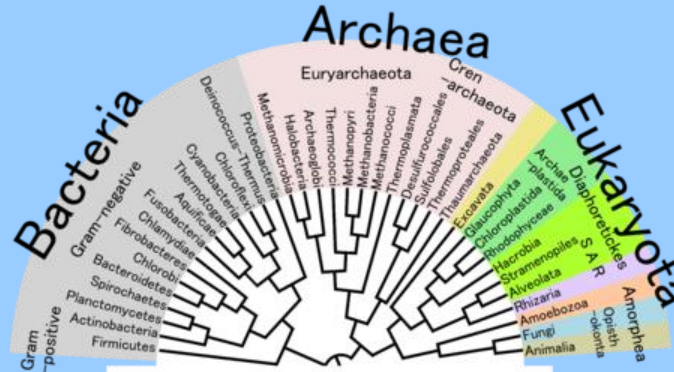




Prokaryote Diversity and the Origin of Eukaryotes



PROKARYOTE DIVERSITY

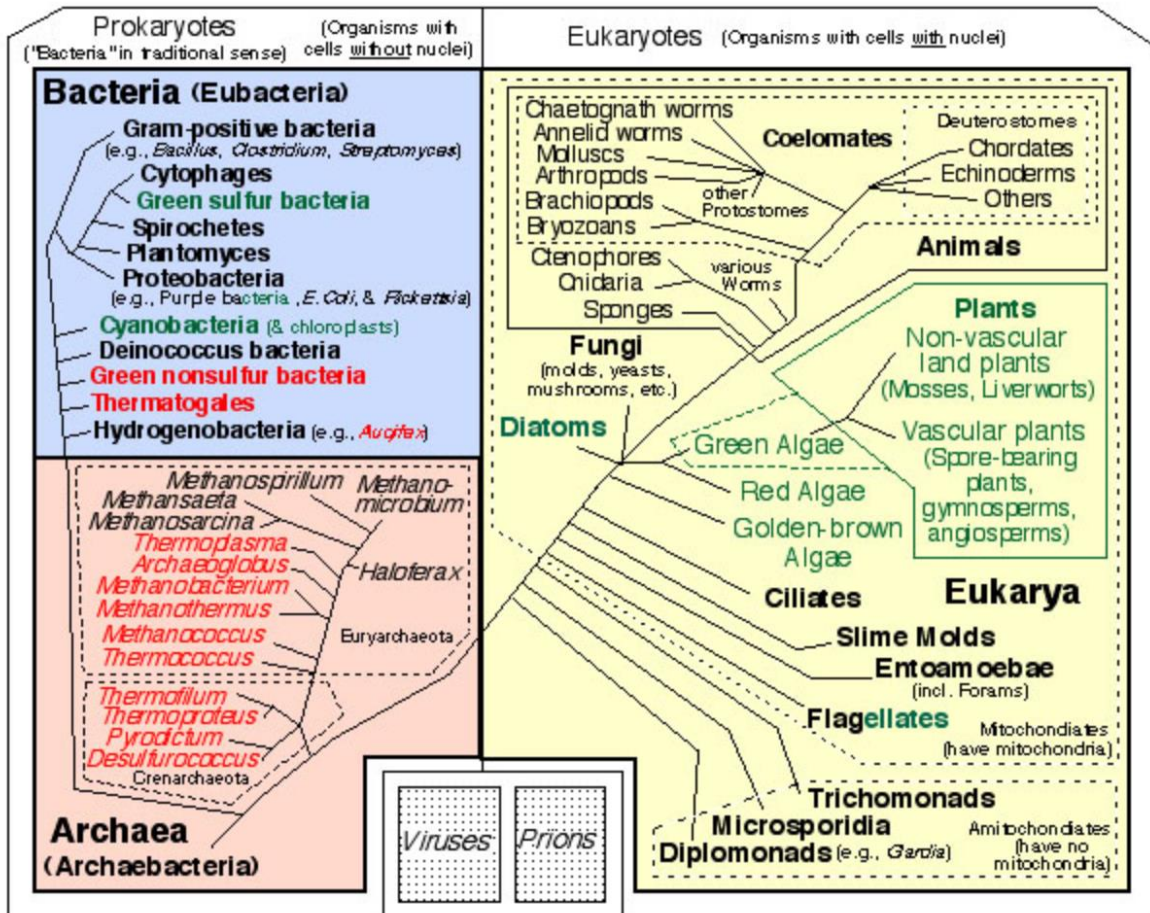
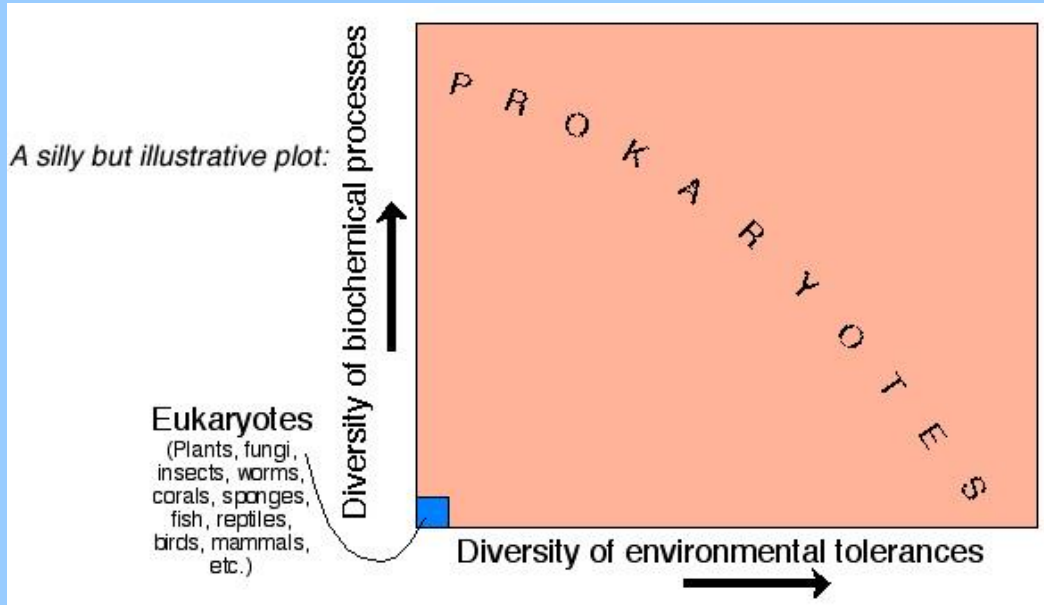
- Similarities, Differences between Bacteria and Archaea
 - What is unique about Bacteria?
 - What is unique about Archaea?
- How are sub-groups of Bacteria, of Archaea determined?
 - What are those sub-groups, or current "best guess?"
 - Evolution of extremophily in each group
- Biochemical pathways in prokaryotes
 - carbon fixation
 - autotrophy, heterotrophy
 - chemo-, photo-synthesis
- Eukaryotes use prokaryotic pathways by endosymbiosis
- Genomic Evolution
 - genome in flux
 - lateral gene transfer

EUKARYOTIC ORIGINS

- Shared features of all Eukaryotes
- Major Kingdoms of Eukaryotes
- Endosymbiotic origin of mitochondria, chloroplasts
- Eukaryote genome structure: plasmids, introns/exons, chromosome number
- Cellular structure in Eukaryotes—diversity

Review of Prokaryotic Diversity

from L. Bruce Railsback, Department of Geology, University of Georgia



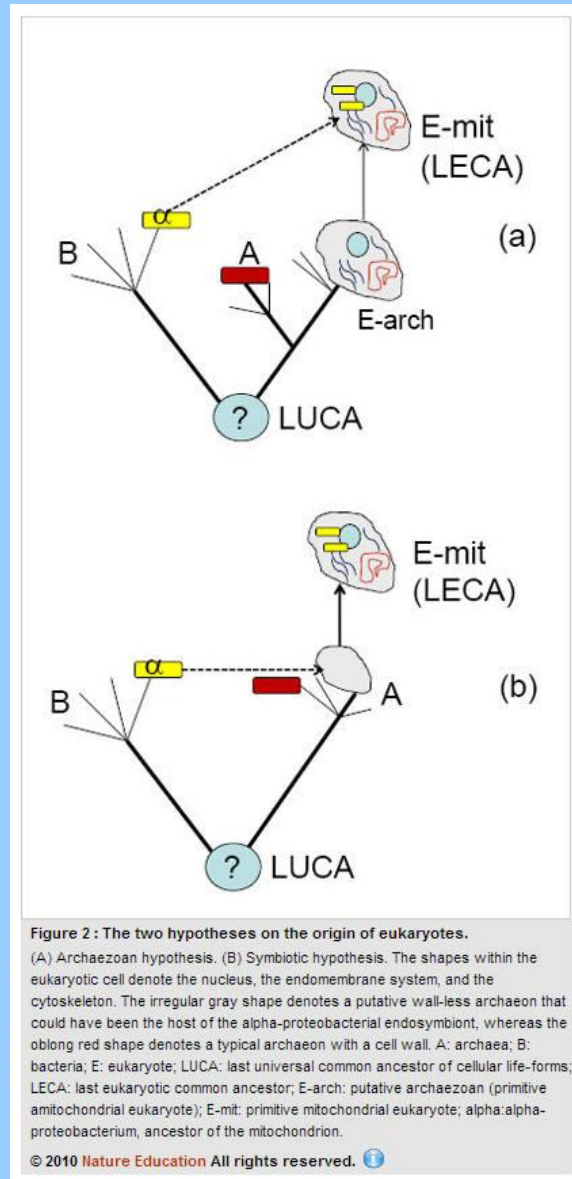
Legend: Photosynthesizers in green
Thermophiles (heat-tolerant) in red
Domains in **large bold**

LBR 10/29/2001

<http://www.gly.uga.edu/railsback/l122Lifegram.html>

The Two Empires and Three Domains of Life in the Postgenomic Age

From Koonin in Nature Education



Additional Background Information

[Endosymbiosis and the Origin of Eukaryotes](#)

[From Kimball Biology Pages \(great online Biology encyclopedia\)](#)

[Lynn Margulis and Endosymbiotic Origin of Eukaryotic Organelles](#)



[Kurzgesagt YouTube Science Explainer Channel](#)

Video about Neutron Stars.

Explains where all bigger elements in universe, upon which life relies, came from.

<https://youtu.be/udFxKZRyQt4>