Biodiversity, evolution & taxonomy

Teaching Biodiversity Short Course for FET Life Sciences Teachers

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The Tree of Life

- Discovering all its branches
- Understanding how those branches link together/where they are

Why study life's diversity?

- For its own sake
- For the benefit of society
- For medicines, materials & food

Taxonomy

*The science of **classifying** & **naming** living organisms*

- Foundation of all other life sciences
- Can't get much done if you don't know what something is...

Old-timey taxonomy: Linnaeus

- Pre-evolutionary views
- Classification based on sexual parts
- A lot of Linnaeus' *Systema Naturae* & *Systema Plantarum* didn't hold up to modern scientific evidence...

Old-timey taxonomy: Linnaeus cont.

But, he gave us 2x amazing (& simple!) things:

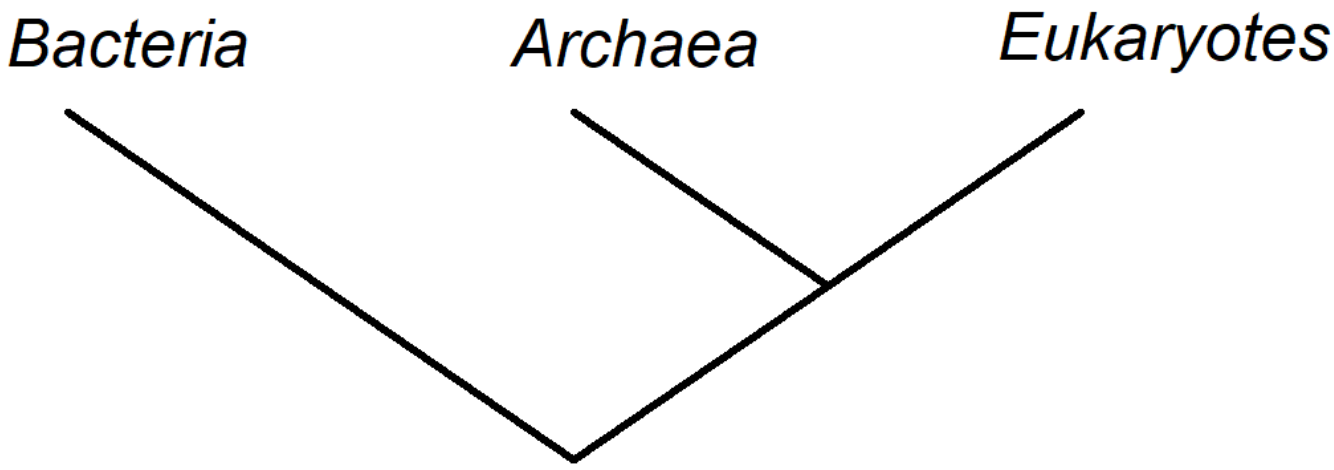
- Hierarchical classification
- Binomial nomenclature

Naming things: Nomenclature

Classifying things: Hierarchies

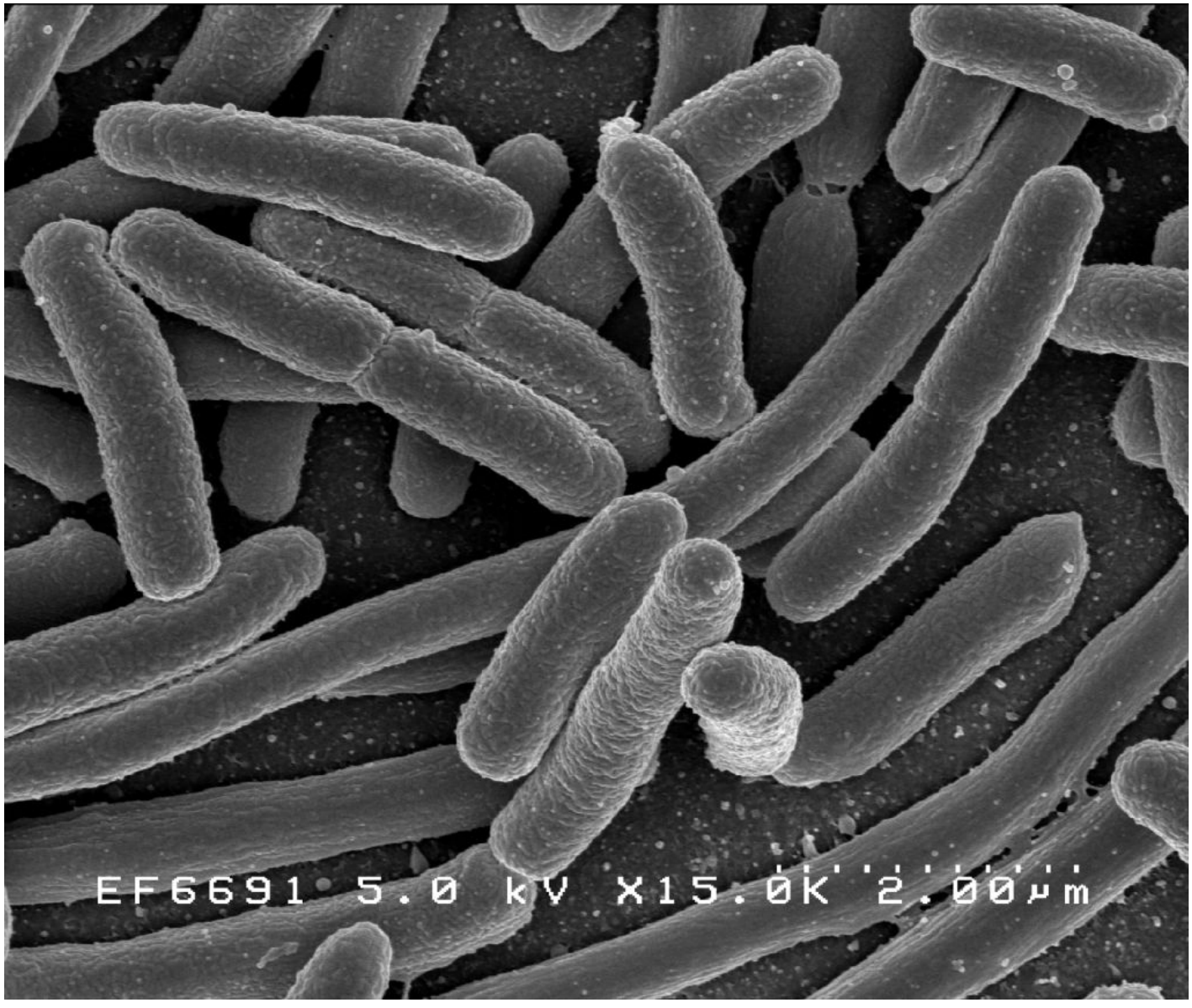
- (Domain)
- Kingdom
- Phylum
- Class
- Order
- Family
- Genus
- Species

The domains



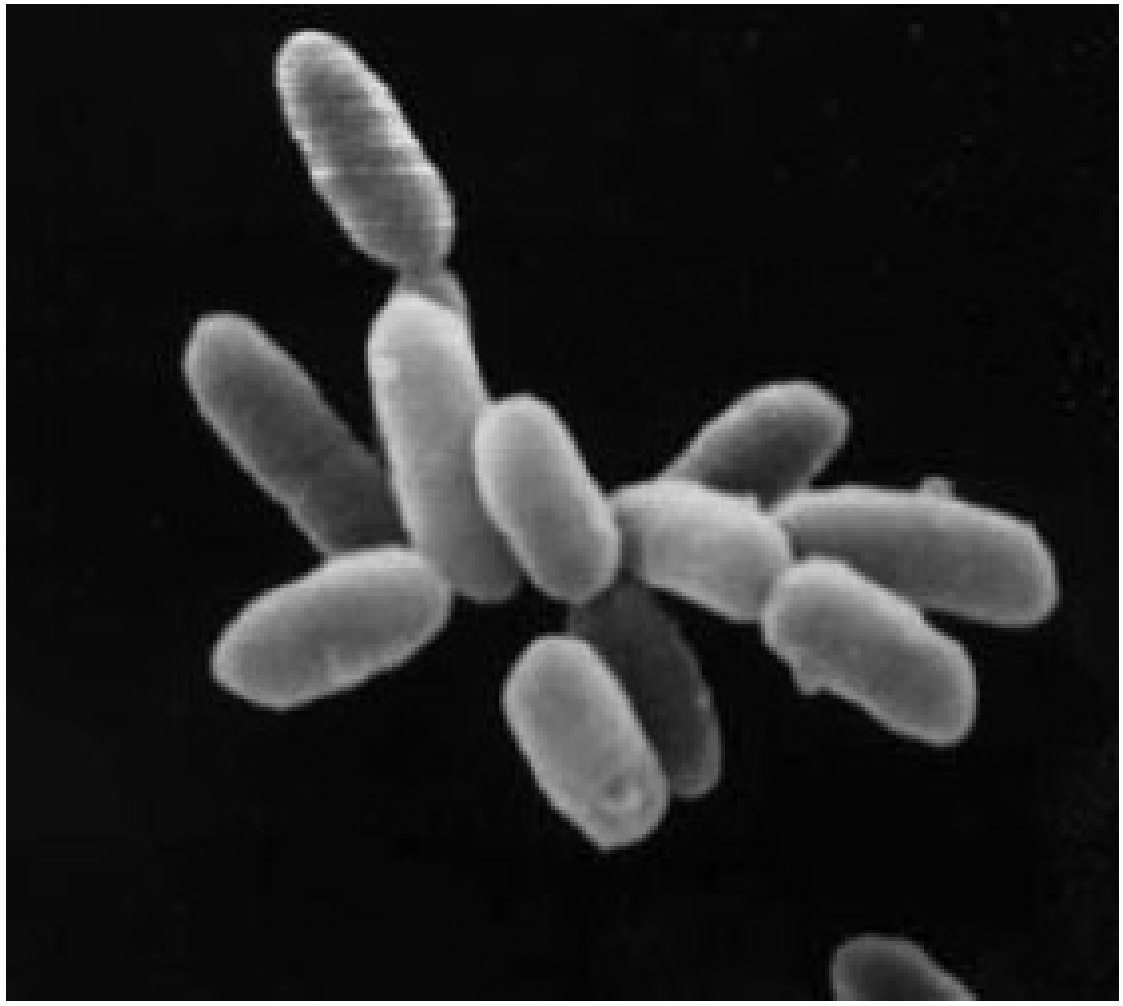
The 2x prokaryotic & 1x eukaryotic domains of the Tree of Life

Proakryotes (simple life)



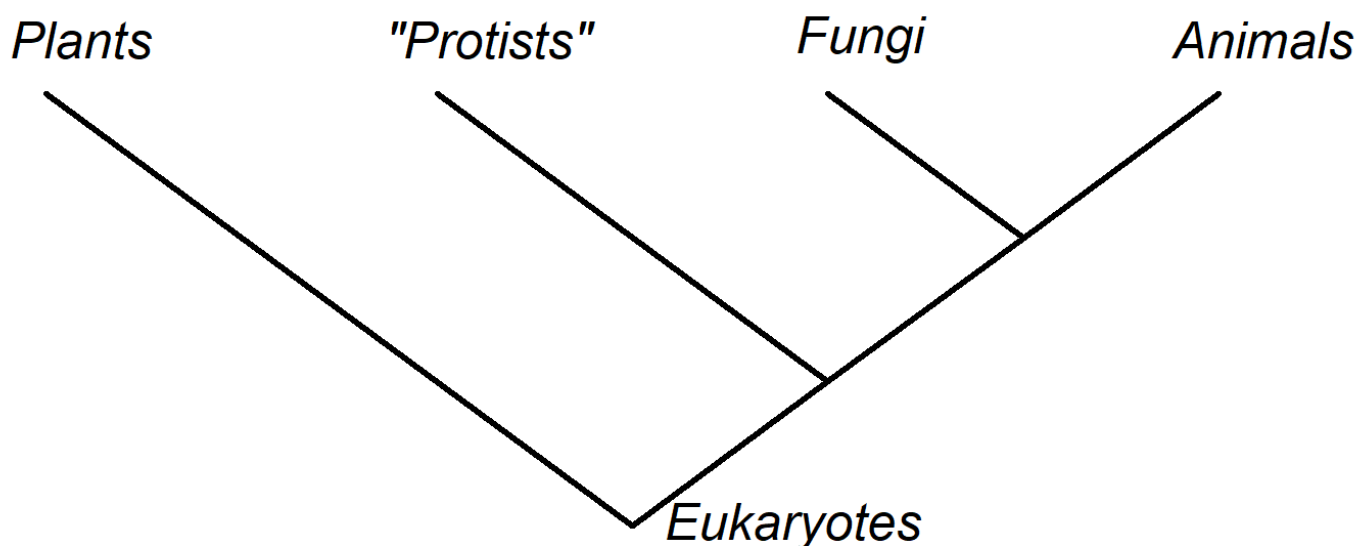
The bacteria species *E. coli*

Proakryotes (simple life) cont.



An extremophilic archaean

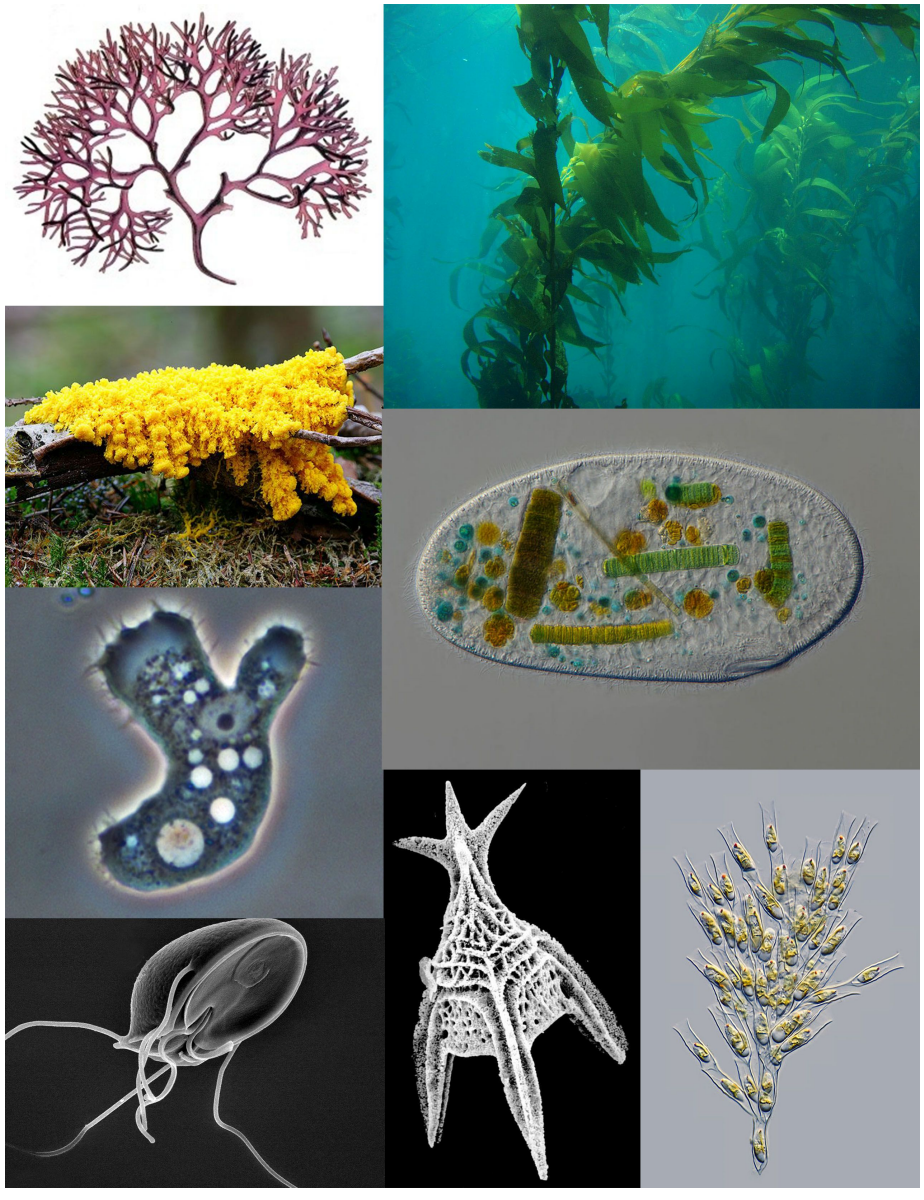
Eukaryotes (having a “true cell nucleus”)



The Kingdoms[1] of eukaryotic life

[1]Protists are mostly algal micro-organisms that are neither plants, fungi nor animals

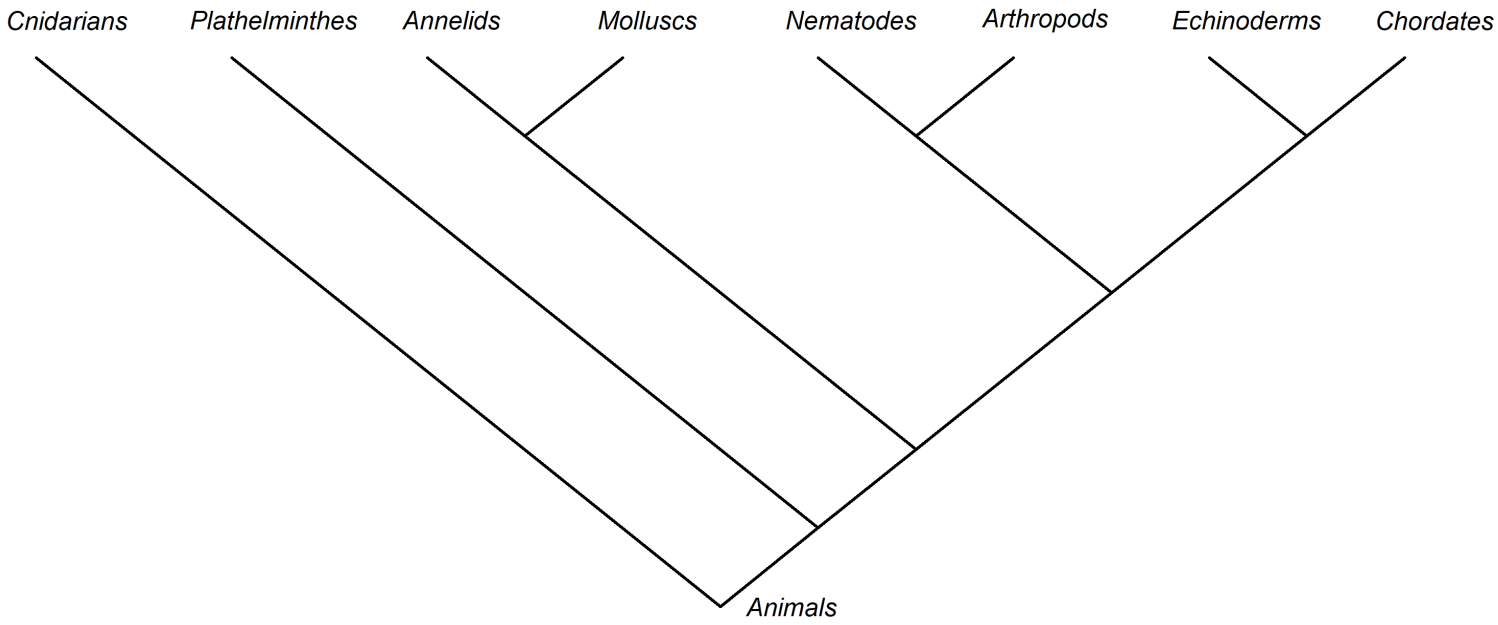
Protists: the “dust-bin” kingdom



Fungi: $\frac{1}{2}$ animal & $\frac{1}{2}$ plant

Animals—both big & small

Animal phyla



Plants

Major plant groups