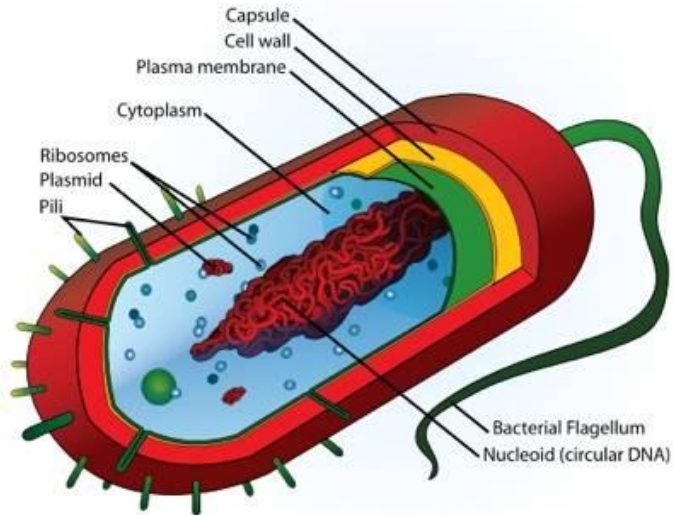


Class Set – Do Not Write On This!

Structures of Prokaryotes and Eukaryotes



Prokaryotic Cell Structure

Prokaryotic cells are not as complex as eukaryotic cells. They have no true nucleus as the DNA is not contained within a membrane or separated from the rest of the cell, but is coiled up in the region of the cytoplasm called the nucleoid.

The following structures can be found in bacterial cells:

Capsule- found in some bacterial cells, this additional outer covering protects the cell when it is engulfed by other organisms, assists in retaining moisture, and helps the cell adhere to surfaces and nutrients.

Cell wall- outer covering of most cells that protects/supports bacterial cells and gives it shape

Cytoplasm- a gel-like substance composed mainly of water that also contains enzymes, salts, cell components, and various organic molecules.

Cell Membrane- surrounds the cell's cytoplasm and regulates the flow of substances in and out of the cell.

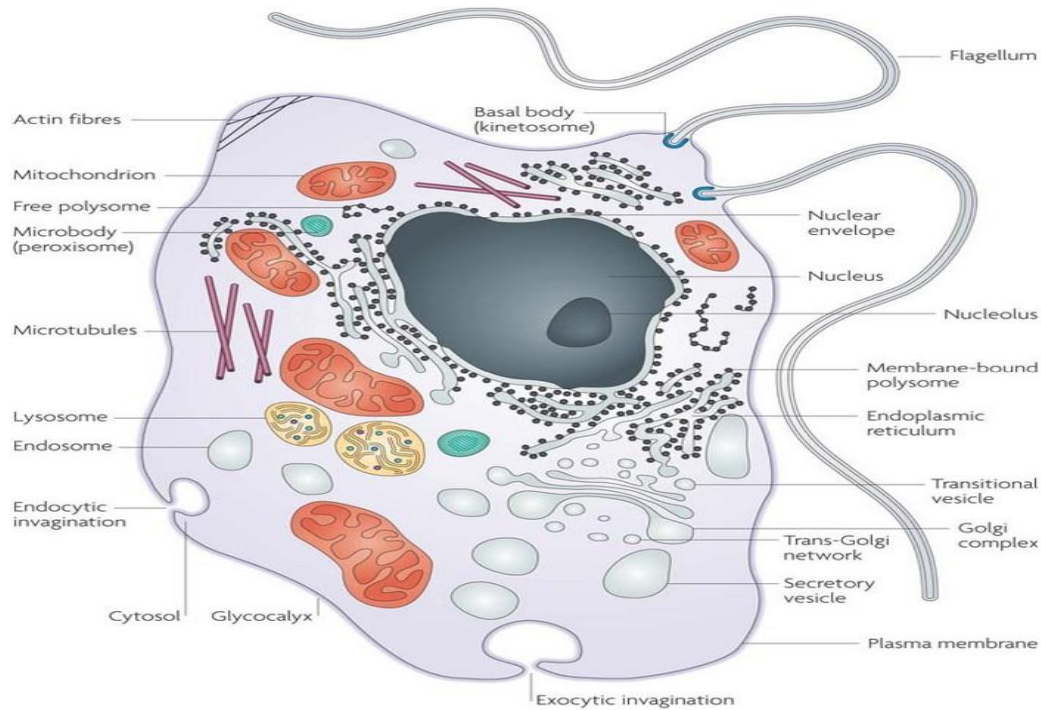
Pili- hair-like structures on the surface of the cell that attach to other bacterial cells.

Flagella- long, whip-like projection that aids in locomotion.

Ribosomes- Cell structures responsible for protein production

Plasmids- Gene carrying, circular DNA structures that are not involved in reproduction.

Nucleoid Region- Area of the cytoplasm that contains the single bacterial DNA molecule.



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Eukaryotic Cell Structure

The eukaryotic cell is much larger than the prokaryotic cell. Therefore, these cells are considered complex because of all the jobs its organelles are capable of. Although eukaryotes have more functions than prokaryotes, the cell membrane and ribosome have similar functions in both cells.

The following structures can be found in eukaryotic cells:

Lysosome- contain digestive enzymes which break down waste

Golgi Apparatus- Golgi bodies are like little stacks of hollow membrane pancakes. Their function is to process materials manufactured by the cell, then package those products into small structures called "Golgi vesicles." The materials arrive at the Golgi bodies from the smooth endoplasmic reticulum.

Nucleus- contains genetic information and instructions for the rest of the cell. It is enclosed by a double layer of membrane called the nuclear envelope. The function is to confine the materials necessary for DNA and RNA synthesis inside the nucleus, and controlling movement into and out of the nucleus.

Endoplasmic Reticulum- a system of membrane-enclosed channels which ramifies throughout the cytoplasm of the cell. It comes in two types--smooth and rough. The difference is that rough ER has **ribosomes** all over its outer surface. It's associated with lipid synthesis (smooth ER) and protein synthesis (rough ER).

Mitochondria- Their function is to perform the aerobic portions of aerobic cellular respiration, the essential energy-producing process of the cell.