CONCEPT: ENDOSYMBIOTIC THEORY

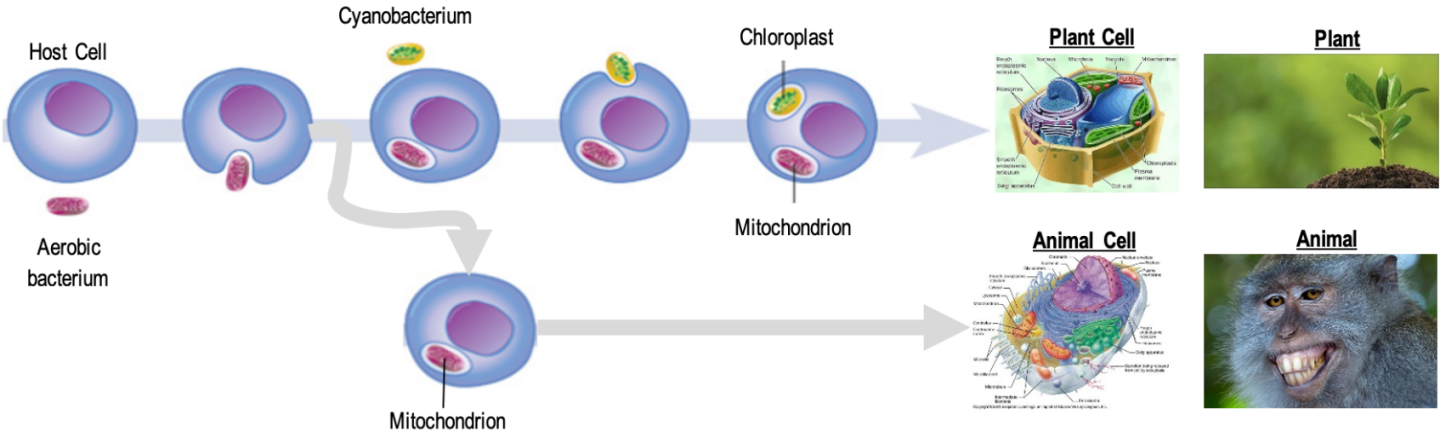
●**Endosymbiotic Theory**: mitochondria & chloroplasts were once *independently* living _____.

●~1.5 _____ years ago, an *aerobic* bacterium was engulfed by an *anerobic* host cell, making a *symbiotic relationship*.

□ Over time, the aerobic bacterium lost many genes/abilities & developed into today's _____.

□ Photosynthetic *Cyanobacterium* were engulfed by a host cell & over time, evolved to the _____.

EXAMPLE: Endosymbiotic Theory.



●Supporting evidence includes _____ between *mitochondria/chloroplasts* & *prokaryotes*.

□ Both have/do: **1)** small circular *DNA*, **2)** 70S *ribosomes,* **3)** replicate via _____ *fission*.

□ Also, mitochondria & chloroplast both have *outer* & _____ membranes (consistent with engulfment).

PRACTICE: Endosymbiotic theory is supported by the discovery of non-nuclear DNA in the _____ and _____ organelles.

a) Golgi apparatus and lysosomes.
b) Mitochondria and lysosomes.
c) Chloroplast and Golgi apparatus.
d) Chloroplast and mitochondria.

PRACTICE: According to the endosymbiotic theory, which of the following is likely the ancestor of the mitochondria?

a) Aerobic eukaryotes.
b) Aerobic bacteria.
c) Anaerobic bacteria.
d) Cyanobacteria.
e) Chloroplasts.