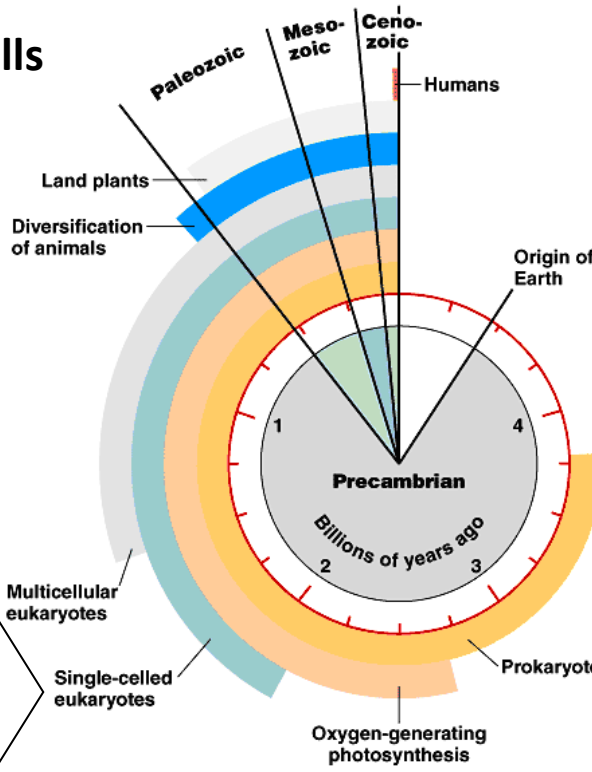


Origin of Eukaryotic Cells



Nearly all are:
Accordingly, they could not have evolved before at least some free oxygen was present in the atmosphere

Life originated:

Dominated life on Earth:

Oxygen accumulates in atmosphere.
Evidence:

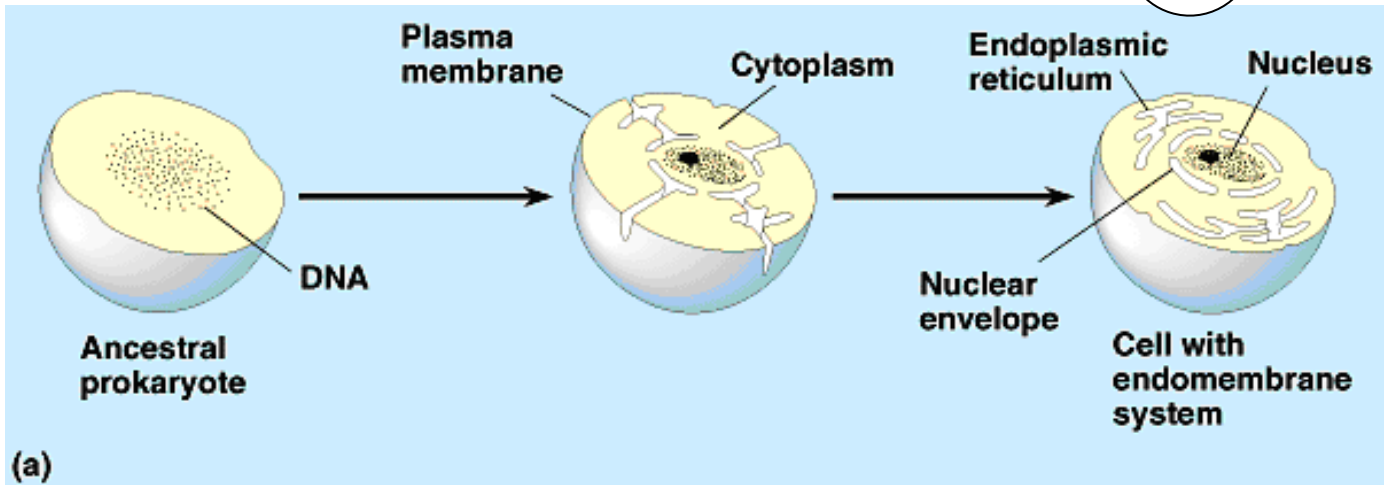
By cyanobacteria: a type of prokaryote with...

Makes:

Two processes are thought to have led to the origin of eukaryotes....

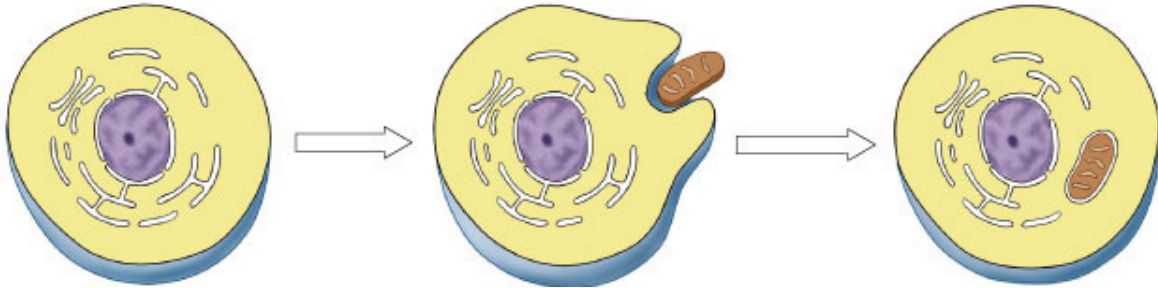
These organelles are thought to have arisen via infolding:

- 1 **Infoldings of the prokaryotic cell membrane**
Creates internal micro-environments
Advantage = increase efficiency

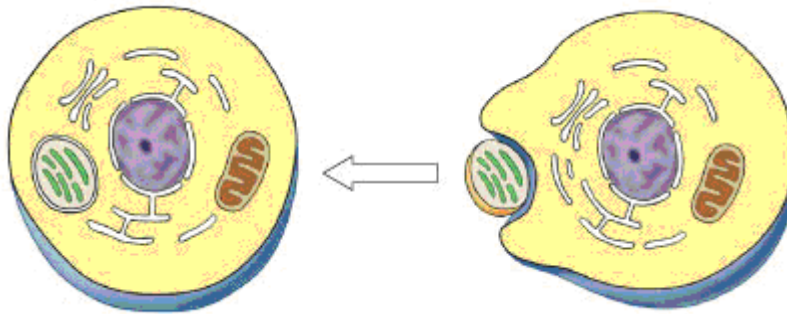


(a)

Early eukaryotic cells engulfed aerobic bacteria *but did not digest them*. Led to the origin of mitochondria.



Early eukaryotic cells engulfed photosynthetic bacteria *but did not digest them*. Led to origin of chloroplasts.



Evidence for Endosymbiosis

Structural evidence *Both mitochondria & chloroplasts*

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Genetic evidence *Both mitochondria & chloroplasts*

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Functional evidence *Both mitochondria & chloroplasts*

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