Kingdom Bacteria

- Bacteria live in almost every environment on the earth
- They are relatively simple unicellular organisms
- All Bacteria have a few common characteristics that scientist use to identify them
    - Bacteria are **Prokaryotes**-they do not have a nucleus
    - Bacterial cells tend to take on one of 3 shapes:
        - Spherical-these cells look round under a microscope
        - Rod-these cells look like small, thick lines with rounded ends
        - Spiral-these cells look a twisted, thick line
    - Cell wall made of **peptidoglycan**
        - If the cell wall is really thick, the Bacteria is **Gram Positive**
        - If the cell wall is really thin, the Bacteria is **Gram Negative**
    - Some bacteria use a **flagella** to move around
    - Bacteria reproduce asexually through **binary fission**
        - Binary fission is very similar to mitosis in eukaryotic cells

Kingdom Archaea

- Organisms in the Archaea Kingdom are very old
- They are similar to bacteria, but have special adaptations to live in very harsh environments
- Archaea are grouped based on those adaptations
    - Halophiles-(salt-loving) these organisms can live in places with very high concentrations of salt
    - Thermophiles-(heat loving) these organisms can live at very high temperatures (over $80^{o}C$)
    - Acidophiles-(acid loving) these organisms can live in very acidic conditions
    - Alkliphiles-(base loving) these organisms can live in very basic conditions
    - Mesophiles-(mild loving) these organisms live in 'normal' places
        - One mesophile helps termites digest the wood that they eat