

Cell and molecular biology

By

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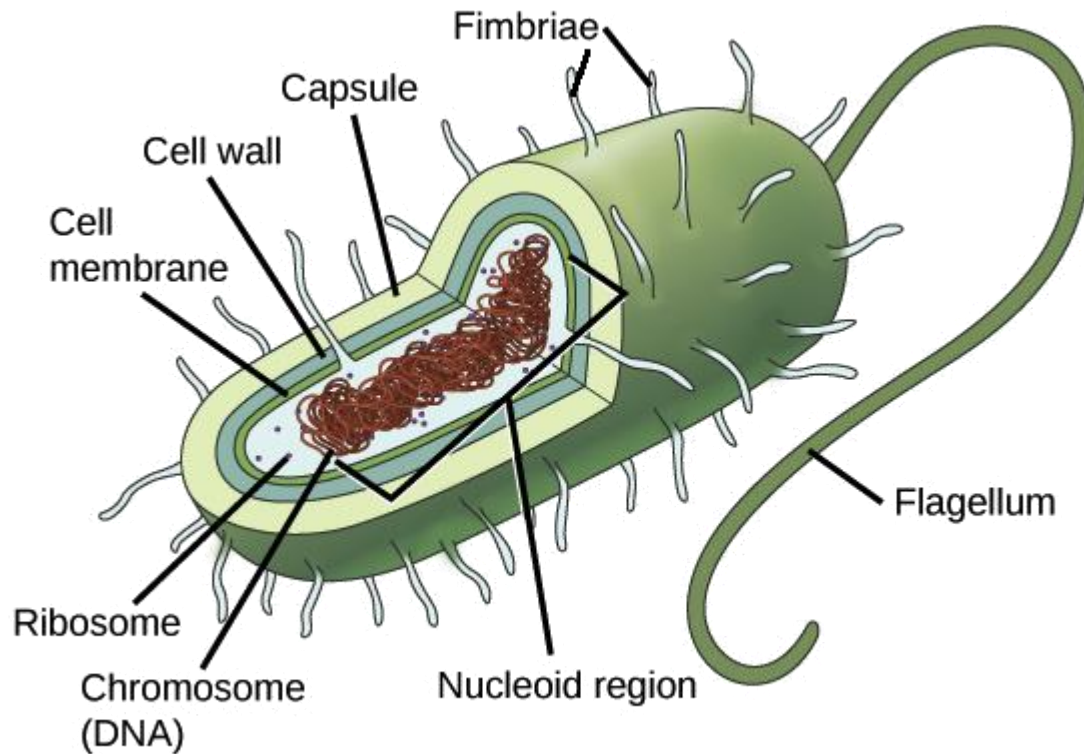
Prokaryotic cell

This course deals with the biology of cells of higher organisms:

The structure, function, and biosynthesis of cellular membranes
organelles; transport,
the cytoskeleton, the extracellular matrix, a
cell movements;

All living organisms employ the same genetic code and a similar machinery for protein synthesis.

Prokaryotic cell

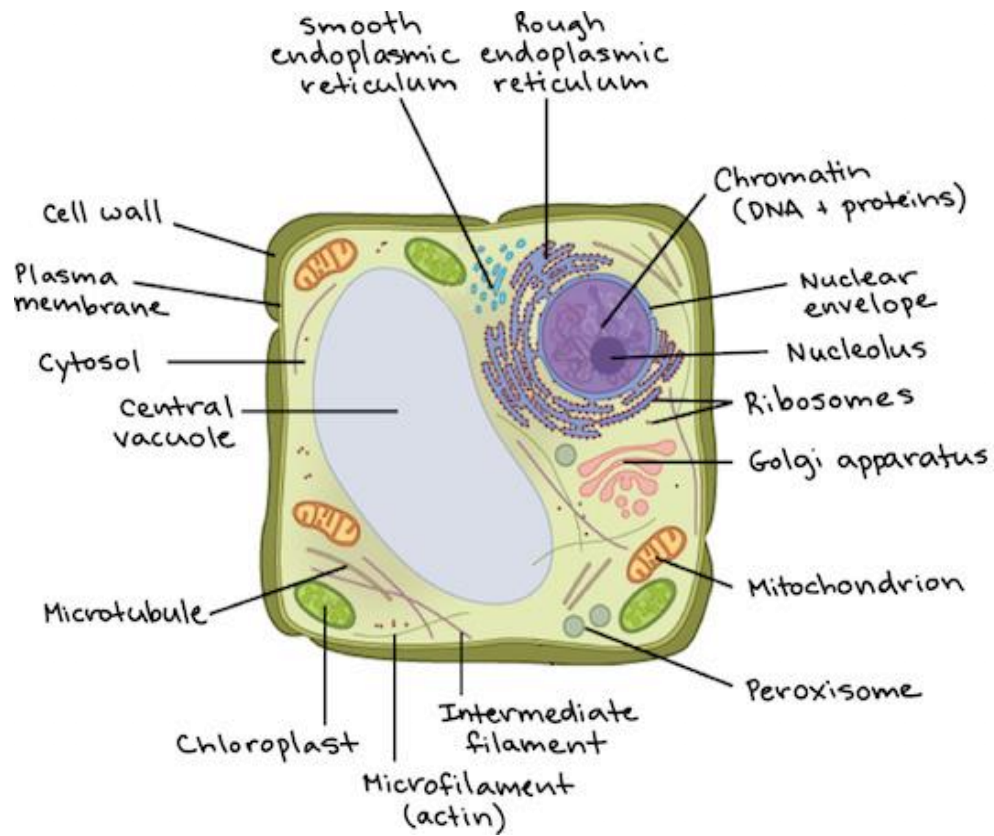


- Prokaryotes are ancestors of eukaryotes
- Cells lack nuclear envelope
- Prokaryotic chromosome occupies a space in cell called nucleoid.
- Nuclear envelope absent,
- chromosome single circular molecule of naked DNA tightly coiled within nucleoid,
- nucleolus absent,
- division amitosis,
- Ribosomes 70s,
- Chloroplast absent,
- cell wall non-cellulosic

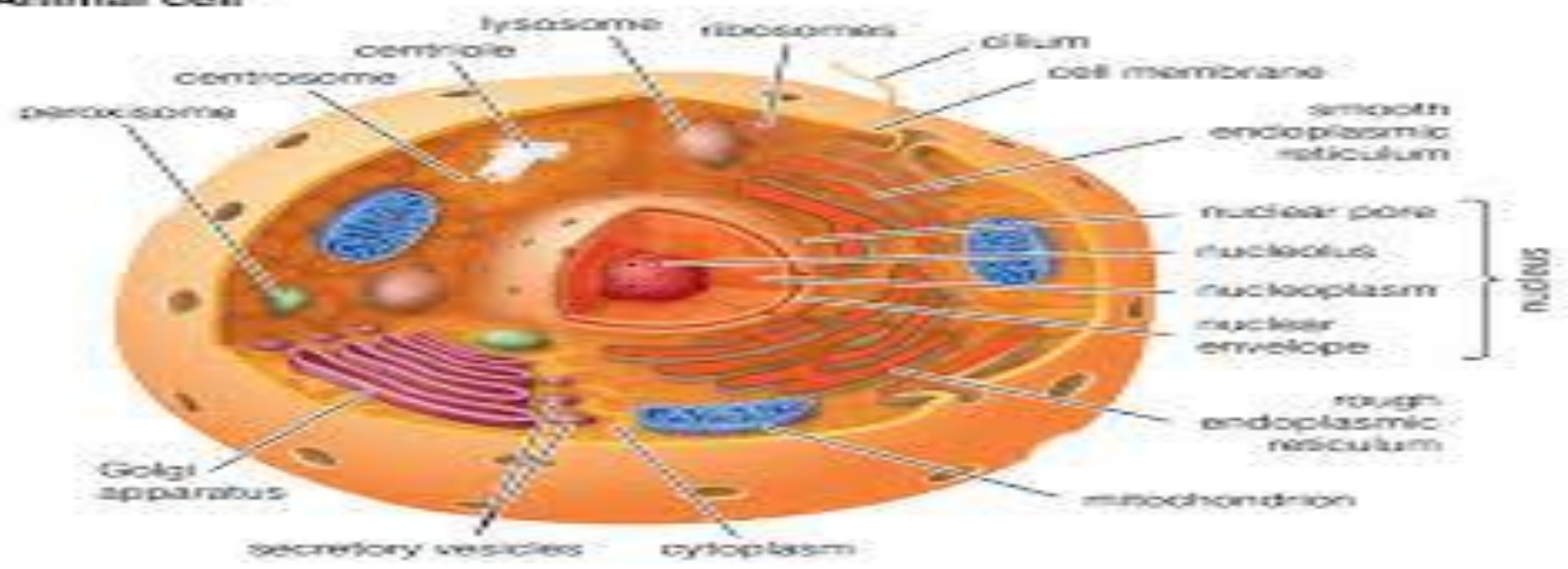
- Autotrophs /Photosynthetic bacteria, blue green algae
- Heterotrophs /fungi , animals
- Aerobic respiration
- Difference between prokaryotic and eukaryotic cell. Table 1.4 pg8

- Cell wall around bacterium..peptidoglycans
- Chemical composition ..contains polysaccharides e.g porin. lipids, proteins ...proteoglycans
- Inner membrane is plasma membrane, it is a lipoprotein structure ..controls entry of small molecules
- Enzymes for respiration are present in prokaryotes

- Bacteria contains small extra chromosomal circular DNA. To code for 3000 proteins
- Genes can be inserted on plasmid can be used as vector. In genetic engineering.
- Ribosomes present
- Flagella whip like



Animal cell



Eukaryotic cell

- A membrane-bound **nucleus**, a central cavity surrounded by membrane that houses the cell's genetic material.
- A number of membrane-bound **organelles**, compartments with specialized functions that float in the cytosol.
- (Organelle means “little organ,” and this name reflects that the organelles, like the organs of our body, have unique functions as part of a larger system.)

- Multiple **linear chromosomes**, as opposed to the single circular chromosome of a prokaryote.
- Eukaryotic cells are much more complicated than those of prokaryotes.
- They are packed with a fascinating array of subcellular structures.
- play important roles in energy balance, metabolism, and gene expression.