

Endosymbiotic Theory – serial endosymbiosis (pgs. 549-553)

- Eukaryotes evolved from prokaryotic ancestors that gradually accumulated greater structural complexity
- Developed by Lynn Margulis of U. of Massachusetts
 - Lab observations – amoeba infected with bacteria become dependent on them
- Mitochondria may be aerobic heterotrophic bacteria
- Chloroplasts may be cyanobacteria
- Prokaryotes enter cell – establish symbiotic relationship with the cell
- Evidence:
 - Mitochondria and chloroplast are similar to bacterial size and structure
 - Both are bounded by double membrane – outer derived from engulfing vesicle; inner derived from plasma membrane
 - Both contain bacterial-like DNA and ribosomes
 - RNA base sequence of these ribosomes suggests bacterial origin