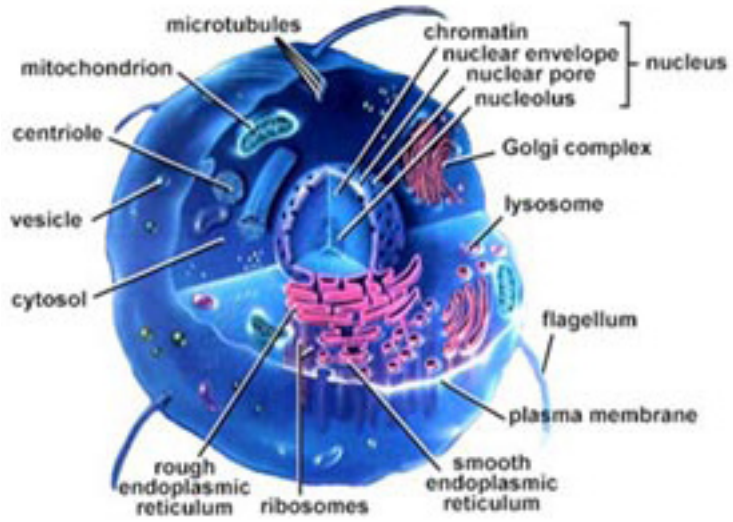
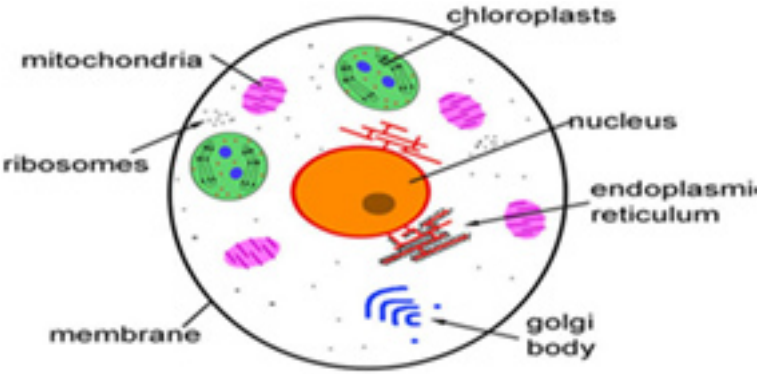
cell structure: prokaryote vs eukaryote

Eukaryotes

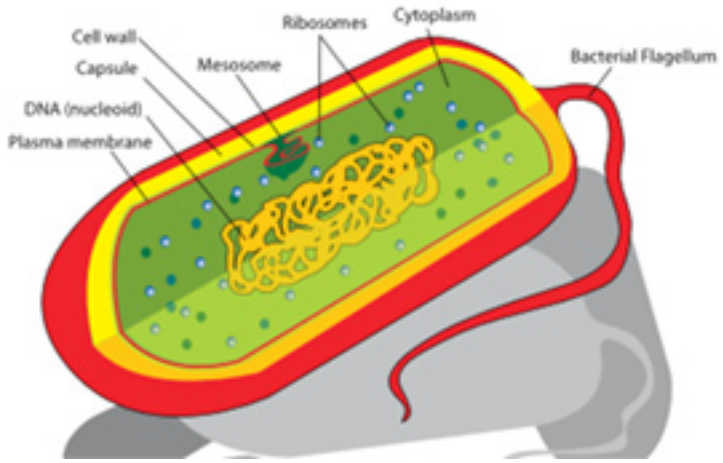
These are cells which contain discrete, membrane bound organelles such as a nucleus, mitochondria and chloroplasts. All animals and plants have eukaryotic cells, 20 times or so larger than prokaryotes.

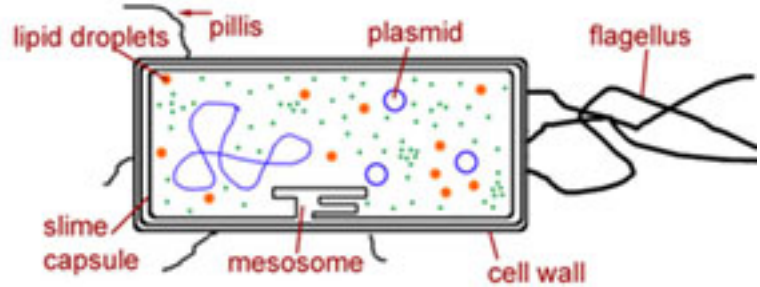


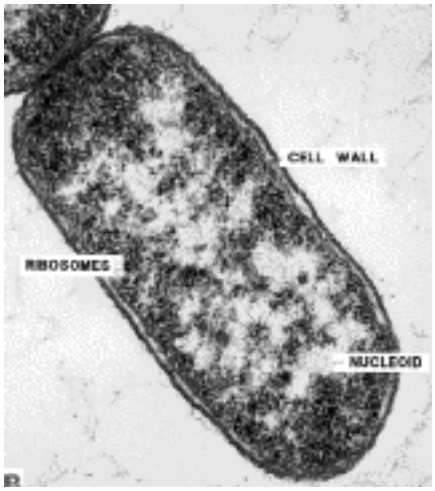


Prokaryotes

Without any membranes, these are bacteria or cyanobacteria cells containing no bound organelles and free-floating DNA. They always have a cell wall, and are extremely small.







Organelles

Blue= Eukaryotes, Red= Pro, Black= Both

- Mitochondria
  - These consist of finger-like projections called cristae formed by the infolding of membrane. They perform respiration.
- Golgi apparatus
  - A set of flattened, membrane bound sacs, this modifies proteins and packages them into vesicles
- ER (Smooth and Rough)
  - A system of membrane bound, flattened sacs, these have ribosomes connected to the outer surface. They transport proteins. Smooth ER has no ribosomes, and makes lipids and steroids.
- Ribosomes
  - Made of RNA, these occur in the cytoplasm or attached to the rough ER
- Centrioles
  - Every animal cell ha sone pair of centrioles, hollow cyclinders made from a ring of nine protein microtubules. They are involved in the formation of the spindle during nuclear division and in transport within the cytoplasm
- Lysosome
  - These spherical scas, bound by a single membrane, contain digestive enzymes. Their role is to breakdown unwanted cellular structures and to destroy old cells. The acrosome (sperm cell) is a specializded lysosome, also containing digestive enzymes.

- Pili
  - These small, threadlike protrubances allow bacteria to adhere to surfaces
- Capsule
  - A slimy outer layer, this offers protection and prevents dehydration
- Mesosome
  - This is the infolding in the nuclear membrane where respiration takes place
- Plasmid
  - These are free-floating rings of DNA, not membrane bound. The collection of plasmids or the tangle of DNA is known as a nucleoid.

- Cell wall
  - This contains peptidoglycan, a polysaccharide/polypeptide combination
- Flagellum
  - This hollow, thread like structure rotates, facilitating movement