Bacteria

- **"Green filamentous bacteria"**
  - *Chloroflexus aggregans*
  - *Herpetosiphon aurantiacus*
- **Gram positives**
  - *Bacillus licheniformis*
  - *Geobacillus stearothermophilus*
  - *Mycobacterium smegmatis*
  - *Mycoplasma mobile*
  - *Staphylococcus aureus*
- **Spirochetes**
  - *Borrelia burgdorferi*
- **Proteobacteria**
  - *Burkholderia thailandensis*
  - *Campylobacter jejuni*
  - *Escherichia coli*
- **Cyanobacteria**
  - *Synechococcus elongatus*
  - *Chroococcidiopsis thermalis**
- **Plantomycetes**
  - *Phycisphaera mikurensis*
  - *Gemmata obscuriglobus*
- ***Bacteroides/Cytophaga***
  - *Candidatus Amoebophilus asiaticus*
  - *Bacteroides fragilis*
- ***Thermotoga***
  - *Thermotoga maritima*
- ***Aquifex***
  - *Aquifex aeolicus*
- **?**
  - *Deinococcus radiodurans***
  - *Thermus thermophilus*

* "...one of the most primitive cyanobacteria (blue-green algae) known."

** *Deinococcus* stains Gram positive, but the "cell envelope is unusual and is reminiscent of the cell walls of Gram negative bacteria" - also, *Deinococcus* and *Thermus* share their own phylum, and *Thermus* is gram-negative. A description the phylum Deinococcus-Thermus says, "These bacteria have thick cell walls that give them gram-positive stains, but they include a second membrane and so are closer in structure to those of gram-negative bacteria." Therefore, I am not sure how to classify them.

Archaea

- ***Methanosarcina***
  - *Methanosarcina acetivorans*
- **Halophiles**
  - *Halobacterium sp.*
- ***Methanobacterium***
  - *Methanothermobacter thermautotrophicus**
- ***Methanococcus***
  - *Methanococcus aeolicus Nankai*
  - *Methanococcus jannaschii*
- ***Thermococcus celer***
  - *Pyrococcus horikoshii***
- ***Thermoproteus***
  - *Pyrobaculum aerophilum*^
  - *Staphylothermus marinus*^^
  - *Sulfolobus acidocaldarius*^^
- ***Pyrodicticum***
  - *Pyrodictium occultum*
  - *Pyrodictium delaneyi*
- **Etc.**
  - *Methanospirillum hungatei*[1]
  - *Nanoarchaeum equitans*[2]
  - *Thermoplasma volcanium*[2]
  - *Thermoplasma acidophilum*[2]
  - *Methanopyrus kandleri*[3]
  - *Archaeoglobus fulgidus*

* *Methanothermobacter thermautotrophicus* shares the same family (Methanobacteriaceae) with *Methanobacterium*.

** *Pyrococcus horikoshii* shares the family Thermococcaceae with *Thermococcus celer*.

^ *Pyrobaculum aerophilum* shares the family Thermoproteaceae with *Thermoproteus*. "When discovered, *Pyrobaculum aerophilum* resembled members from the genera *Thermoproteus* and *Pyrobaculum* because of its ability to transform into spherical bodies, which resemble golf balls. After its 16S rRNA was sequenced, the new archaeum displayed traits more characteristic of the genus *Pyrobaculum* and was therefore classified as *Pyrobaculum aerophilum*."

^^ *Staphylothermus marinus* and *Sulfolobus acidocaldarius* share the class Thermoprotei with *Thermoproteus*.

[1] *M. hungatei*'s class is a sister to Methanobacteria (which includes *Methanobacterium*) and Methanococci (which includes *Methanococcus*).

[2] *Nanoarchaeum equitans*, *Thermoplasma volcanium*, and *Thermoplasma acidophilum* are not halophiles, but they are thermoacidophiles.

[3] *Methanopyrus kandleri* is not a halophile, but it is a hyperthermophile.

Eucarya ("Tree of Life" tree)

- ***Entamoebae*/Myxomycota**
  - *Dictyostelium discoideum* (soil-living amoeba, slime mold) *
- **Animalia**
  - *Homo sapiens* (human)
  - *Bos taurus* (cattle)
  - *Physeter catodon* (sperm whale)
  - *Ornithorhynchus anatinus* (platypus)
  - *Nestor notabilis* (kea)
  - *Aptenodytes forsteri* (emperor penguin)
  - *Danio rerio* (zebrafish)
  - *Python bivittatus* (Burmese python)
  - *Bombyx mori* (silkworm)
  - *Musca domestica* (housefly)
  - *Crassostrea gigas* (Pacific oyster)
- **Fungi**
  - *Auricularia subglabra* (jelly fungi)
- **Plantae**
  - *Zea mays* (maize)
  - *Citrus sinensis* (sweet orange)
  - *Erythranthe guttata* (Yellow monkey flower)
  - *Populus euphratica* (Euphrates or desert poplar)
  - *Solanum lycopersicum* (tomato)
  - **Green algae**
    - *Coccomyxa subellipsoidea* (green algae)
- **Ciliates**
  - *Cryptosporidium parvum Iowa II* (apicomplexan protozoan) **
- **Flagellates**
  - *Guillardia theta* (flagellate cryptomonad algae)
  - *Salpingoeca rosetta* (choanoflagellate, closest living relatives of the animals)
  - *Leishmania infantum* (kinetoplastid protozoan with single flagellum)
  - **Diplomonads**
    - *Giardia lamblia* (flagellated protozoan parasite)
  - **Trichomonads**
    - *Trichomonas vaginalis* (anaerobic, flagellated protozoan parasite)
- **Microsporidia**
  - *Nosema ceranae* (unicellular honey bee parasite)
- **Etc.**
  - *Naegleria gruberi* (famous for ability to change from amoeba to flagellate)
  - *Blastocystis hominis* (single-celled protozoan human parasite)
  - *Reticulomyxa filosa* (freshwater foraminifer with anastamozing pseudopodia)
  - *Capsaspora owczarzaki* (single-celled amoeba symbiont with tropical freshwater snail)
  - *Paulinella chromatophora* (photosynthetic freshwater amoeboid)

***** *Dictyostelium discoideum* shares phylum Amoebozoa with genus *Entamoeba* and infraphylum Mycetozoa with other slime molds ("myxomycota" is an informal term for fungus-like amoebozoa)

** Apicomplexa is a sister taxa to Ciliates

Eucarya (eukaryotes-only tree)

- **Plants and green algae**
  - **Plants**
    - *Zea mays* (maize)
    - *Citrus sinensis* (sweet orange)
    - *Erythranthe guttata* (Yellow monkey flower)
    - *Populus euphratica* (Euphrates or desert poplar)
    - *Solanum lycopersicum* (tomato)
  - **Green algae**
    - *Coccomyxa subellipsoidea* (green algae)

- **Rhodophyta (red algae)**
- **Animals**
  - *Homo sapiens* (human)
  - *Bos taurus* (cattle)
  - *Physeter catodon* (sperm whale)
  - *Ornithorhynchus anatinus* (platypus)
  - *Nestor notabilis* (kea)
  - *Aptenodytes forsteri* (emperor penguin)
  - *Danio rerio* (zebrafish)
  - *Python bivittatus* (Burmese python)
  - *Bombyx mori* (silkworm)
  - *Musca domestica* (housefly)
  - *Crassostrea gigas* (Pacific oyster)

- **Choanoflagellate ("free-living unicellular and colonial flagellates, considered to be closest living relatives of animals")**
  - *Salpingoeca rosetta*

- **Filasterea**
  - *Capsaspora owczarzaki* (single-celled symbiont in freshwater snails)

- **Ichthyosporea/Mesomycetozoea (fish parasites)**

- **Fungi**
  - *Auricularia subglabra* ("jelly fungi")
  - *Nosema ceranae* (microsporidian, parasitic fungi)

- **Nucleariidae (filose amoebae)**

- **Amoebozoa (slime molds, etc.)**
  - *Dictyostelium discoideum* (soil-living amoeba, slime mold)

- **Cercozoa**
  - *Paulinella chromatophora* (freshwater amoeboid)

- **Foraminifera (amoeboid protists)**

    - *Reticulomyxa filosa* (freshwater foraminifer with anastamozing pseudopodia)

- **Radiolaria (protozoa w/ mineral skeletons)**

- **Alveolates (protists "with cavities")**
    - *Cryptosporidium parvum* (mammalian intestinal parasite)

- **Stramenopiles, aka Heterokonta (water molds, etc.)**
    - *Blastocystis hominis* (single-celled protozoan human parasite)

- **Hacrobia** - This is apparently a complicated group. Maybe includes heterokonts (see above), haptophytes, and cyrptomonads, telonemids, and centrohelids, although some argue about these groupings.
    - *Guillardia theta* (cryptomonad)

- **Malawimonas (small flagellates)**

- **Euglenozoa (flagellate protozoa, etc.)**
    - *Leishmania infantum* (trypanosome that causes leishmaniasis)

- **Heterolobosea (amoeboflagellates)**
    - *Naegleria gruberi* (famous for ability to change from amoeba to flagellate)

- **Jakobida (heterotrophic flagellates)**

- **Parabasalids (trichomonads - anaerobic protists, etc.)**
    - *Trichomonas vaginalis* (pathogenic protozoan causing trichomoniasis in humans)

- **Fornicata (diplomonads, etc.)**
    - *Giardia lamblia* (intestinal parasite causing giardiasis)

- **Preaxostyla, aka Anaeromonadea (oxymonads, etc.)**