

Internal membranes create intracellular compartments with different functions – membrane-bounded or membrane-enclosed organelles.

### **ORGANELLES BOUNDED BY DOUBLE-MEMBRANE ENVELOPES**

Three of the major cell organelles, the nucleus, mitochondrion, and, in plant cells, the chloroplast, are all enclosed within an envelope consisting of two membranes.

### **ORGANELLES BOUNDED BY SINGLE-MEMBRANE ENVELOPES**

Eukaryotic cells contain many sacs and tubes bounded by a single membrane. Although these are often rather similar in appearance, they can be subdivided into different types specialized to carry out distinct functions. The next organelles are single-membrane-bounded: endoplasmic reticulum, Golgi apparatus, lysosomes, peroxisomes.

### **ORGANELLES WITHOUT MEMBRANE ENVELOPES**

The discrete structures of a eucaryotic cell that are specialized to carry out a particular functions and are not enclosed within membrane: ribosome, centrosome, cytoskeleton, some types of cells have cilia or flagella.