

## Microbial Diversity

The four domains of life:

- Viruses and other acellular organisms (obligate intracellular parasites; not all contain DNA)
  - Connections of viruses to the rest of the tree: many different ideas/possibilities (more on this later)
- Three domains of **cellular** life (Bacteria, Archaea, Eucarya)
  - Each domain of cellular life is **monophyletic**
  - Just a few representatives of each domain are shown.
- Note that prokaryotes = Bacteria + Archaea (not monophyletic);
- Eukaryotes = Eucarya (monophyletic)
- Examples of things to know: Make sure that you can define the major characteristics of cellular life; defend why viruses are microorganisms (i.e., living organisms); describe LUCA; identify the domains that are prokaryotes; and name, explain, and draw the major hypotheses regarding the origins of viruses. You do not need to memorize the names of all of the lineages within each domain, but make sure that you can name at least two for each domain (for example, Cyanobacteria and Proteobacteria in the Domain Bacteria).

