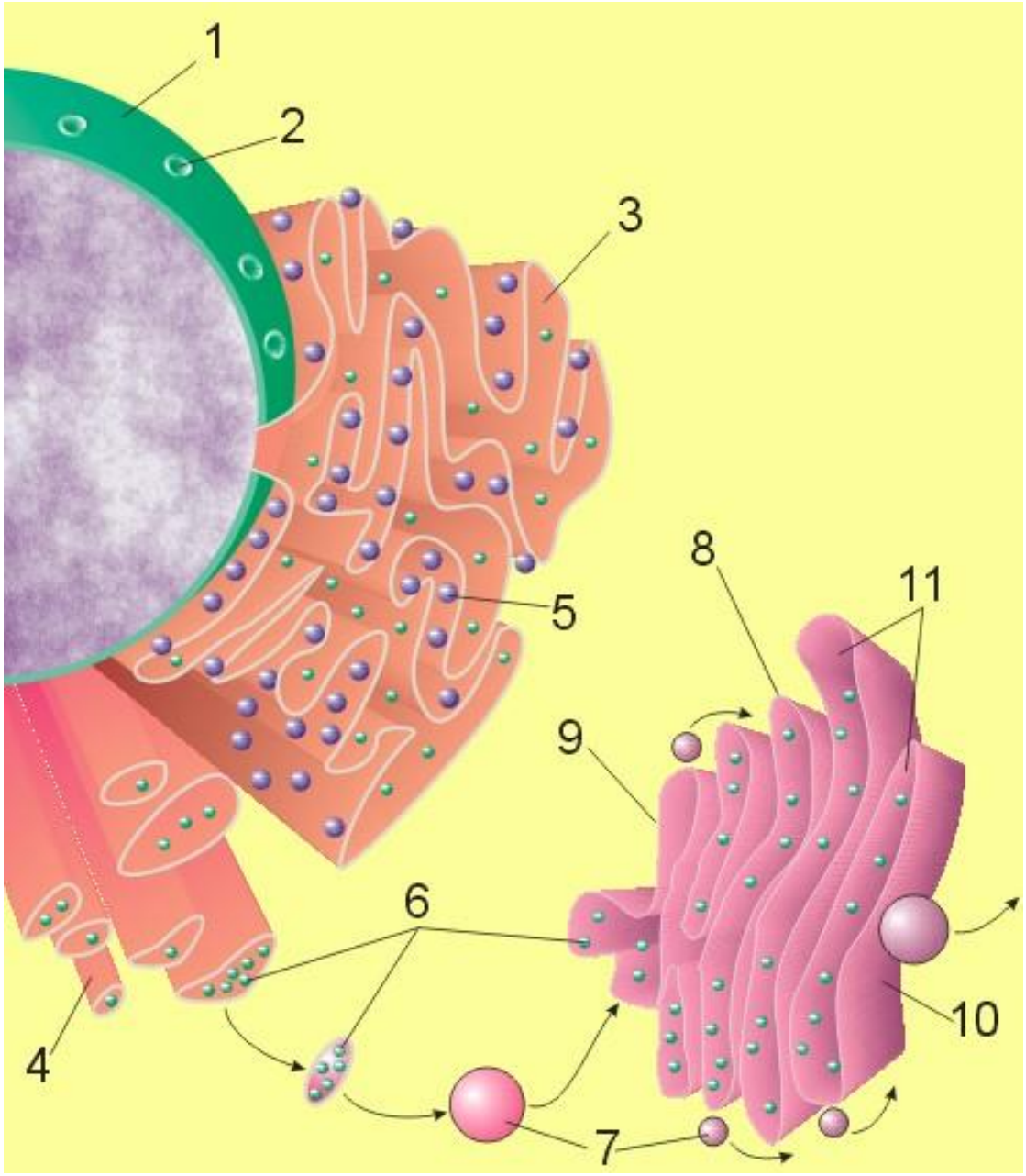


Golgi Bodies

Receive proteins,

_____

_____



Chloroplasts

- In plant cells

_____

- Capture energy

_____

to produce food

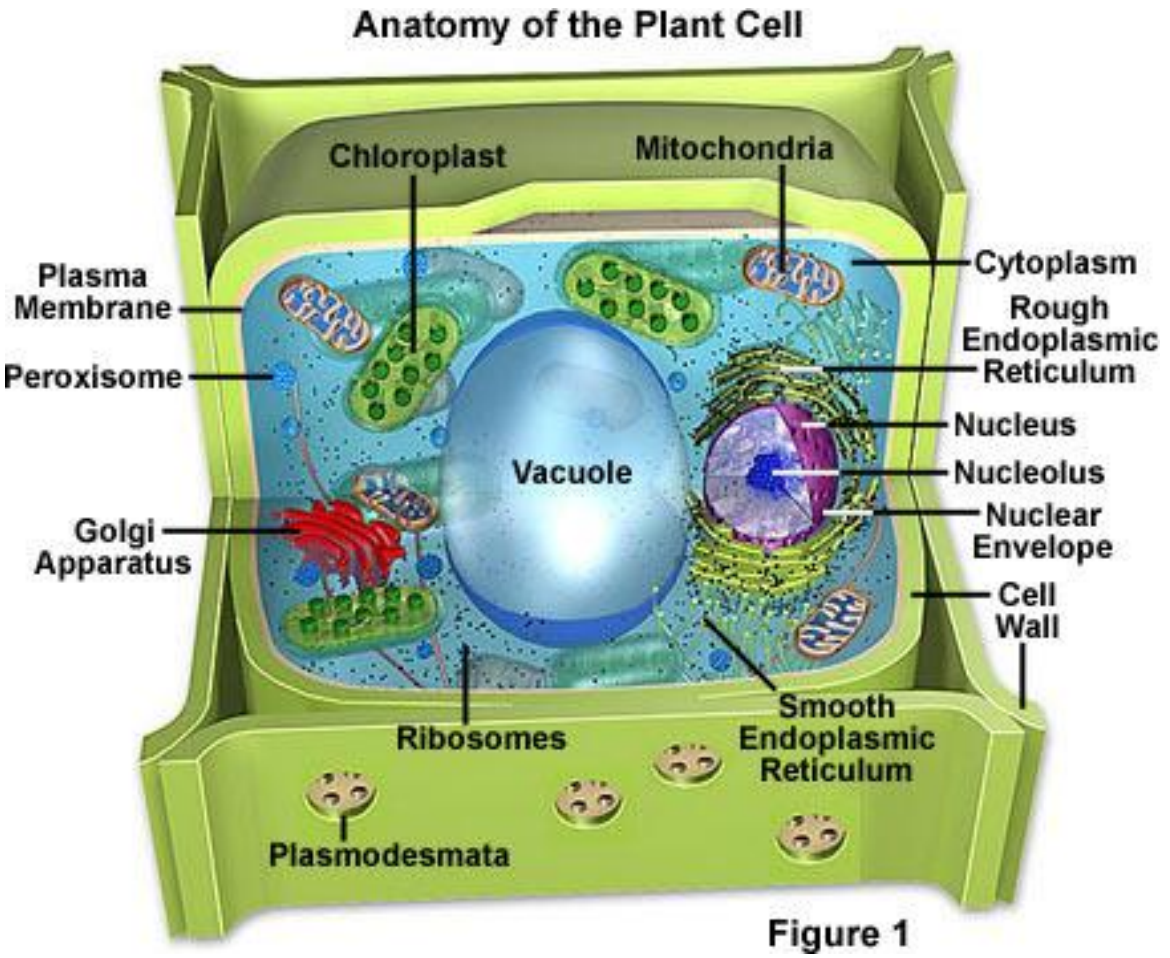


Figure 1

Vacuoles

- Large, _____ sacs used for storage
- Plants have one big vacuole;
- some animal cells have much smaller versions

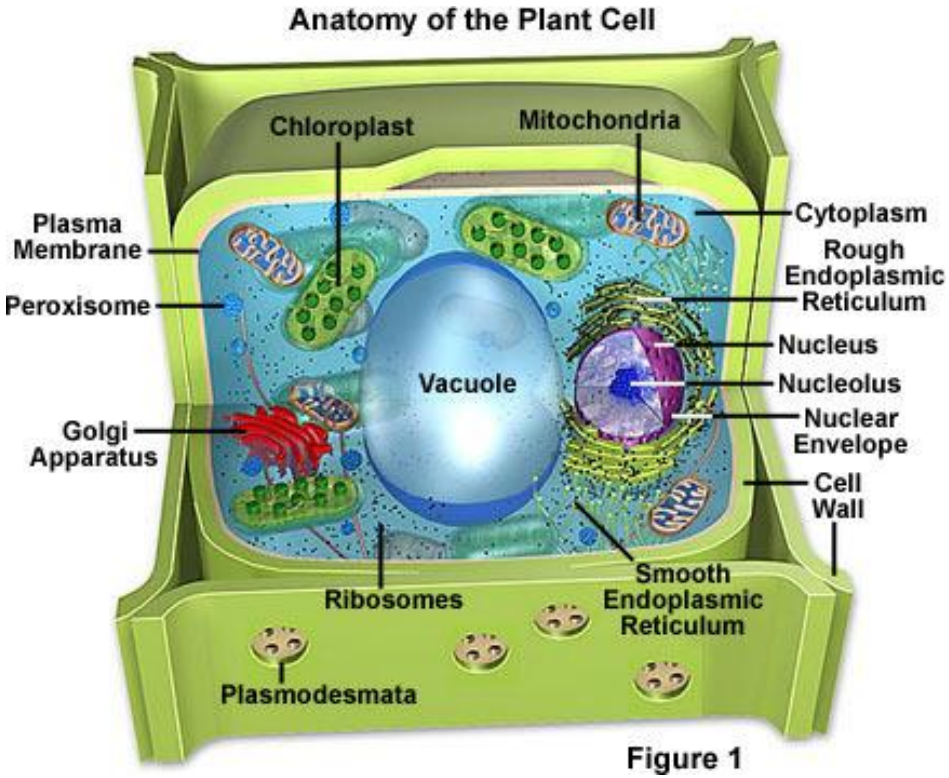
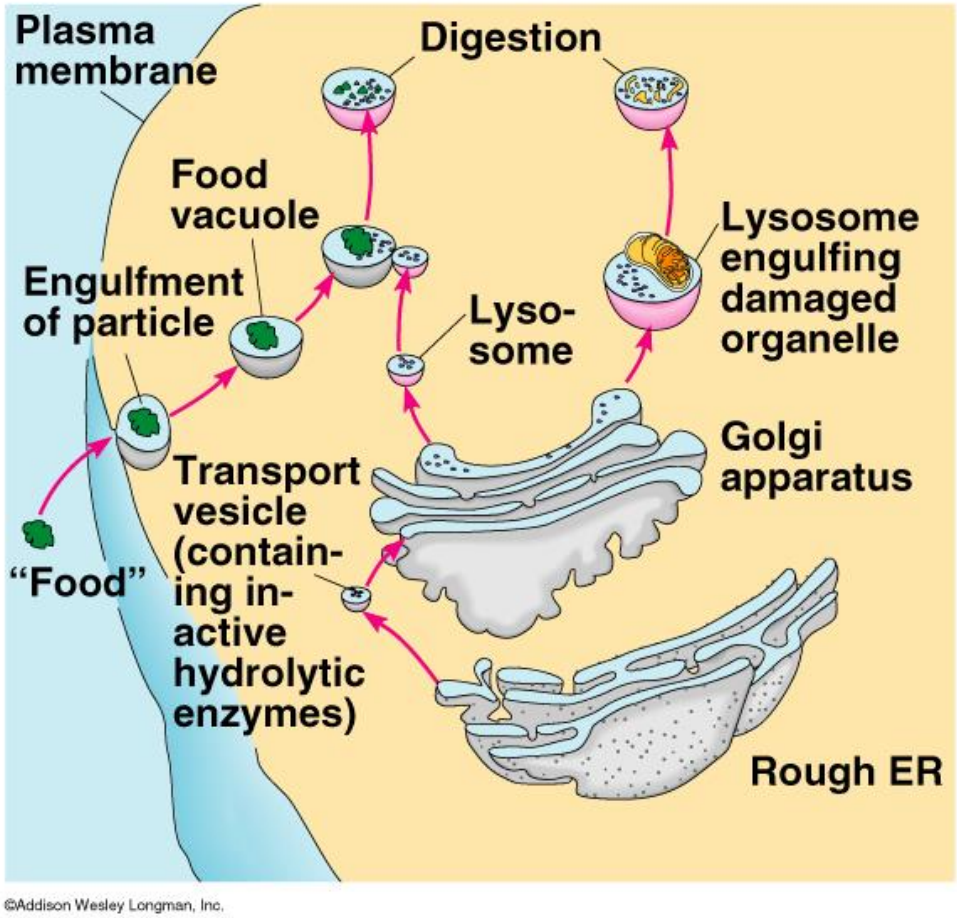


Figure 1

Lysosomes

- Small, round structures
- Cell's _____
- Break down various substances



Nucleus “_____”

Nuclear Envelope

- Membrane that surrounds nucleus
- Controls what materials go in and out of nucleus

Chromatin

- Thin strands floating inside nucleus
- Contains _____

Nucleolus

- Ribosome production

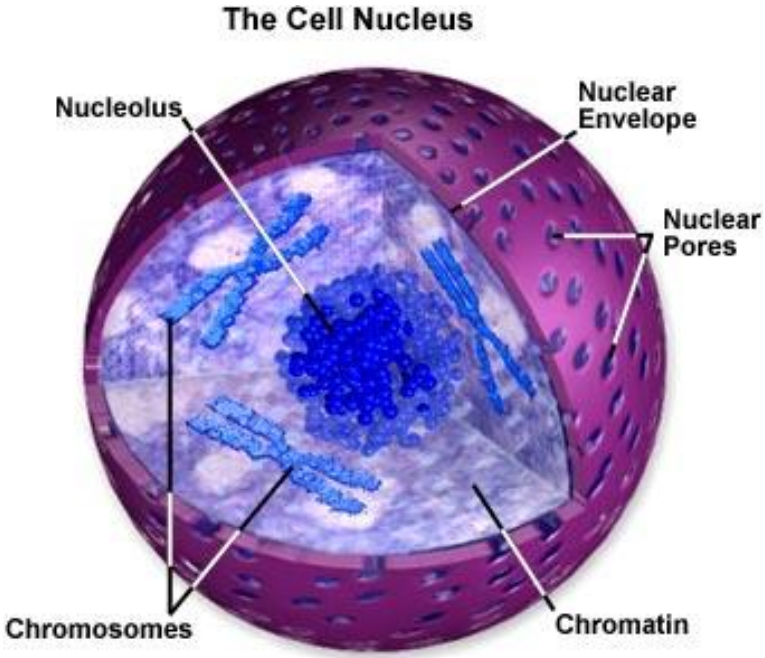


Figure 1