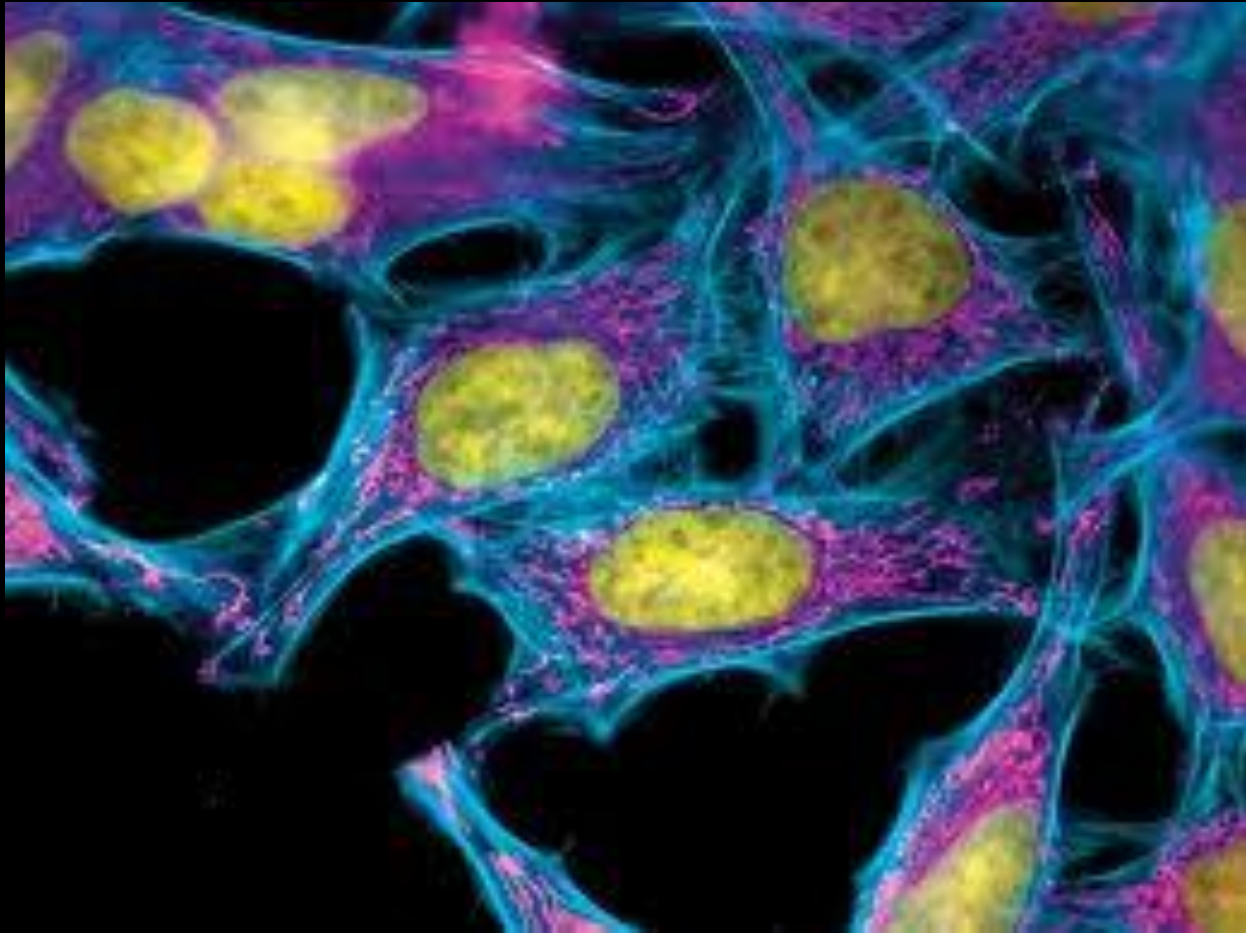


Cells – Part 1



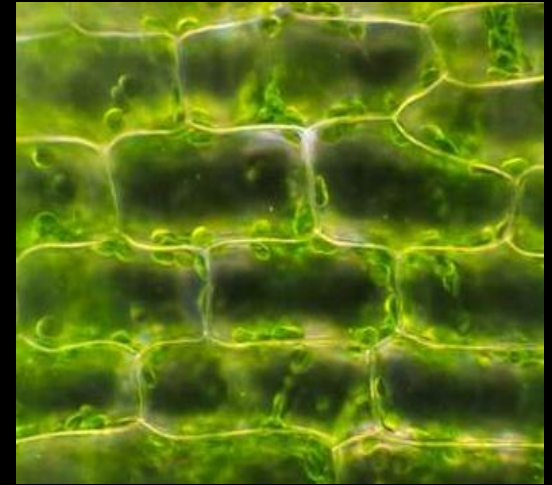
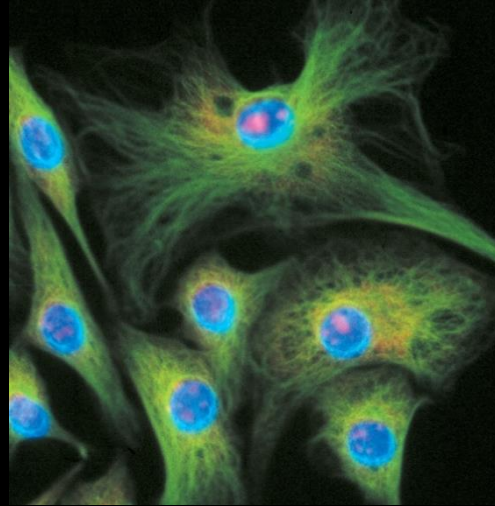
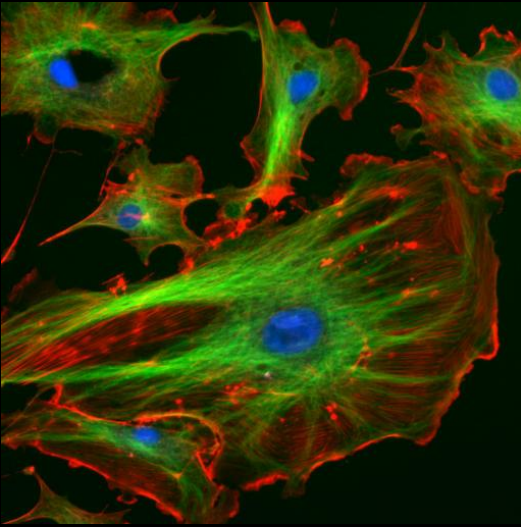
Learning Objectives

- Describe the differences between prokaryotic and eukaryotic cells
- Name the four components found in all cells

YouTube Video

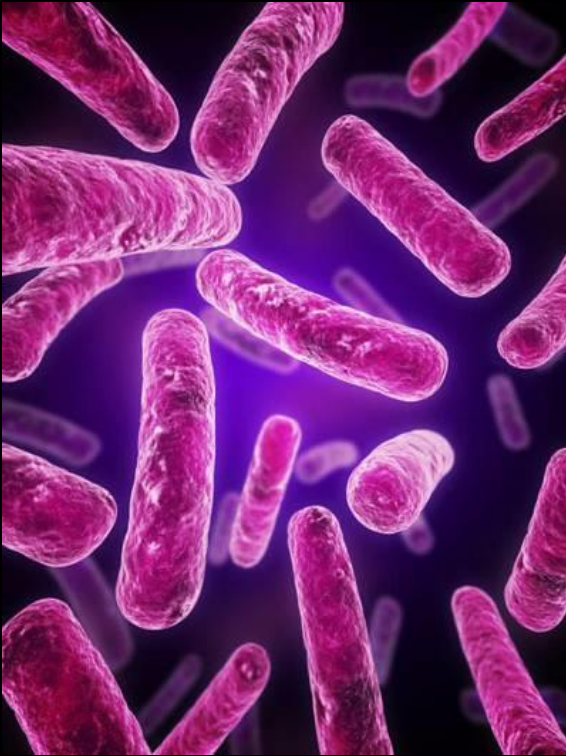
Journey into the Cell

Cell Theory



- All living things are made up of cells
- Cells are the units of structure and function in living things
- All cells arise from preexisting cells

Two Types of Cells



Prokaryote

Example: Bacteria



Eukaryote

Example: Plants and Animals

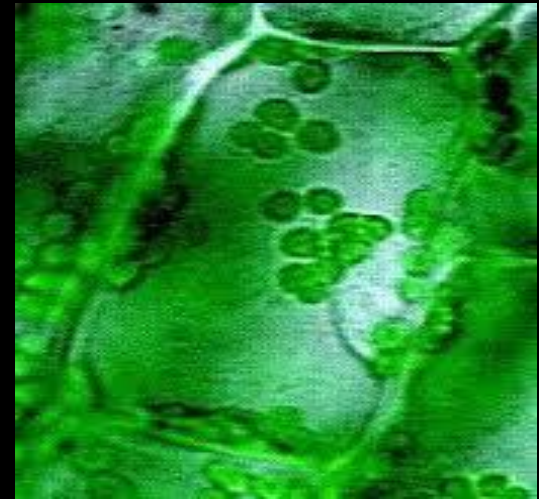
Prokaryotes



- Unicellular
- Lacks internal membrane-bound structures (no nucleus)

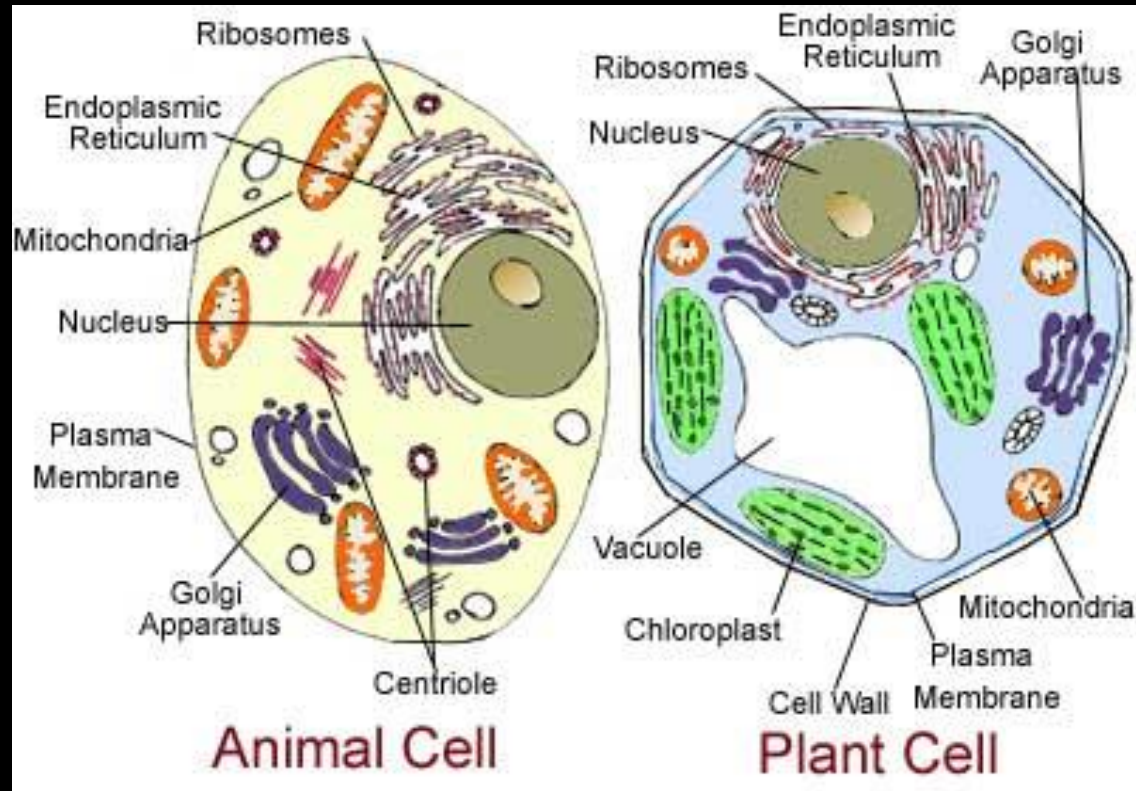
Eukaryotes

- Multicellular organisms
- Contain internal membrane-bound structures called organelles



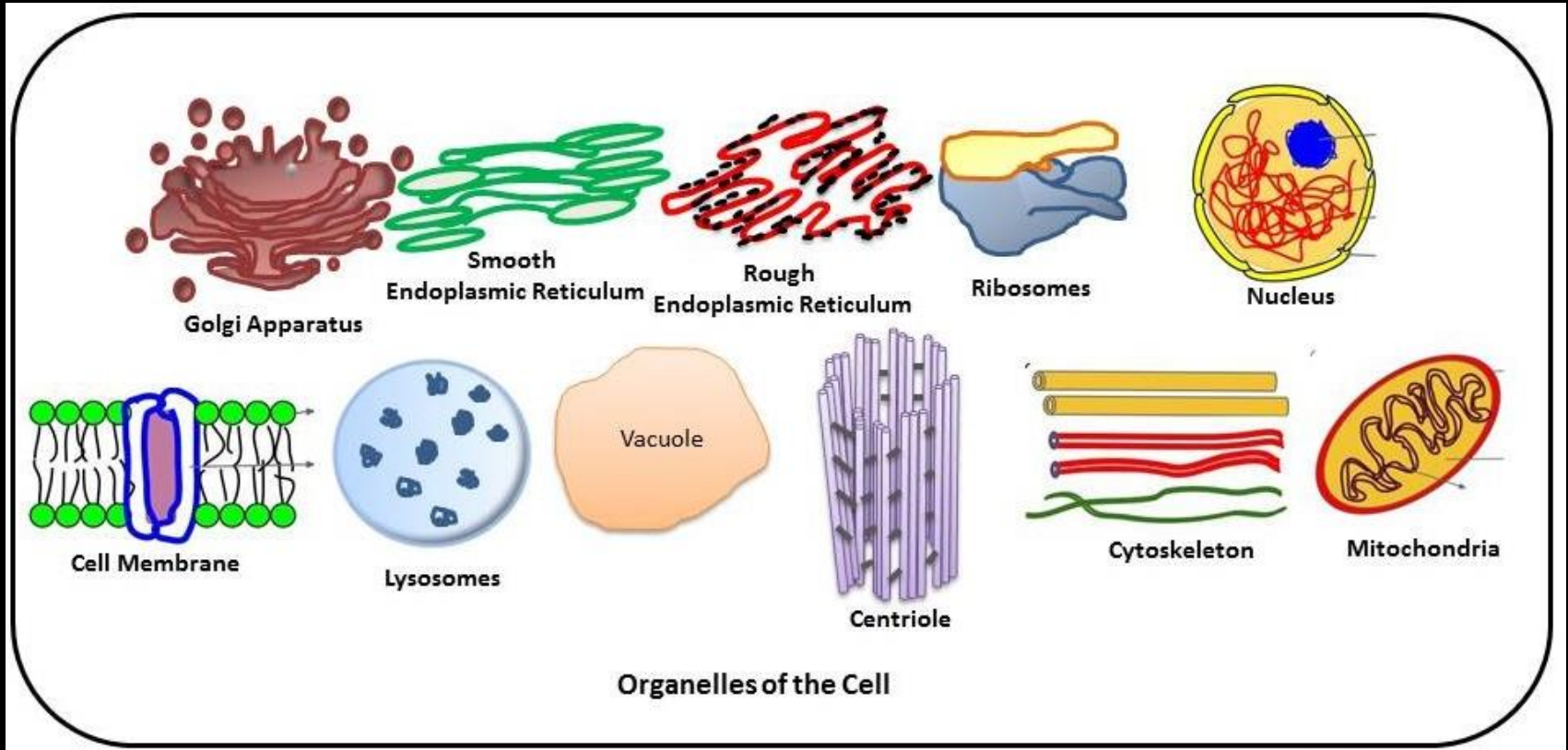
Organelles

“Little Organs”



Organelles – structures with specialized functions, which are found suspended in the cytoplasm of eukaryotic cells

Organelles

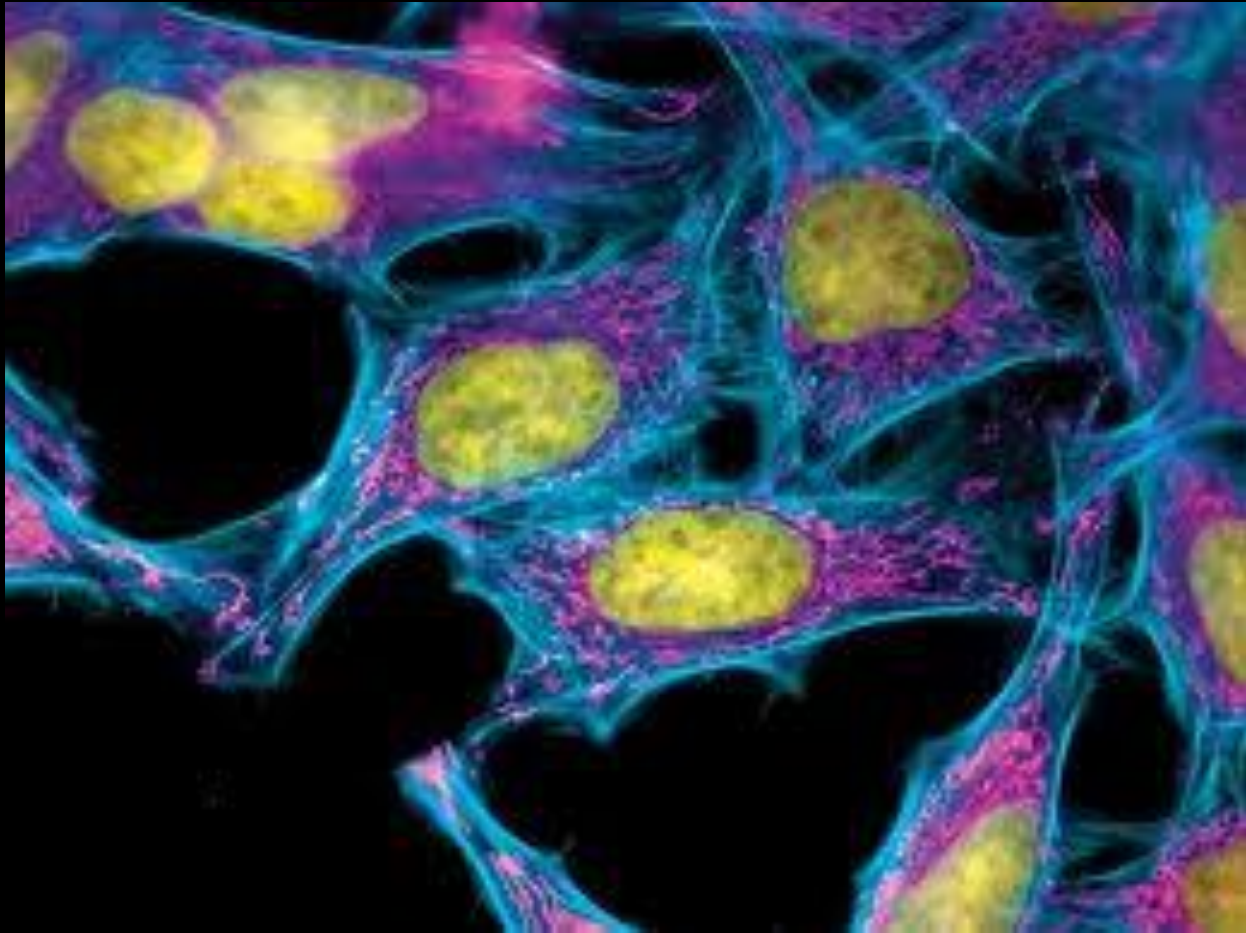


YouTube
Amoeba Sisters
Prokaryotes vs Eukaryotes

Stop Here



Cells – Part 2

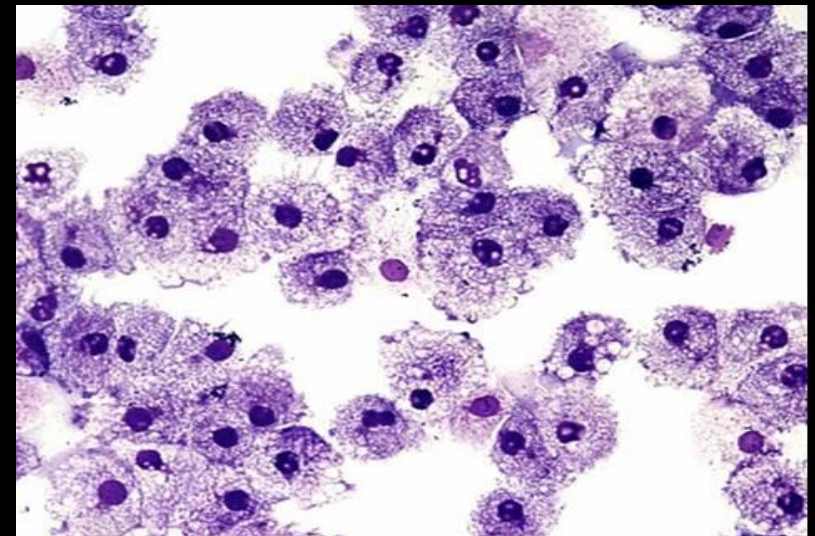
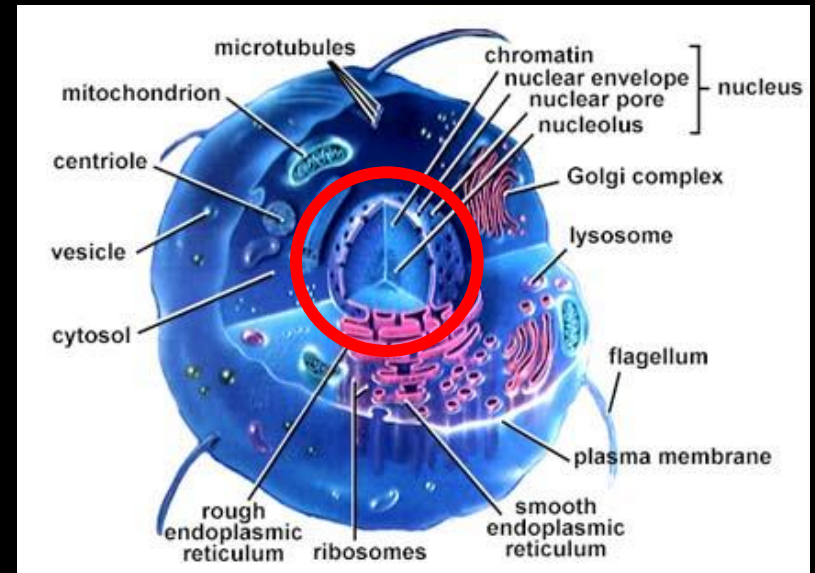


Learning Objectives

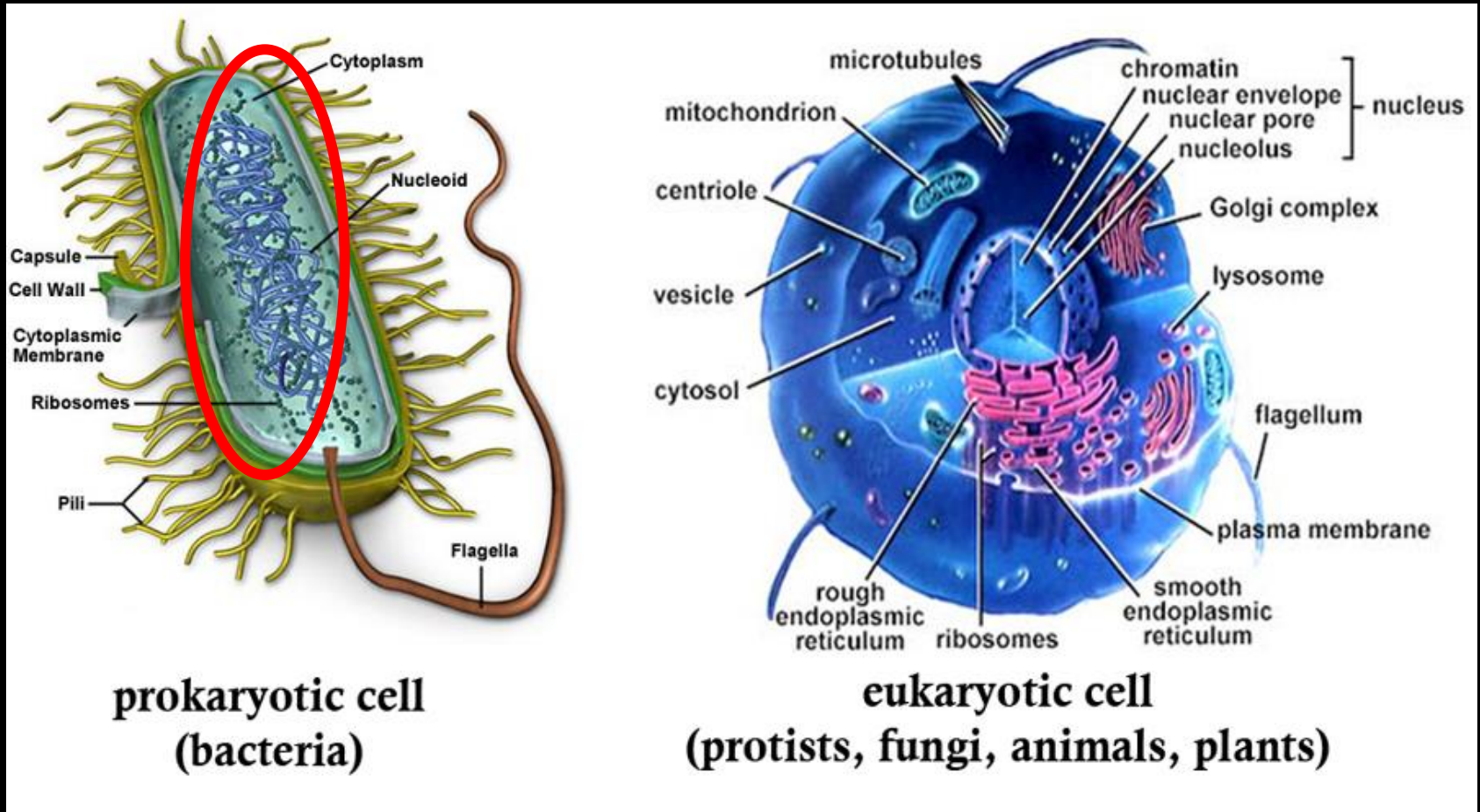
- Identify and describe the function of the different parts of a cell
- Identify the parts of a cell under the microscope

Nucleus (plant and animal cells)

- Contains the cell's DNA
- **All cells have DNA**
- Surrounded by a nuclear envelope
- Also known as the control center



Nucleoid (prokaryotes only)

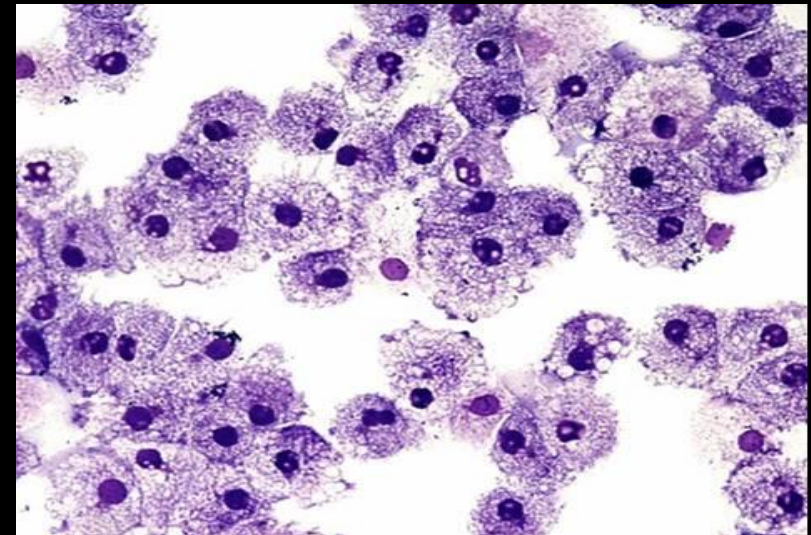
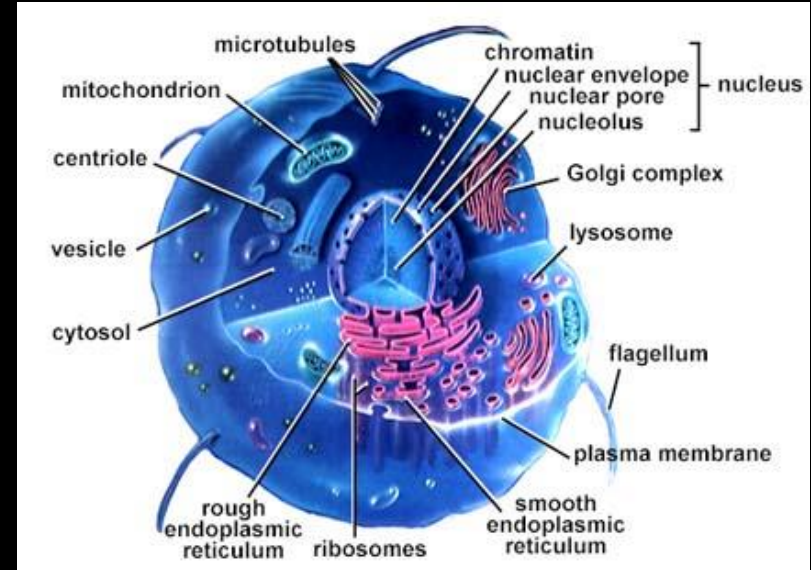


DNA is found in the nucleoid of a prokaryote

Cytoplasm - all cells

AKA Cytosol

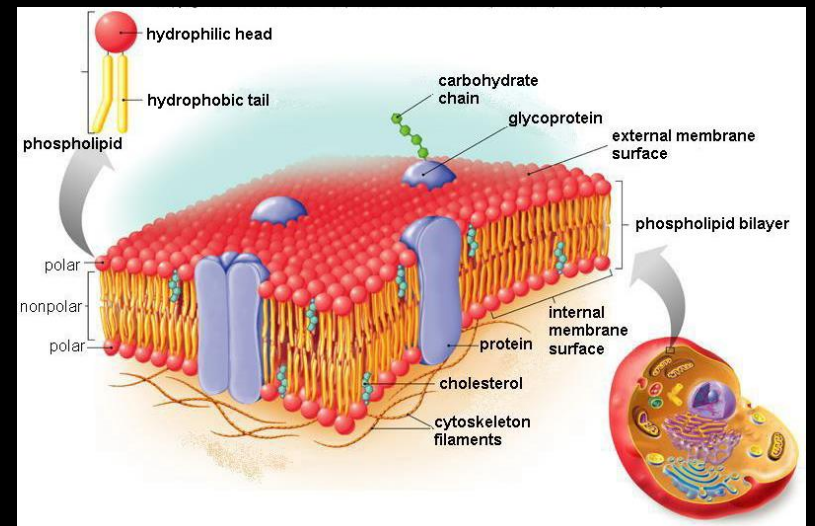
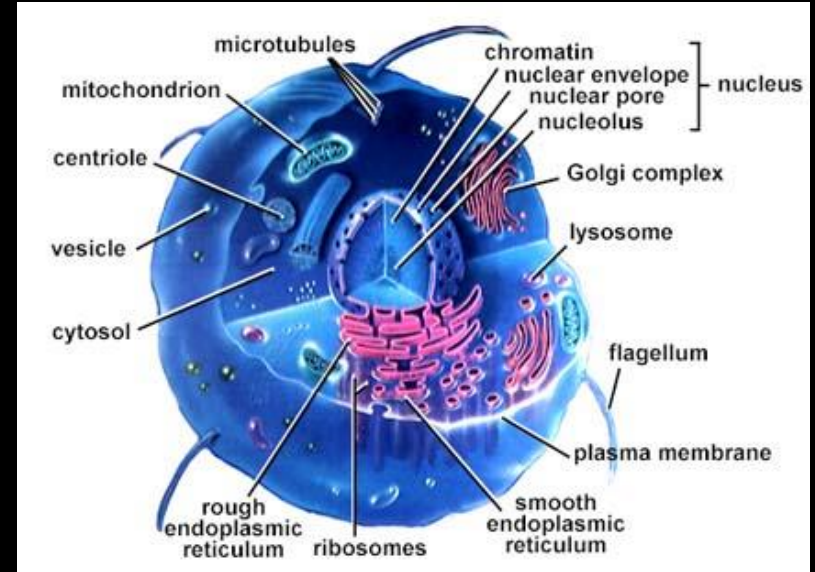
- Gel-like substance inside the cell
- Most cellular activities occur in the cytoplasm
- All cells have cytoplasm



Cell Membrane - all cells

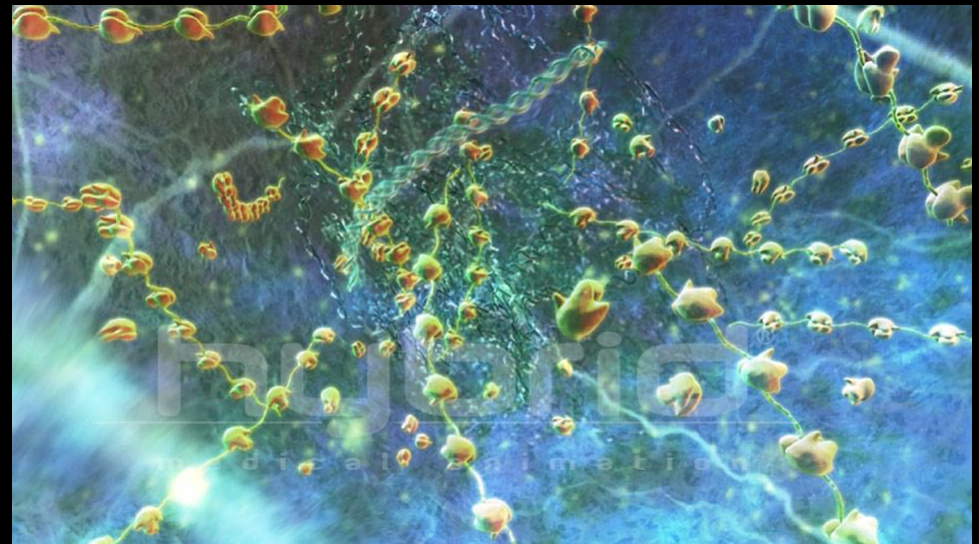
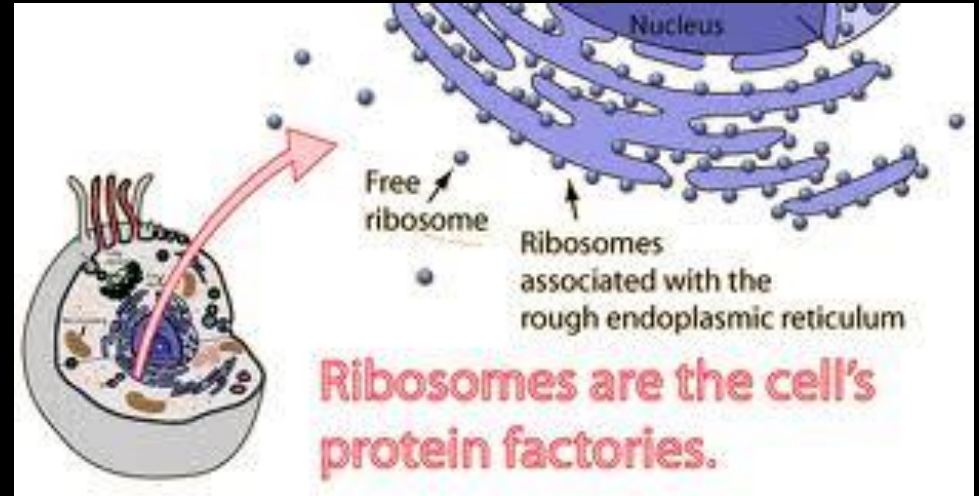
aka Plasma Membrane

- Separates the inside of cells from the outside environment
- Regulates what enters and leaves the cell.
- Provides protection and support.
- All cells have cell membranes



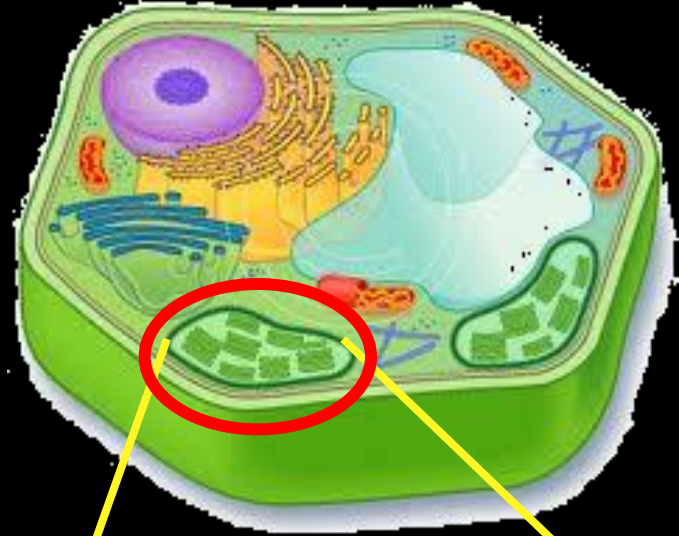
Ribosomes - all cells

- Protein factories
- Attached to the Endoplasmic Reticulum or free-floating in cytoplasm
- Made of small particles of RNA and protein
- All cells have ribosomes



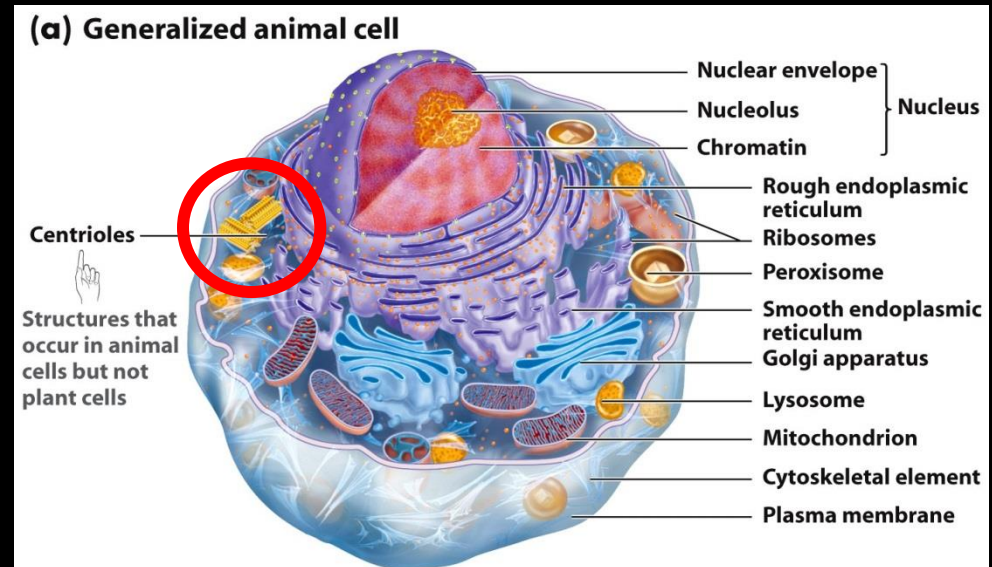
Chloroplast – plant cells

- Photosynthesis takes place here
- Captures energy from the sun and converts it to chemical energy (glucose)
- **Plants only**

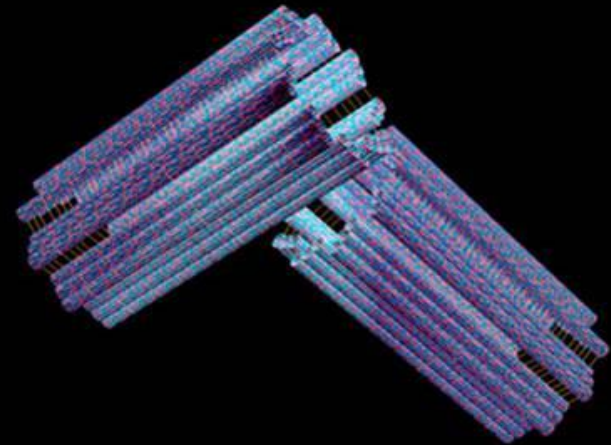


Centriole – only animal cells

- Cylindrical structure made of tubulin



- Functions in cell division and cell organization



YouTube Video

Mark Drollinger

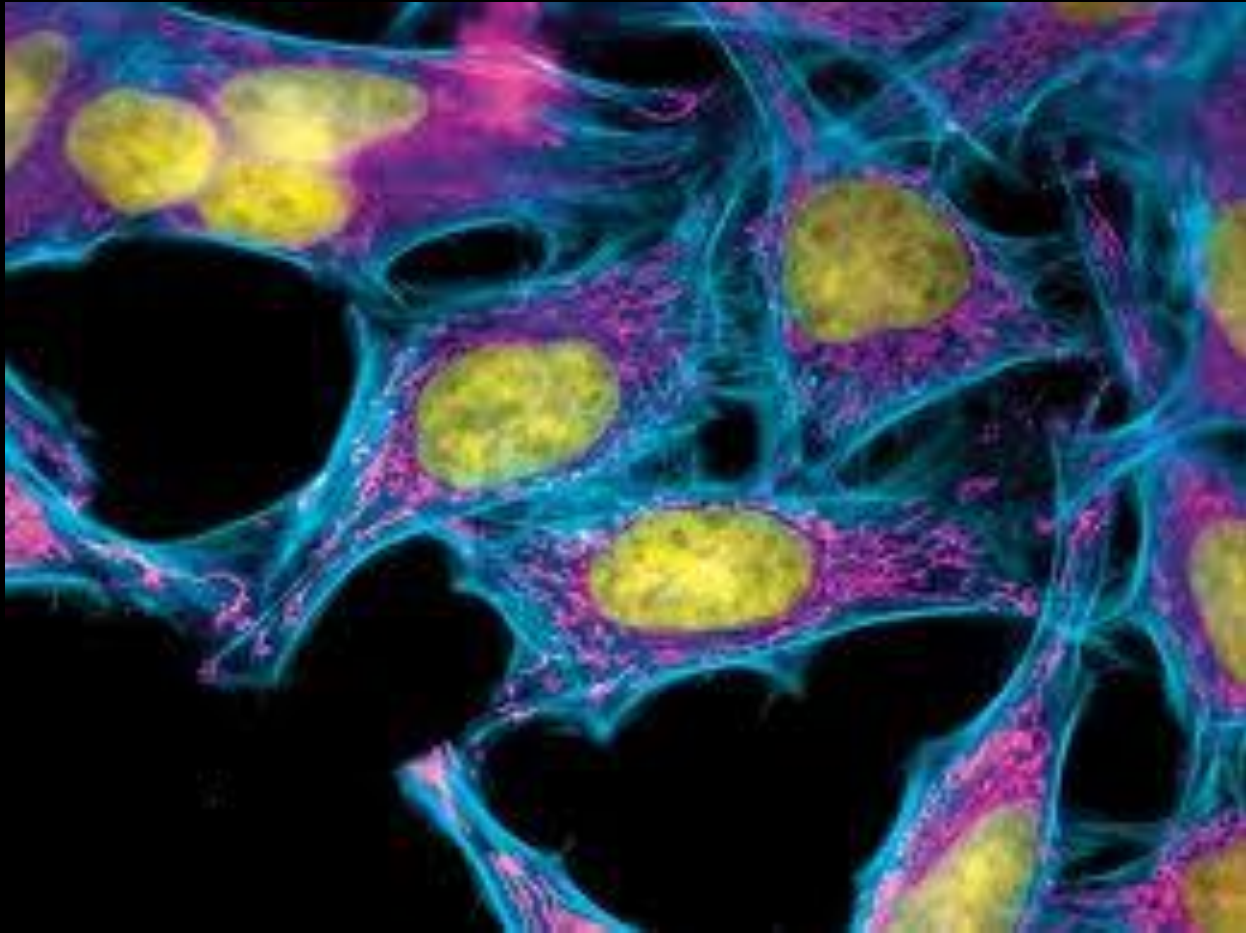
Parts of the Cell

YouTube
Anatomy Animation
Cell Structure

Stop Here

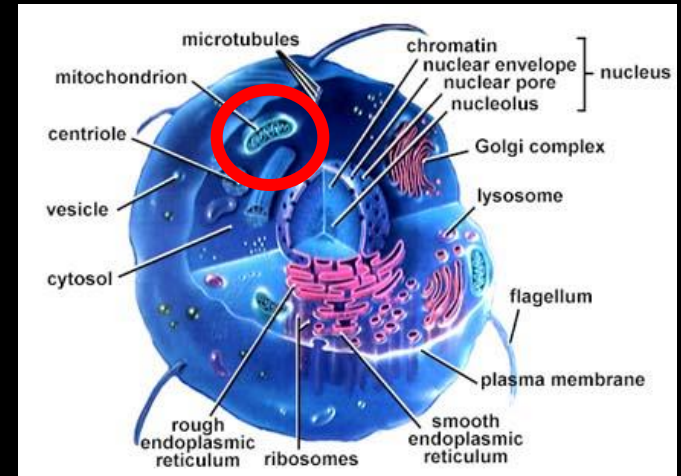


Cells – Part 3



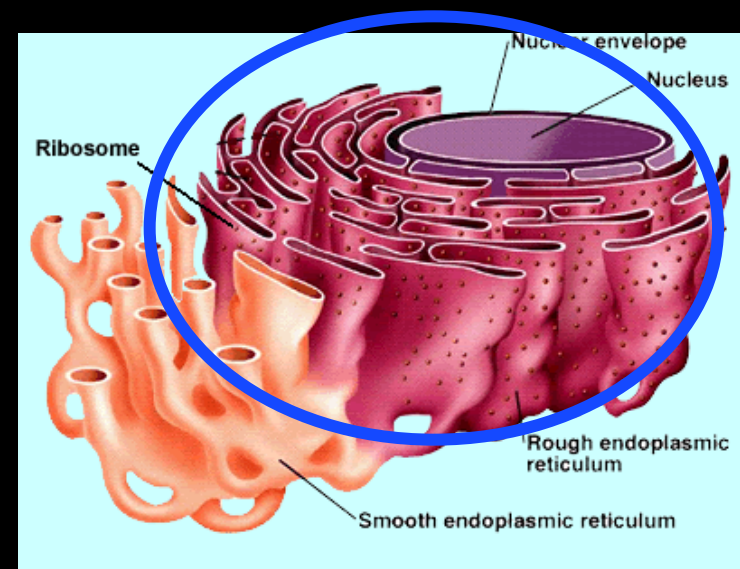
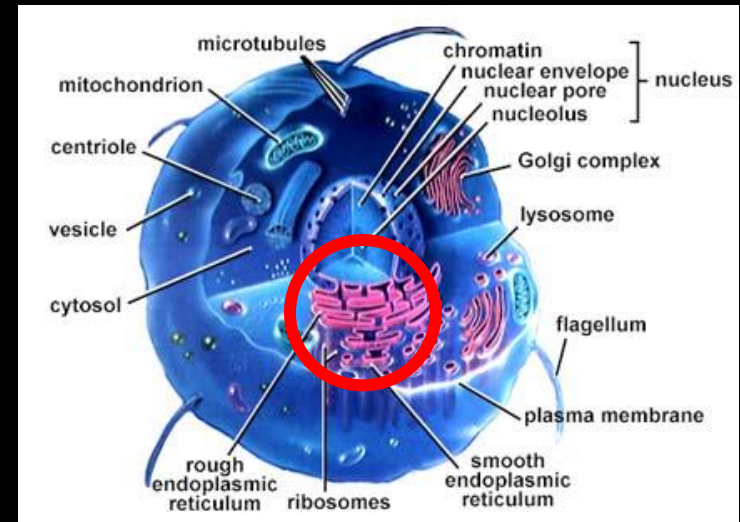
Mitochondria (plant and animal cells)

- “Power House” of the cell
- Converts food energy to usable energy (ATP)
- Cellular respiration occurs here



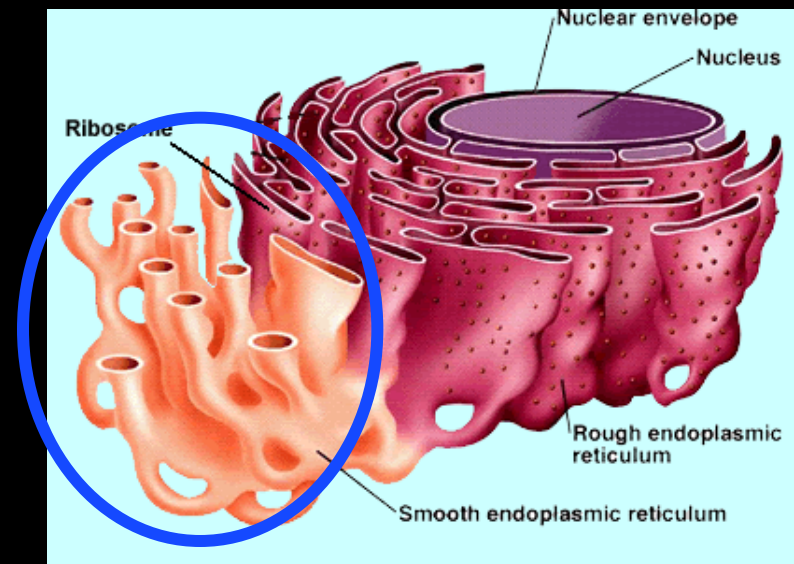
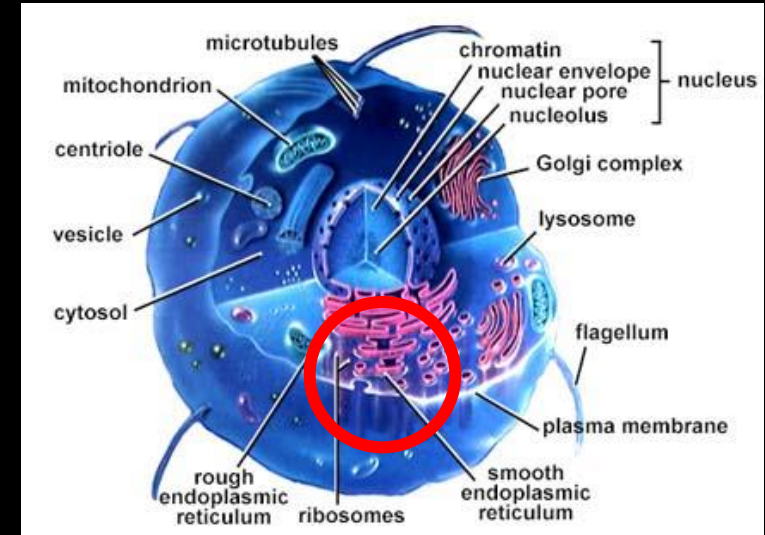
Rough Endoplasmic Reticulum (plant and animal cells)

- Rough ER - interconnected network of membrane sacs connected to nuclear envelope
- Ribosomes attached
- synthesis of proteins and protein folding



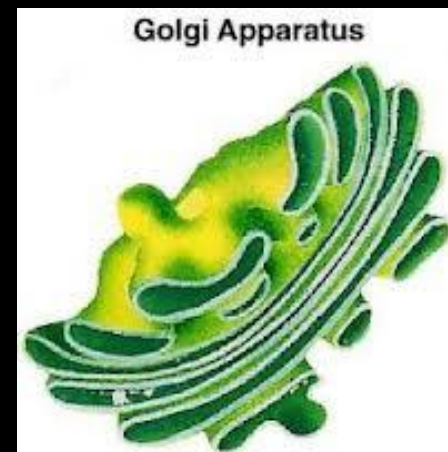
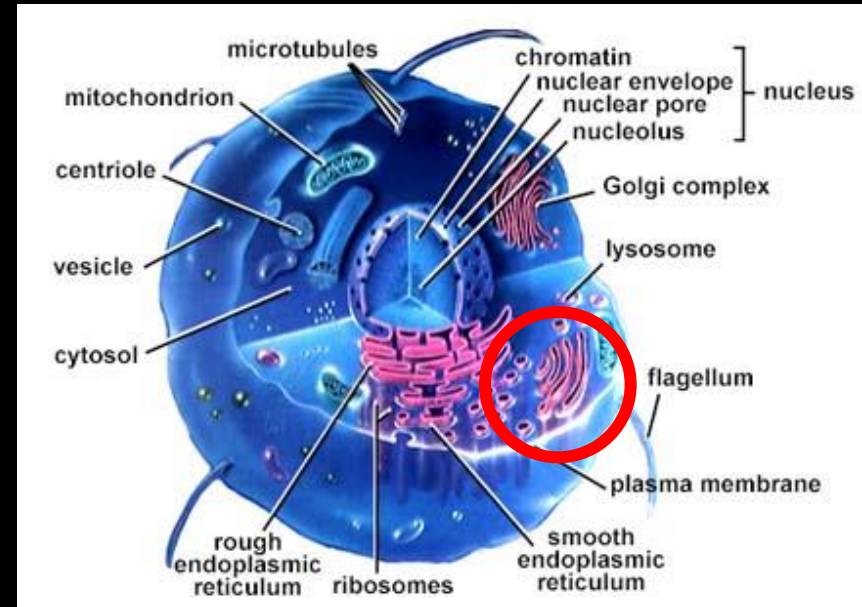
Smooth Endoplasmic Reticulum (plant and animal cells)

- Smooth ER - interconnected network of membrane sacs
- Synthesis of membrane lipids, detoxification of drugs



Golgi Apparatus (plant and animal cells)

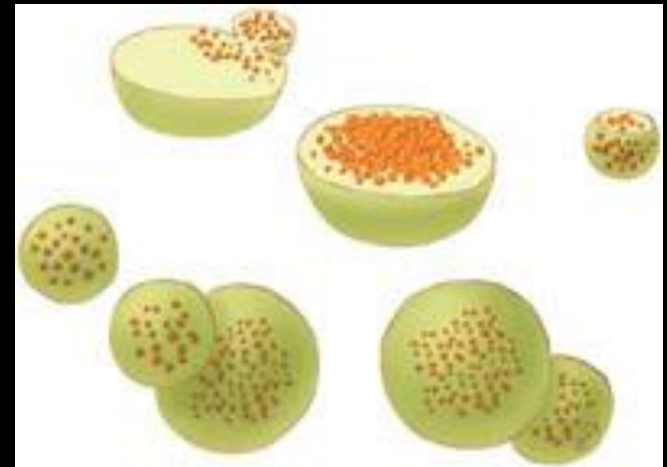
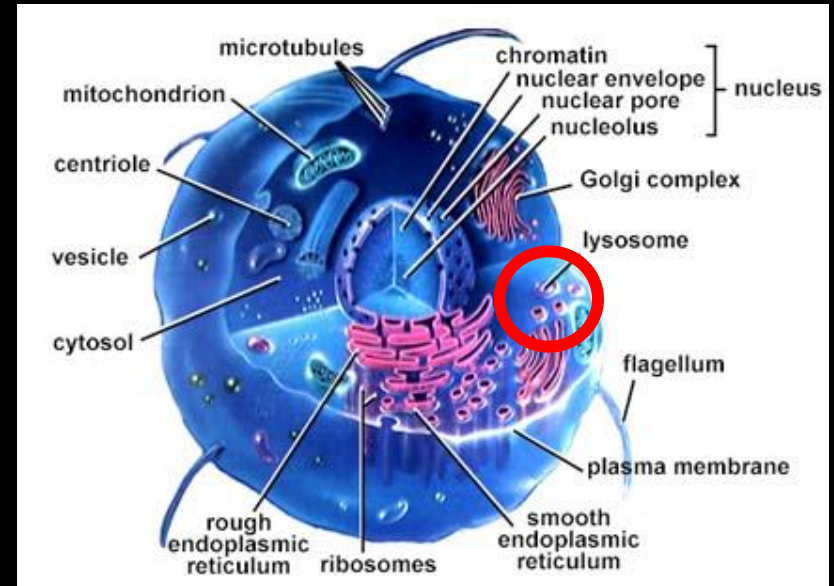
- Stacks of closely apposed membranes.
- Functions to modify, sort, and package macromolecules from the ER.
- The cell's Post Office



Lysosome

(plants and animal cells)

- Small organelles filled with enzymes
- Functions to break down worn out cell parts and molecules.



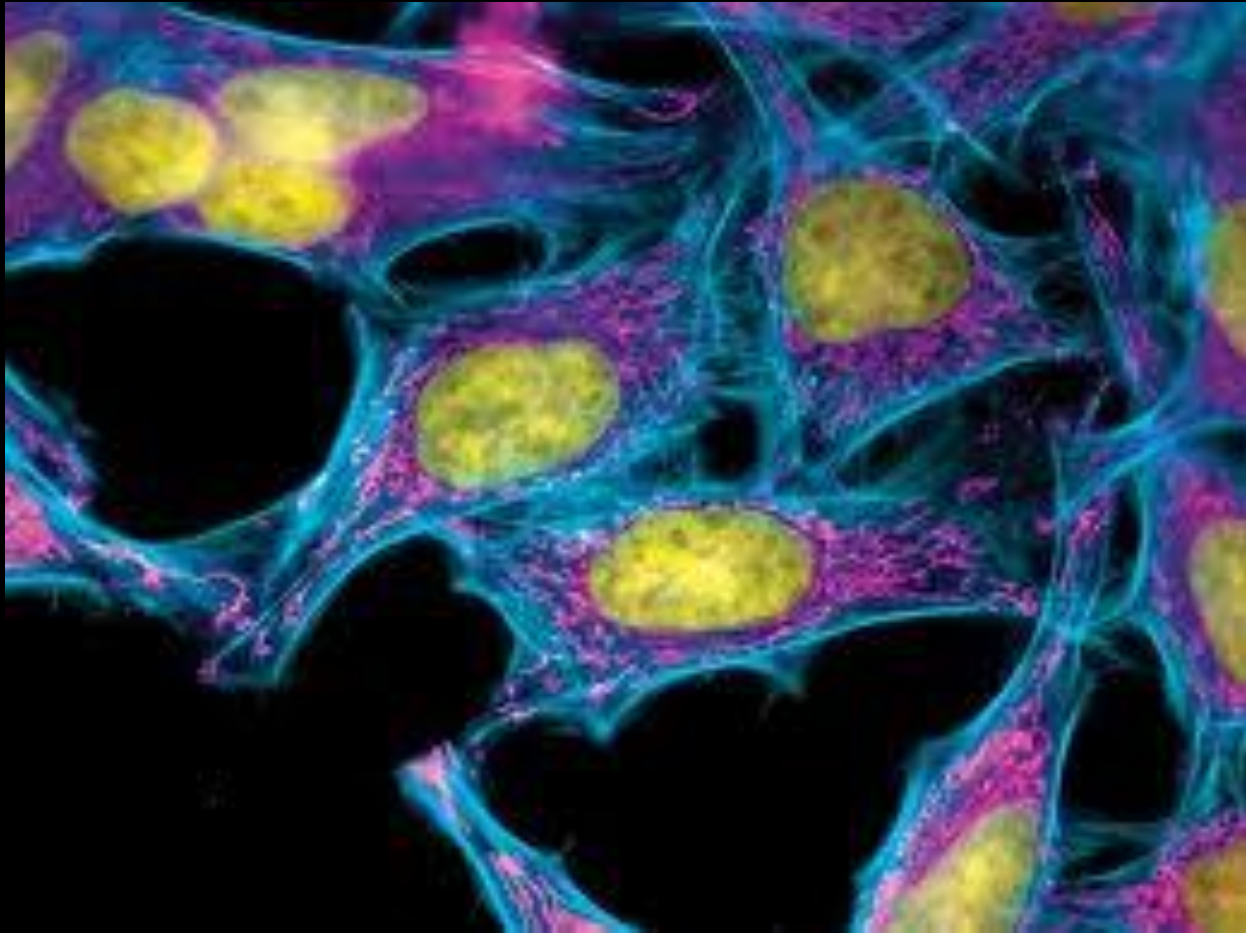
YouTube
Inside a Human Cell

YouTube
Cell Rap

Stop Here



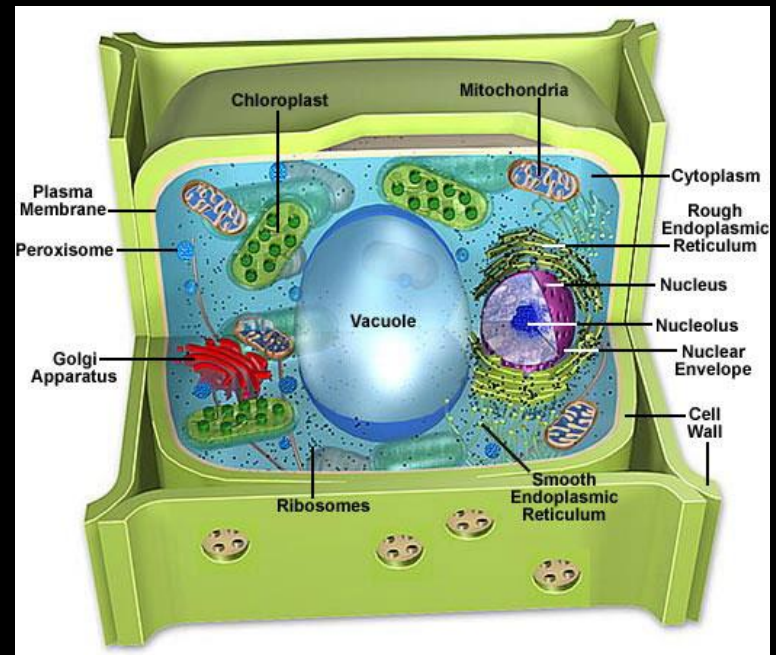
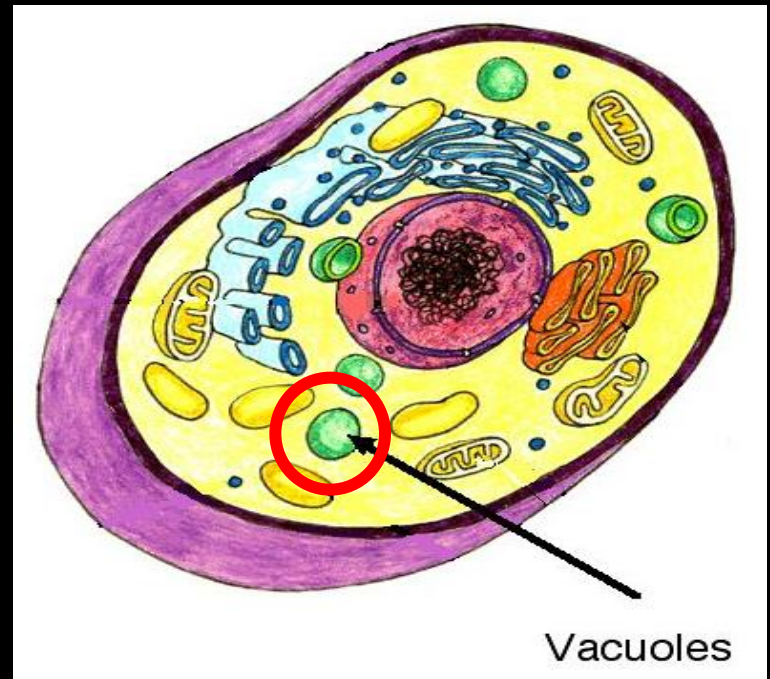
Cells – Part 4



Vacuoles

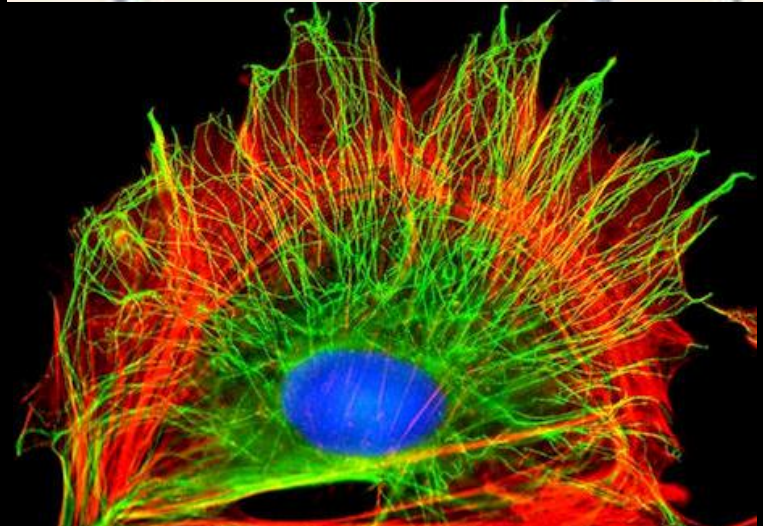
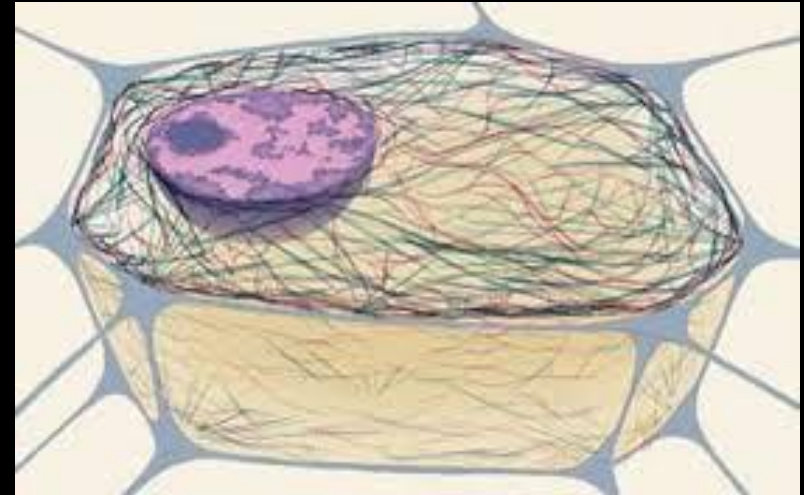
(plants and animal cells)

- The cell's storage area
- Functions to store water, salts, proteins, and carbohydrates



Cytoskeleton: Microtubules & Microfilaments (plants and animal cells)

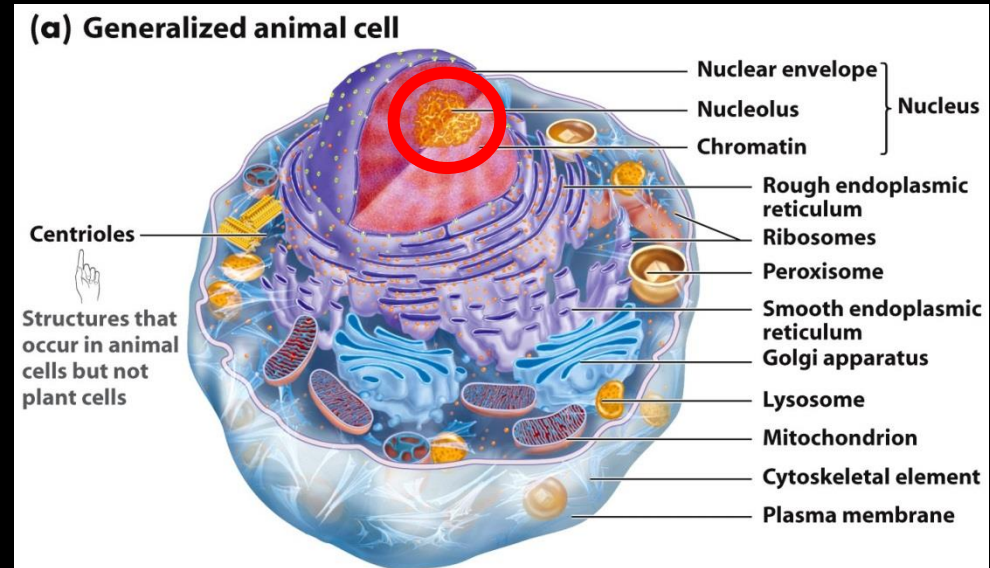
- Support structure and transportation system
- maintain shape
- cell movement



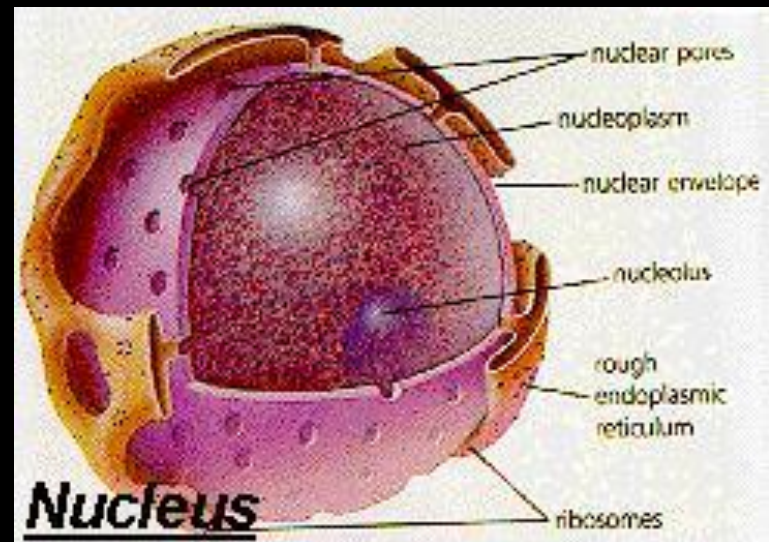
Nucleolus

(plants and animal cells)

- Small, dense region in the nucleus



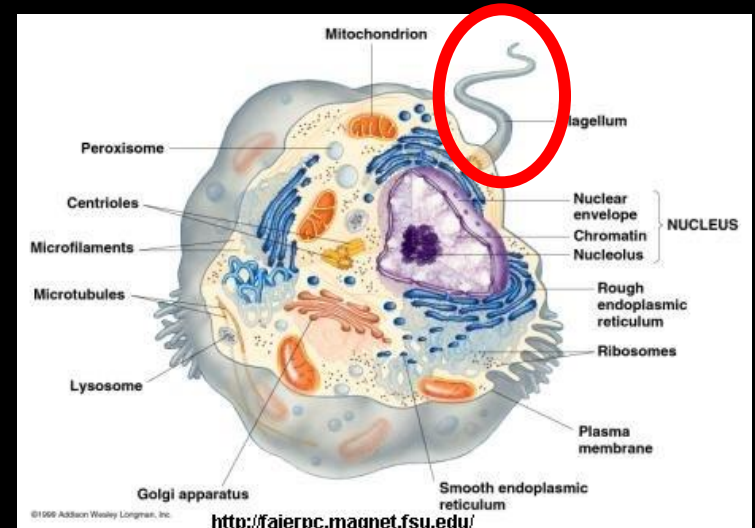
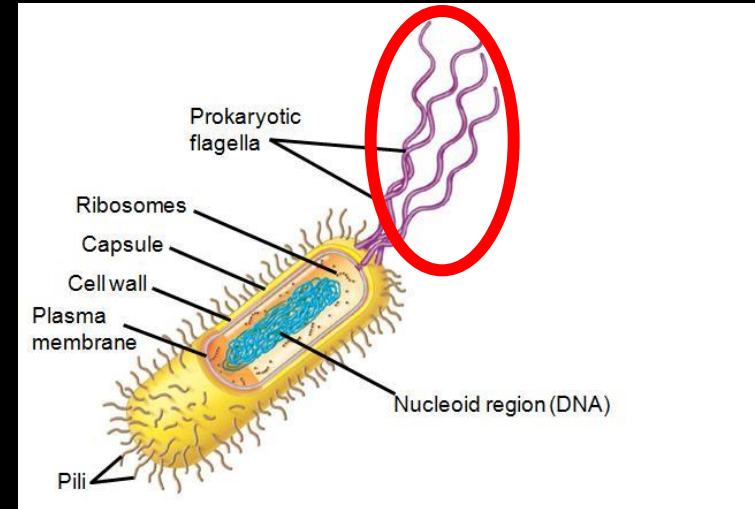
- Ribosomes are made here



Flagella

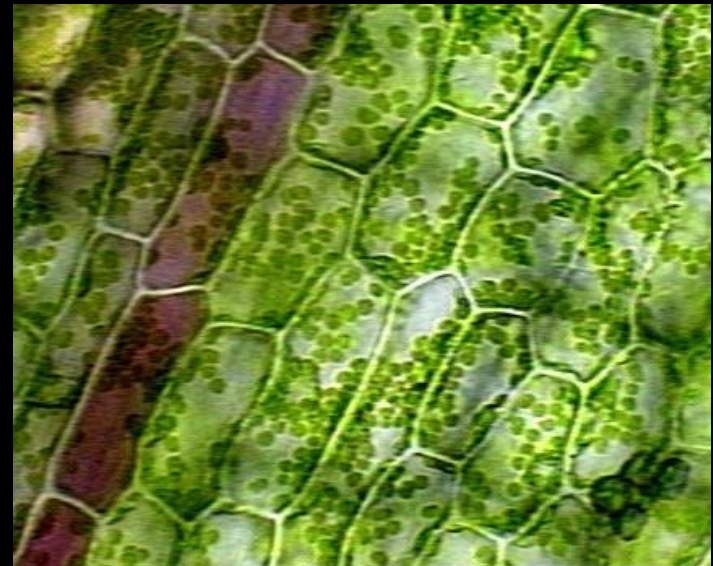
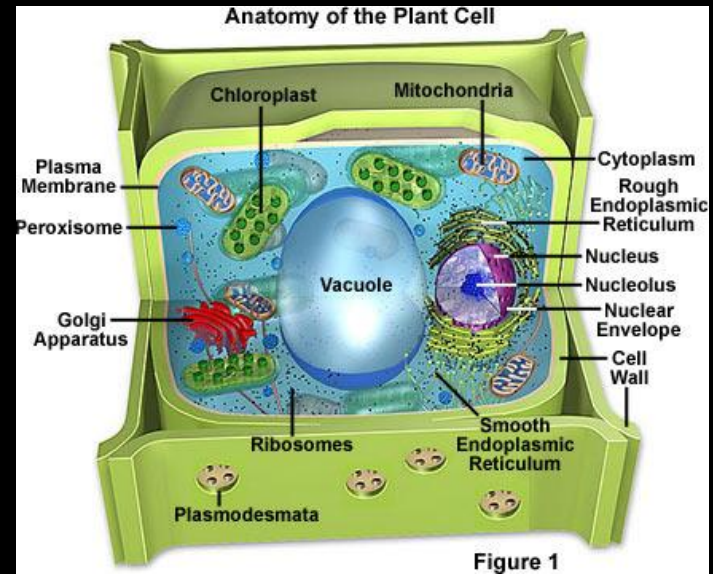
(prokaryotes and animal cells)

- A whip-like structure used for movement
- Sensory – able to sense chemicals and temperature



Cell Wall – Prokaryotes & Plants

- Tough, flexible layer surrounding the cell membrane
- Protection and structure
- Semi-permeable



YouTube Video

The Inner Life of a Cell

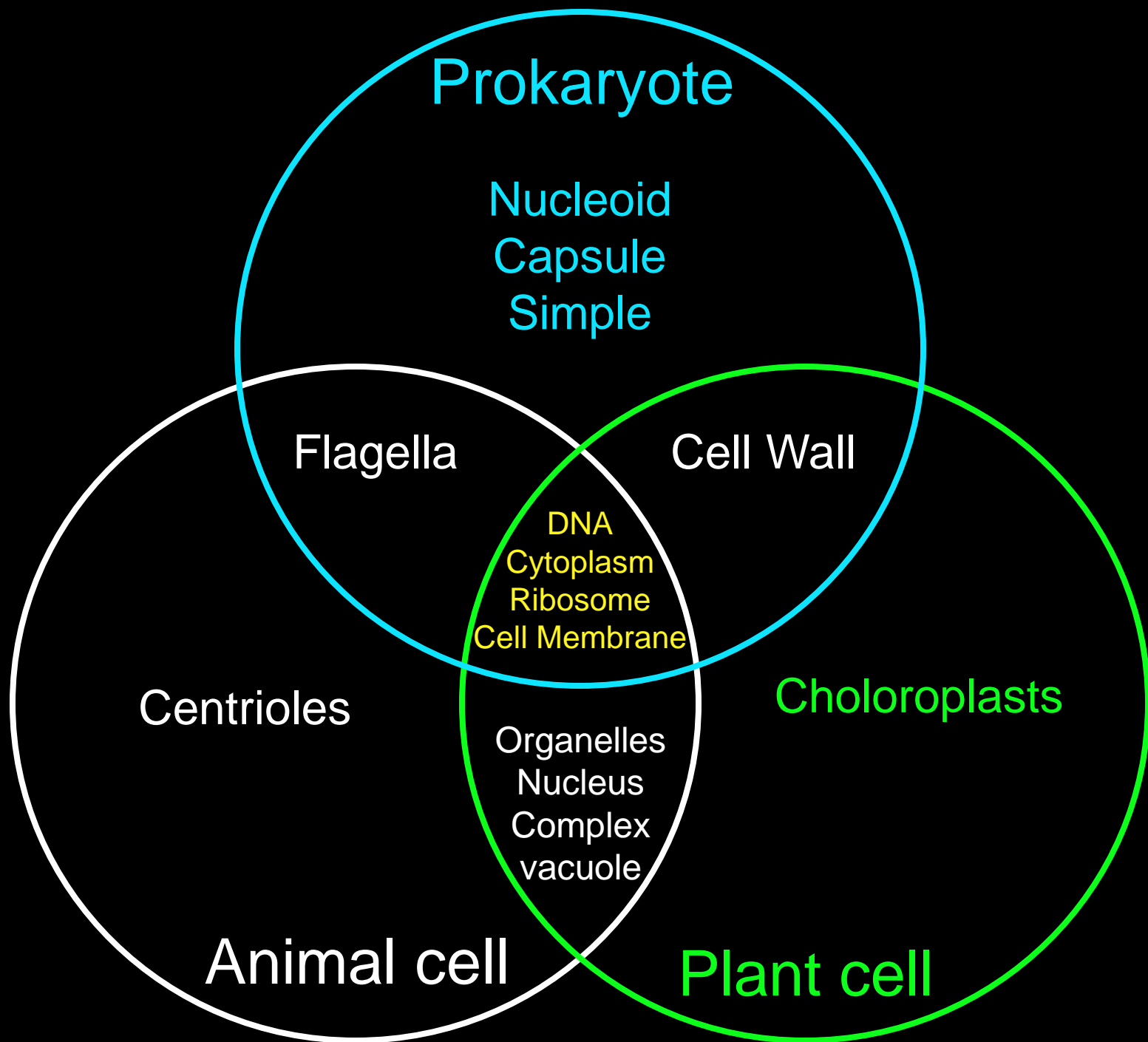
YouTube

Introduction to Cells

Amoeba Sisters

Stop Here

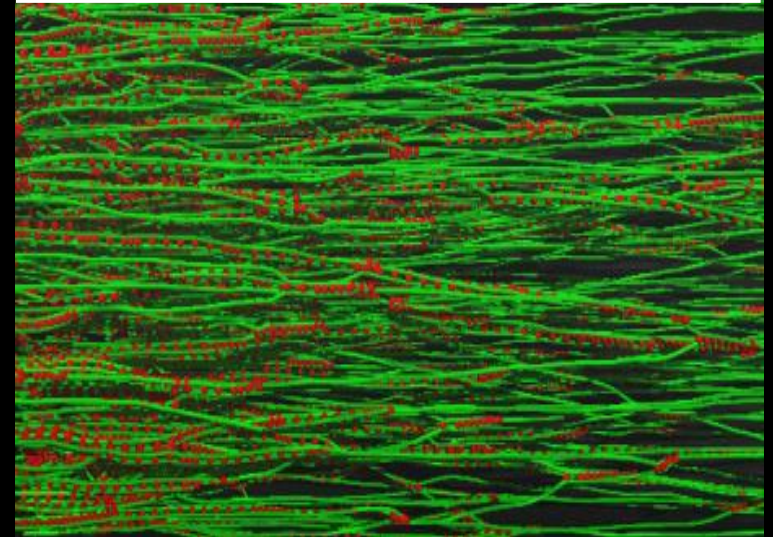
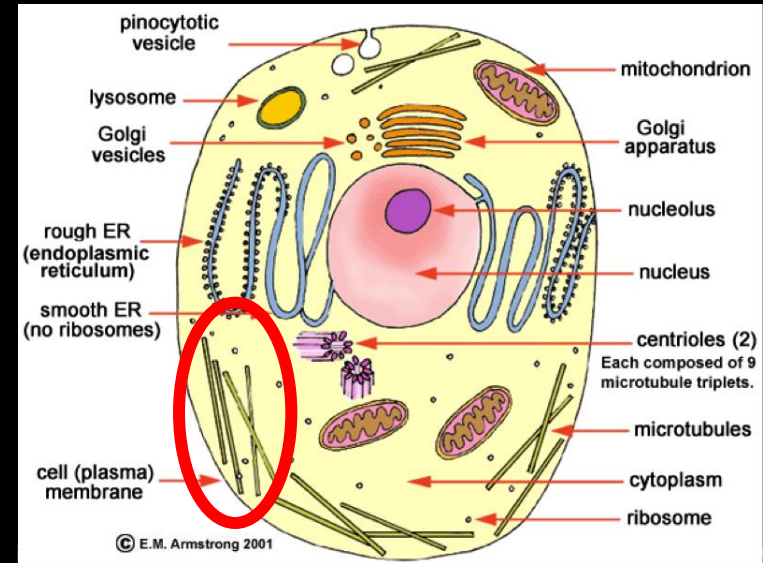




Microtubules

(plants and animal cells)

- A component of the cytoskeleton
- Functions: maintain cell structure, transport, and cell division



Demo Wet Mount Preparation