

Comparison of Prokaryotic and Eukaryotic (Animal) Cells

Structure Or Organelle	Function within Prokaryotic cell	Composition of structure or organelle	Present within Eukaryotic cell (Yes/No)	Is there a structure with a similar function within Eukaryotic cell? (Please name it)	How is this structure different from the structure within the prokaryotic cell?
Nucleoid	Control center of cell	Single chromosome without a membrane	No	Yes, nucleus	Nucleus is membrane bound and contains multiple chromosomes
Capsule	Multifunctional: protective covering; reservoir for stored food; place for waste disposal	The capsule is usually a viscous polysaccharide or polypeptide slime.	No	Yes, cell membrane	The cell membrane is made up of a double layer of phospholipid molecules with protein molecules embedded in the lipid layer; it is not composed of slime.
Cell (plasma) membrane	Controls the passage of nutrients and waste products into and out of the cell; with the use of two respiratory enzymes, cytochromes and dehydrogenases, which take part in aerobic cellular respiration; a third function includes the excretion of hydrolytic exoenzymes or extracellular enzymes; the enzymes needed for the manufacture of the cell wall, cytoplasmic membrane, lipids, and DNA are located in the cytoplasmic membrane.	It is made up of about 60% protein and 40% lipid; it is similar to the chemical and physical structures of the eukaryotic plasma membrane; as viewed through an electron microscope, they appear as two dark bands with a light band in the middle; like all biological membranes in nature, the bacterial cytoplasmic membrane is	Yes	Yes, cell membrane	It is similar to the cytoplasmic membrane found in the prokaryotic cell chemically and physically, but some of its functions are somewhat different. For instance, it does not take part in aerobic respiration with two respiratory enzymes, and it does not excrete hydrolytic exoenzymes. Also, in the eukaryotic cell, the cell membrane is the outermost part of the cell, while in the prokaryotic cell, the cell membrane is located directly under the capsule and cell wall.