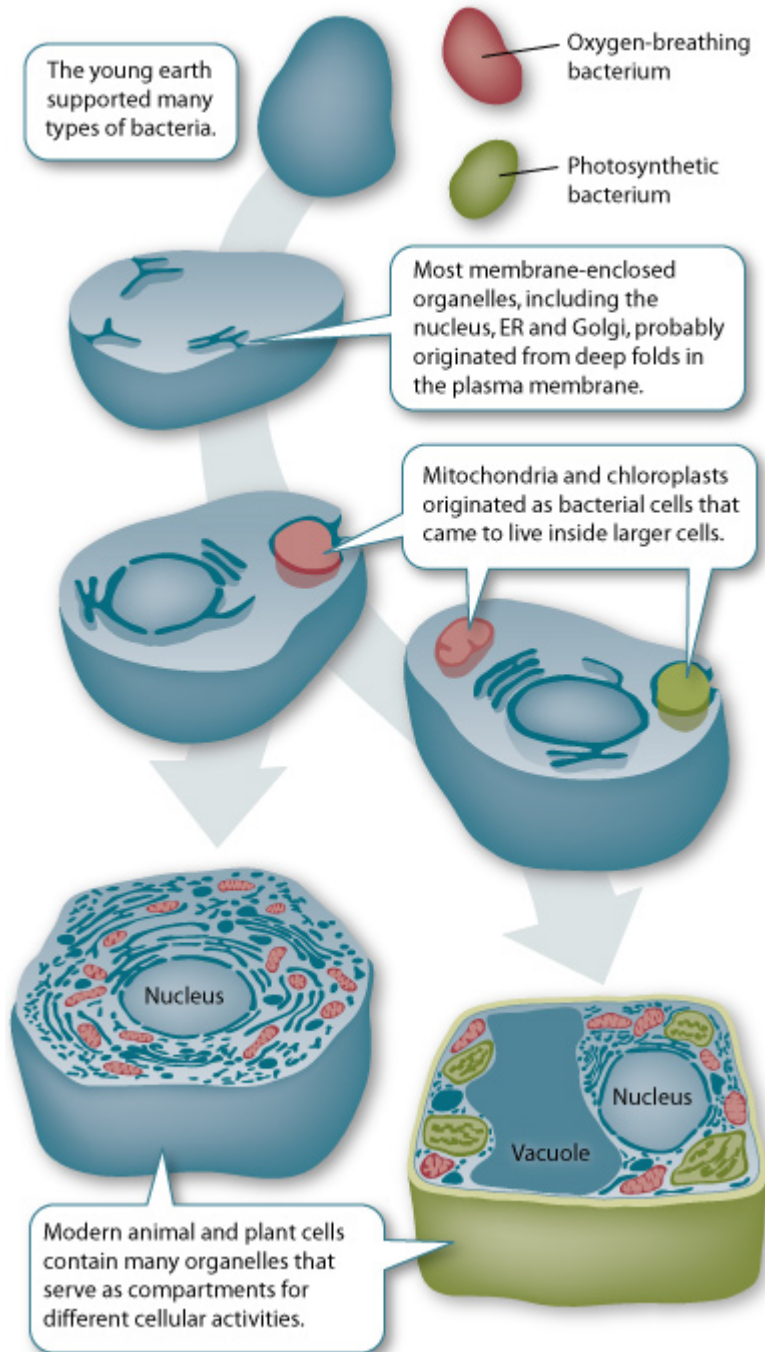


# The Endosymbiotic Theory



There is compelling evidence that mitochondria and chloroplasts were once primitive bacterial cells. This evidence is described in the endosymbiotic theory. How did this theory get its name? Symbiosis occurs when two different species benefit from living and working together. When one organism actually lives inside the other it's called endosymbiosis. The endosymbiotic theory describes how a large host cell and ingested bacteria could easily become dependent on one another for survival, resulting in a permanent relationship. Over millions of years of evolution, mitochondria and chloroplasts have become more specialized and today they cannot live outside the cell.

## *Mitochondria Have DNA*

Mitochondria and chloroplasts have striking similarities to bacteria cells. They have their own DNA and ribosomes, which are separate from the DNA and ribosomes found in the nucleus of the cell. And both organelles use their DNA to produce many proteins and enzymes required for their function. A double membrane surrounds both mitochondria and chloroplasts, further evidence that each was ingested by a primitive host. The two organelles also reproduce like bacteria, replicating their own DNA and directing their own division.

Summarization of **3 key pieces** of information from article:

- 1.) Mitochondria and chloroplasts replicate in the same manner as bacteria (prokaryotic cells).
- 2.) Mitochondria and chloroplasts contain their own DNA and ribosomes (distinct from cell DNA and ribosomes).
- 3.) Mitochondria and chloroplasts are surrounded by their own double membrane.