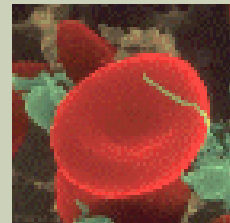


INTRODUCING...



The Amazing Cell



CELL=BASIS OF LIFE

(CELL THEORY)

- All organisms are made of cells
- Cells come from other cells
- Cells=simplest structure capable of performing all activities of life
- May exist **singly** (Protozoa, Bacteria) OR as **subunits of multicellular** organisms (animals, plants, fungi)

PROKARYOTIC CELL

- Lacks membrane bound organelles
 - (organelles = have special function for cell survival: nucleus, mitochondria, ribosomes,...)
- Lacks membrane bound nucleus
 - Genetic material free floats in “nucleoid” region
- Small in size
- Less Complex
- These came first

- Ex: Kingdom Monera (bacteria, cyanobacteria)

PROKARYOTES HAVE...

- Cell membrane
- Cytoplasm (cytosol)
- Cytoskeleton
 - Microtubules: cell shape (compression resisting), motility, organelle movement
 - Microfilaments: (smaller) cell shape (tension bearing), changes in cell shape, muscle contraction, motility (pseudopodia), cell division (cleavage furrow)
 - Intermediate filaments: anchoring organelles
- Nuclear material ~ DNA or RNA
- Ribosomes
- Sometimes cell wall (in the case of some bacteria)
- **BUT NO MEMBRANE BOUND ORGANELLES!**

Prokaryotic Cell Structure

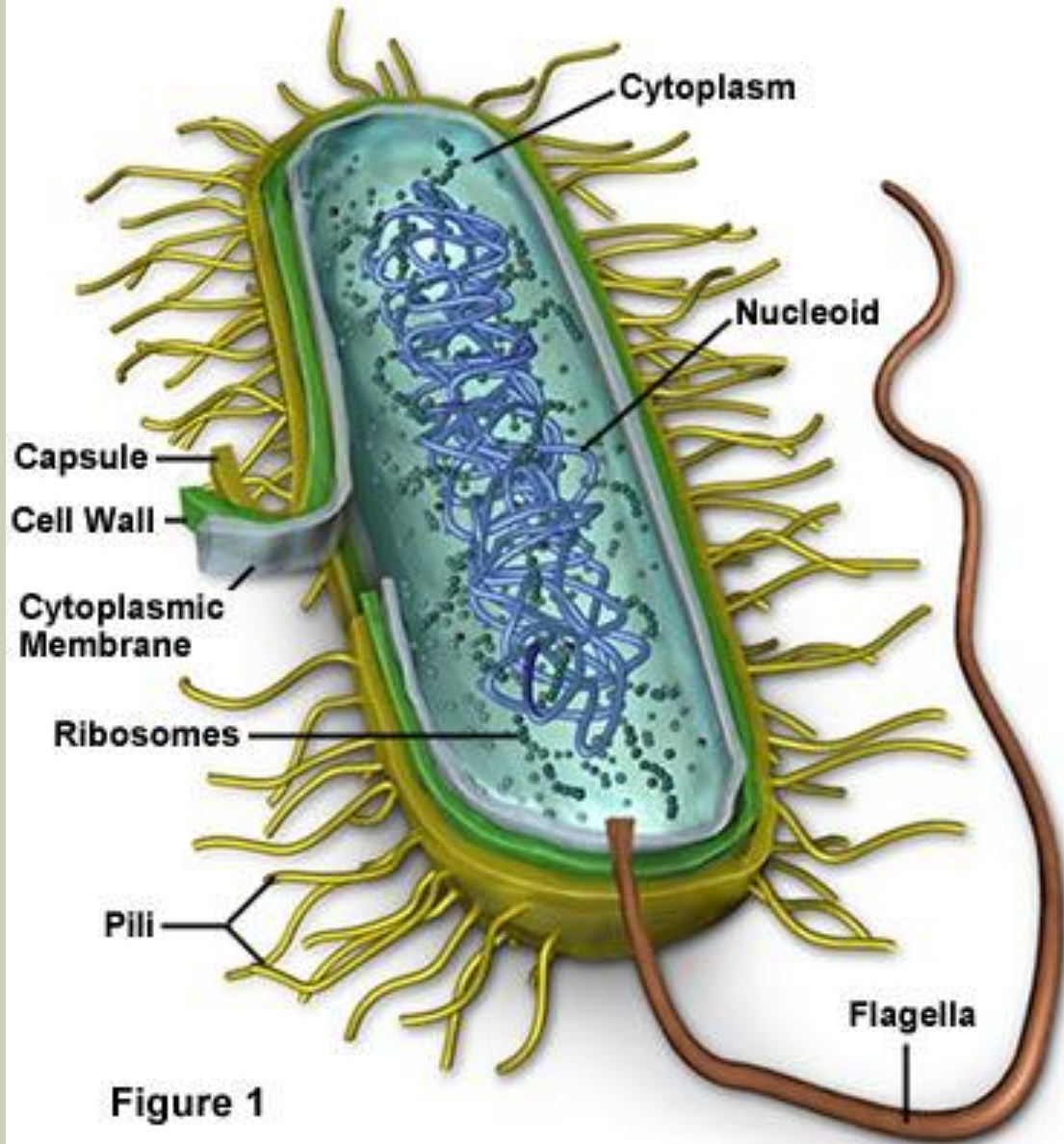
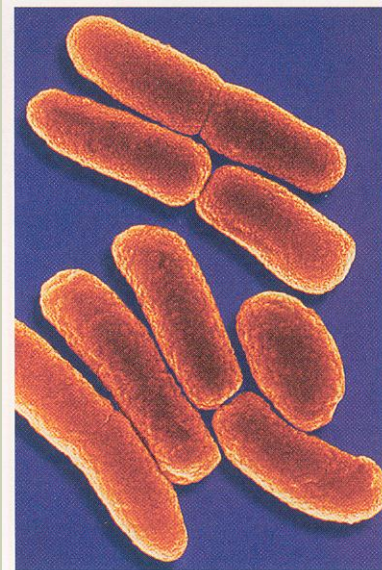
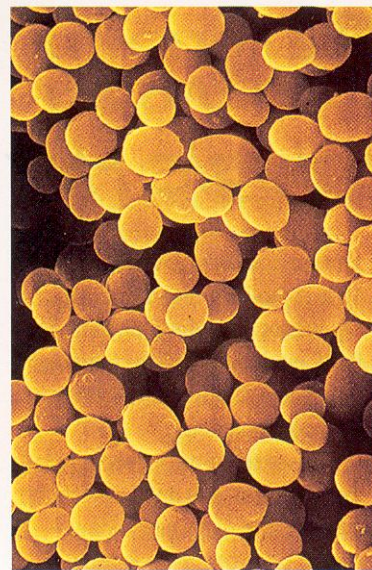


Figure 1

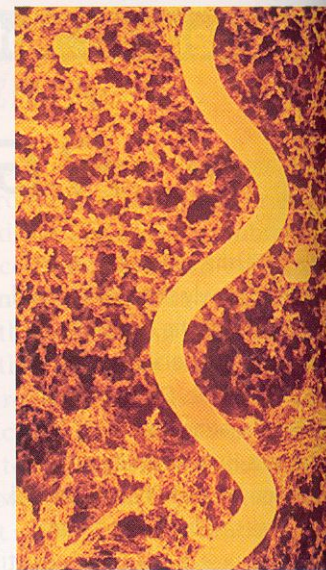
DIFFERENT BACTERIA STRAINS



(a) BACILLI



(b) COCCI



(c) SPIRILLA

EUKARYOTIC CELL

- Membrane bound organelles
- Membrane bound nucleus
- Larger than prokaryotic cells

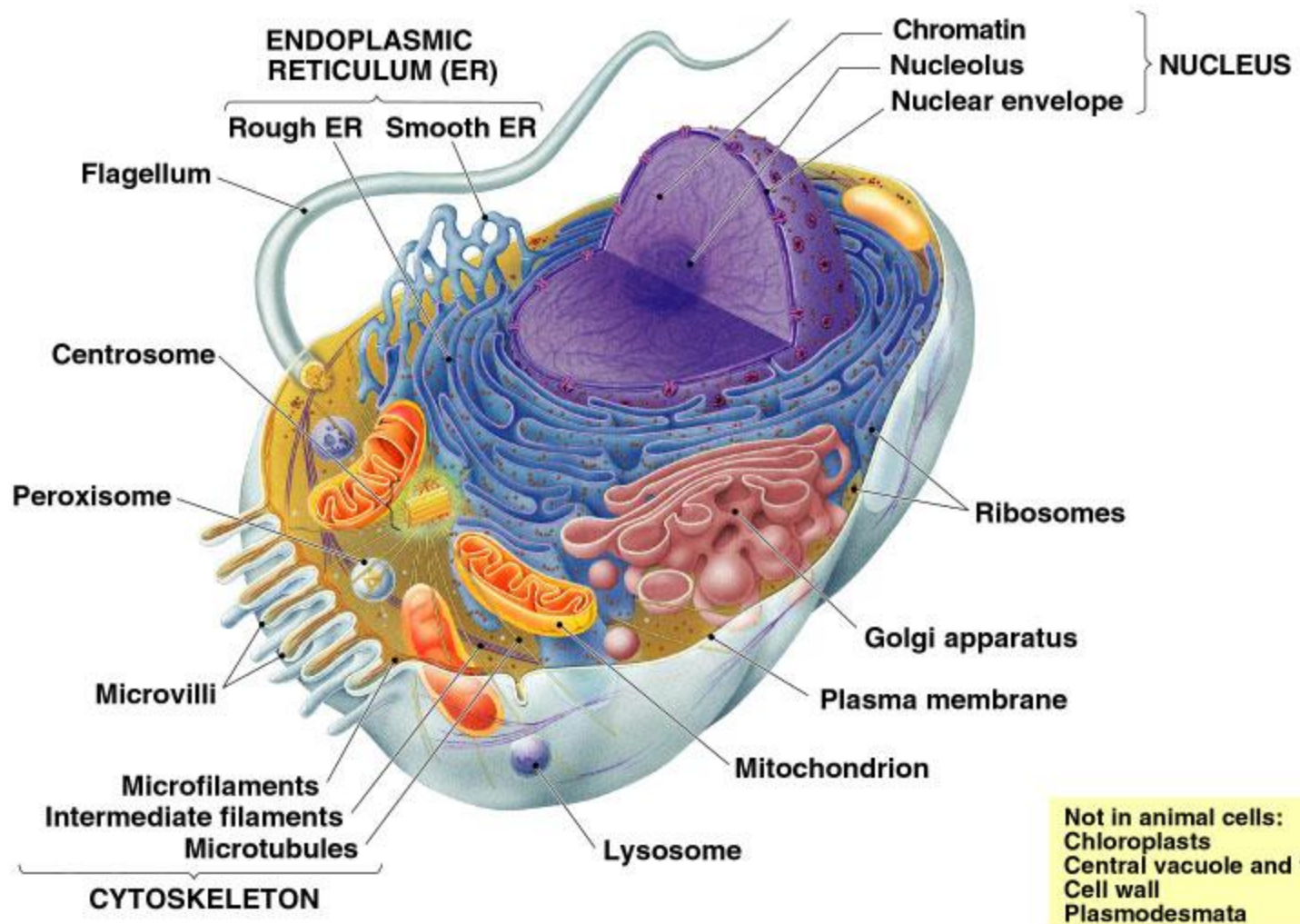
- Ex: Animals, Plants, Protists, Fungi
- Kindom Animalia, Plantae, Protista, Fungi

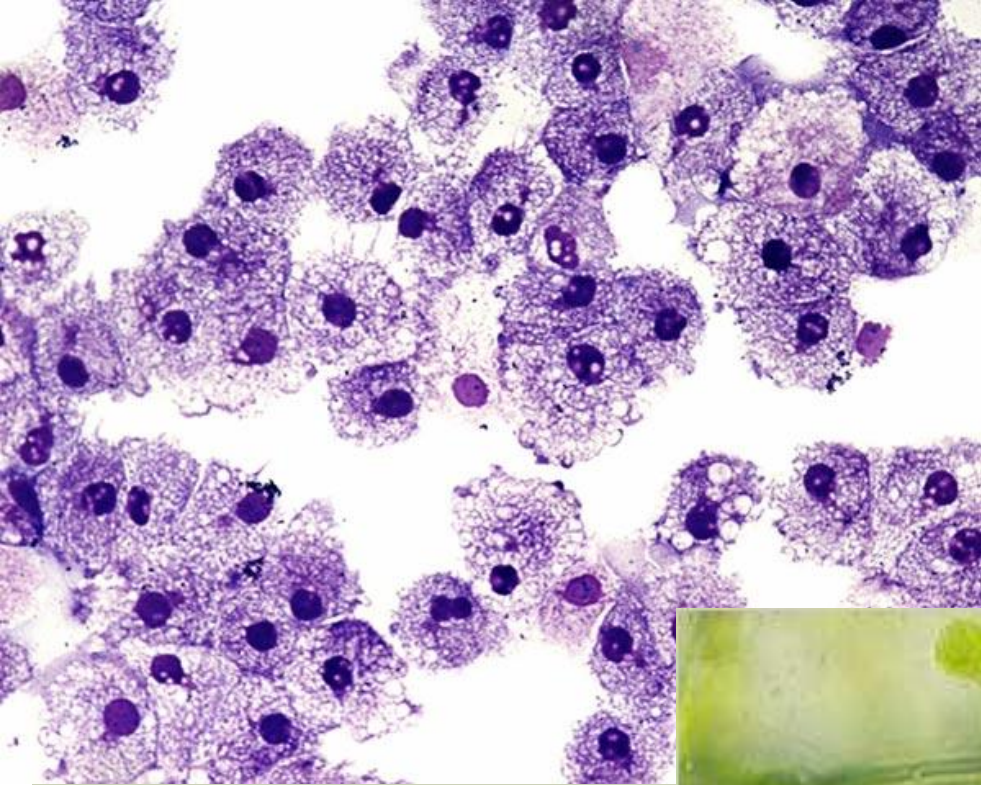
EUKARYOTES HAVE...

- Cell membrane
- Cytoplasm (cytosol)
- Cytoskeleton
- Nuclear material ~ DNA or RNA
- Ribosomes
- Membrane Bound Organelles:
 - NUCLEUS and Nucleolus
 - Endoplasmic reticulum
 - Mitochondria
 - Chloroplasts
 - Lysosomes
 - Peroxisomes
 - Golgi Body
 - Vacuoles
- Sometimes cell wall (in the case of plant cells)
- Junctions

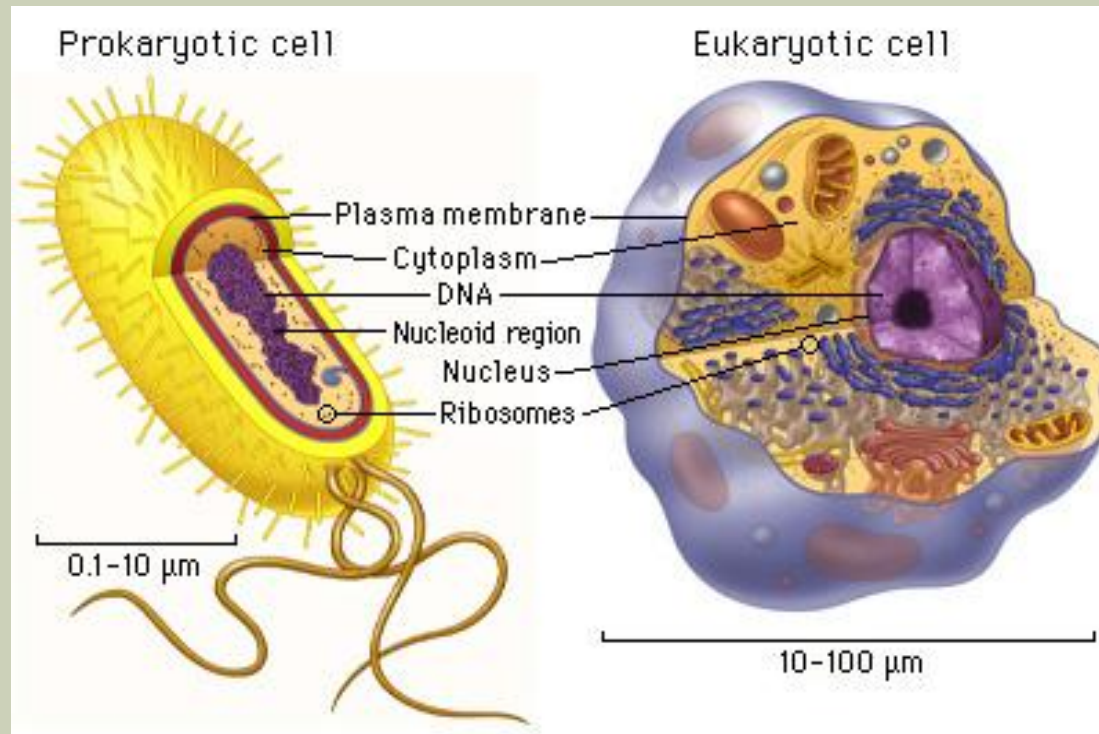
Junctions:

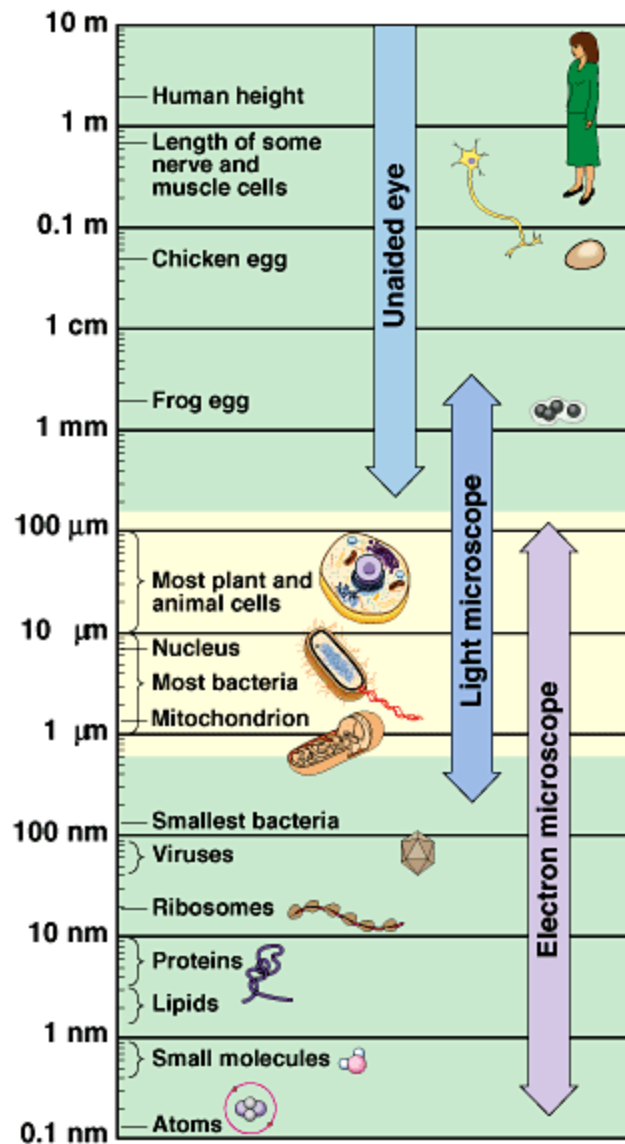
- Plants:
 - Plasmodesmata* – cytosol passes through
- Animal:
 - Tight Junctions* – tightly pressing neighboring cells together
 - Desmosomes* – fastens cells together
 - Gap Junctions* – Allow for communication, cytoplasmic channels





PROKARYOTIC VS. EUKARYOTIC





PLANT VS. ANIMAL

Plant

- Chloroplasts
- Cell Wall
- Large Central Vacuole
- Plasmodesmata Junctions
- Rectangular Shape

Animal

- Centrioles
- Lysosomes
- Flagella
- No cell wall
- Several Small Vacuoles
- Circular Shape