

Archaeobacteria and Eubacteria



What are bacteria?

- ▶ Bacteria are prokaryotes (no membrane bound nucleus)
- ▶ Smallest living known cells
- ▶ Found Everywhere

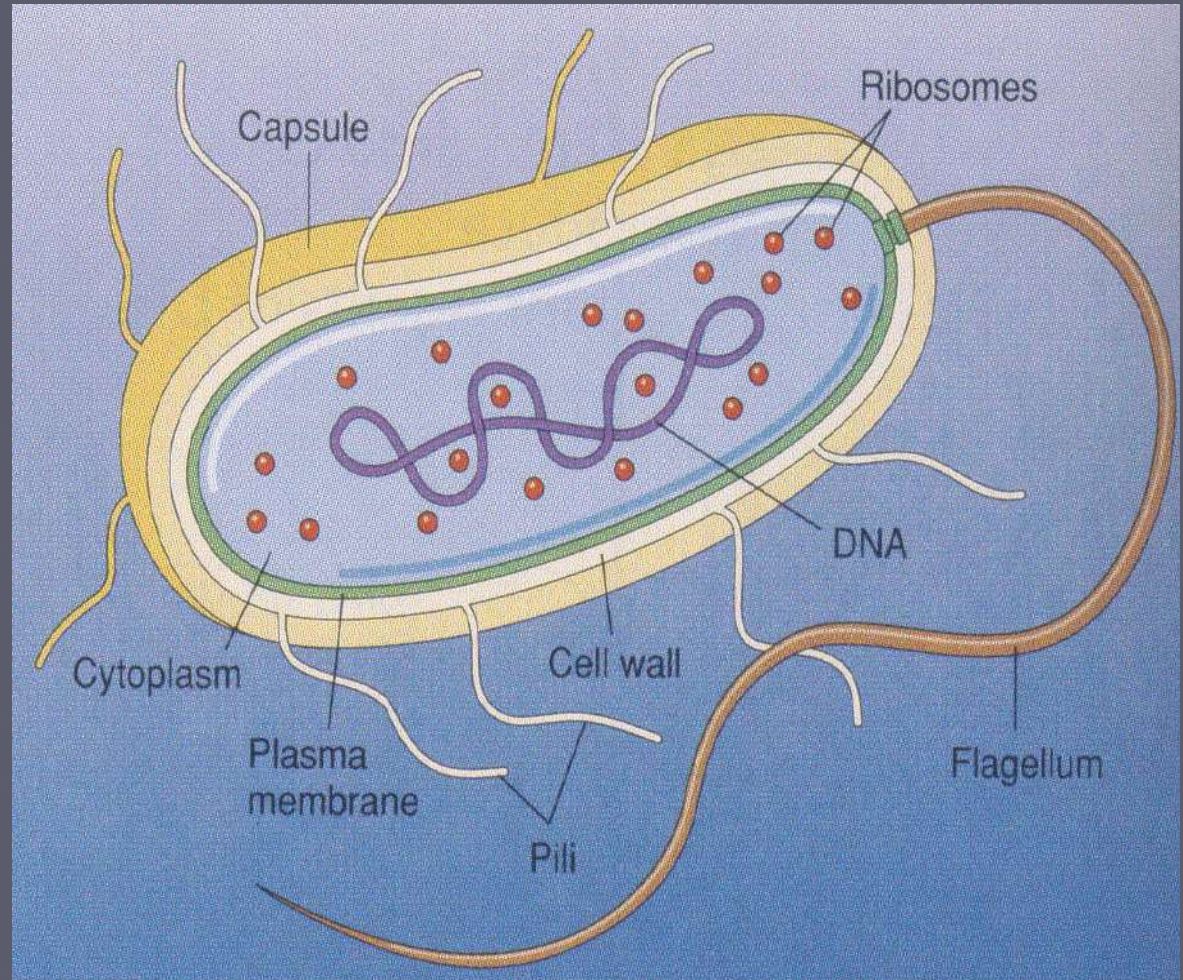


▶ Did you know... there are over 80 species of bacteria in our mouth!

Characteristics of Bacteria

- ▶ Cell Wall
- ▶ Cell (plasma) Membrane
- ▶ Pili
- ▶ Flagella
- ▶ Cytoplasm
- ▶ Ribosomes
- ▶ DNA

Refer to colored picture in NB for functions



Archaeobacteria

- ▶ Emerged at least 3.5 billion years ago
- ▶ Live in environments that resemble conditions existing when the earth was young
- ▶ Don't like oxygen, love acid and heat
- ▶ Differ from Eubacteria
 - bases in ribosomal RNA different
 - composition of plasma membranes and cell walls are different
- ▶ Three major known phyla (groups)
 - Methanogens
 - Halophiles
 - Thermophiles

Methanogens

- ▶ Anaerobic (do not need oxygen to survive)
- ▶ Produce methane gas
- ▶ Marshes, sewage treatment plants, intestinal tracts of humans and some animals (cows).



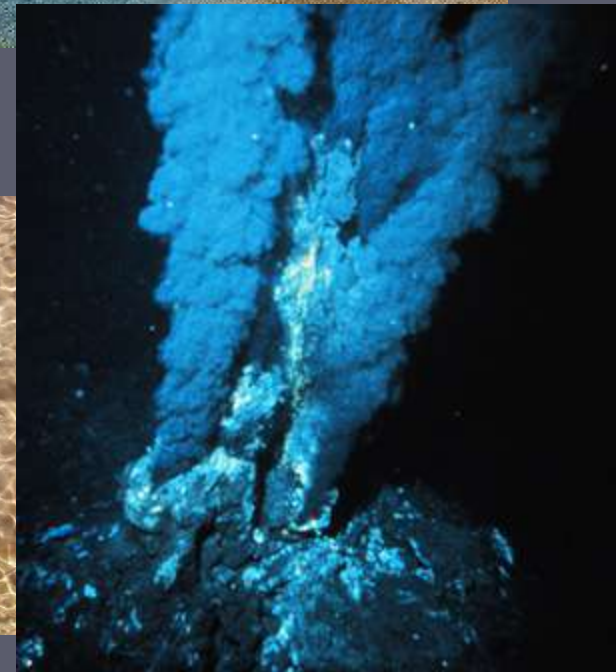
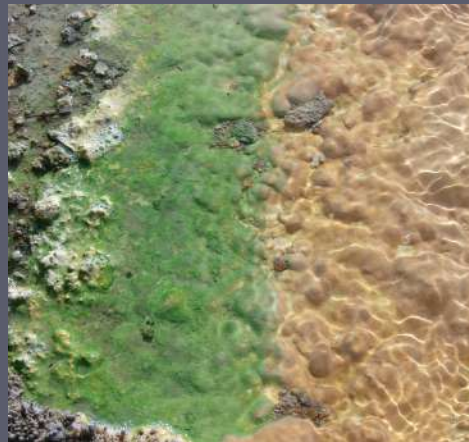
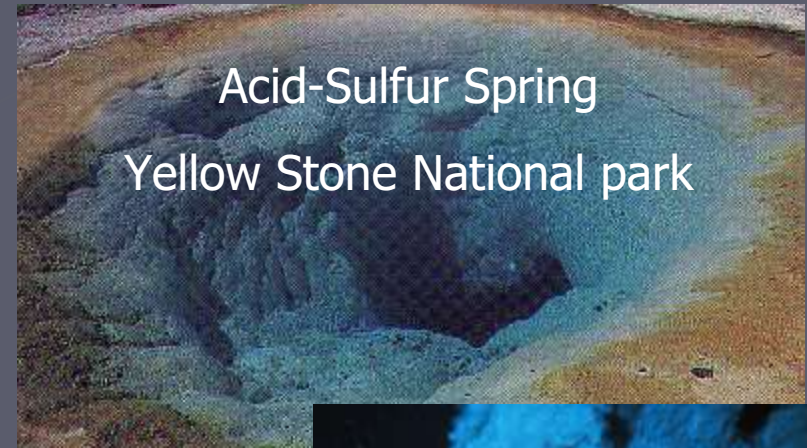
Halophiles

- ▶ Aerobic
- ▶ High saline/salty environments
 - usually 10 times the saline/salt content of normal ocean
 - Salt lakes (Great Salt Lake, Dead Sea), pools, sea water



Thermophiles

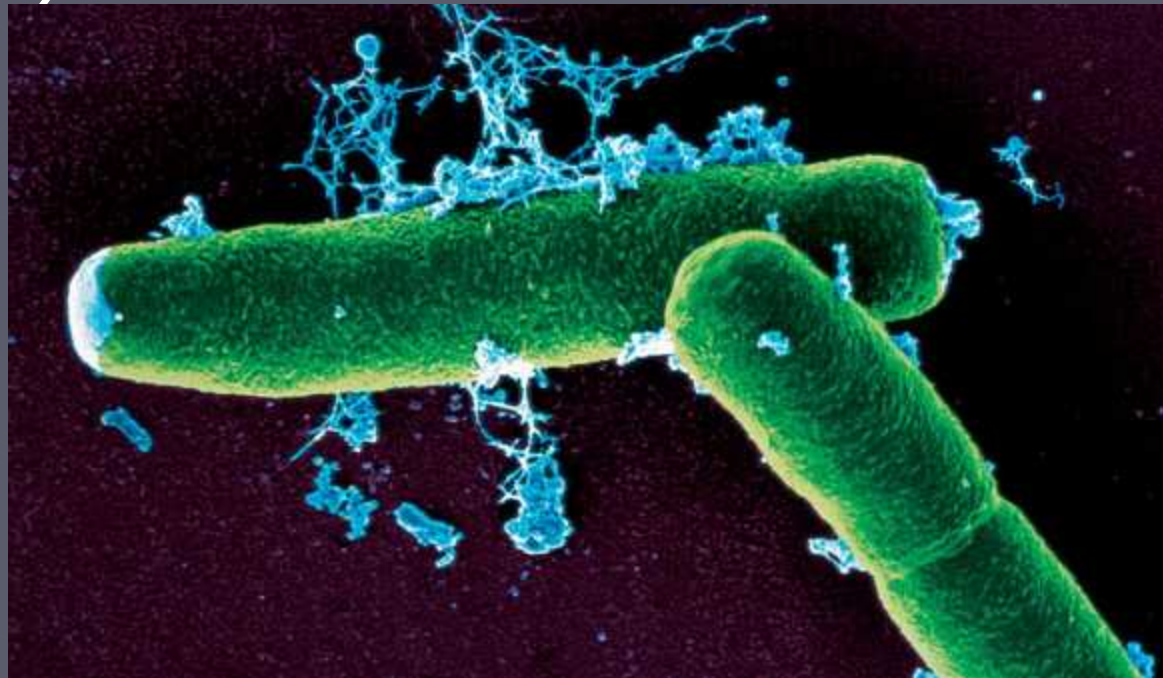
- ▶ Love heat
 - (can survive 230 degrees Fahrenheit)
- ▶ Use sulfur and iron for respiration
- ▶ Extremely acidic conditions pH below 2
- ▶ Hot Springs and Thermal Vents



Eubacteria

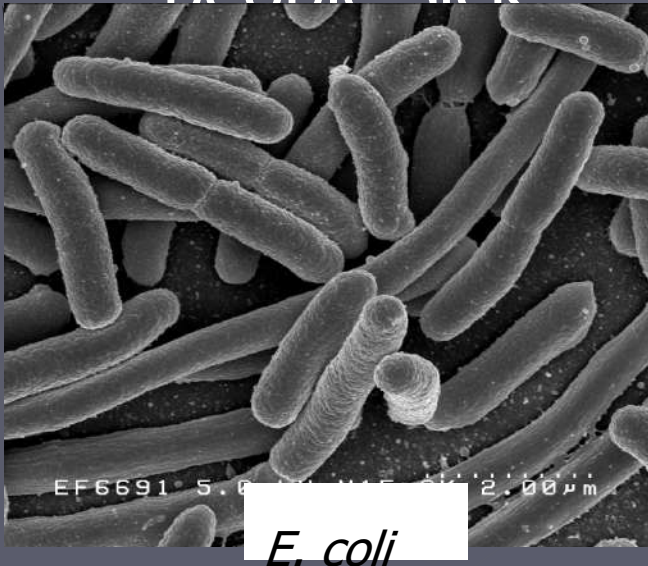
- ▶ “true bacteria”
- ▶ Usually what we refer to as “bacteria”
- ▶ *Usually* Neutral conditions

■ Ex:

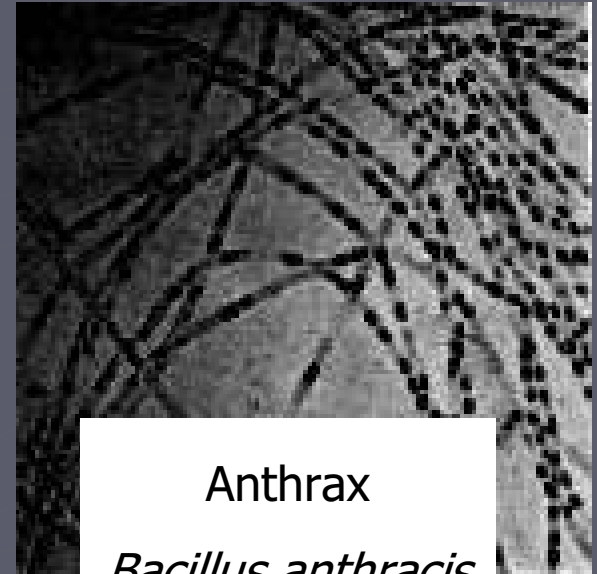


Eubacteria- The Bad?

- ▶ Can cause problems for human health
 - *Streptococci bacteria* cause strep throat
 - *E.coli* and Salmonella are sometimes found in undercooked meat and eggs and can make people sick



Salmonella



Eubacteria- The Good?

▶ Other bacteria are beneficial to human health:

- Fermentation:
 - ▶ Yogurt, grapes, milk, cheese
- Breakdown waste (wastewater treatment plants + septic systems)

▶ *Lactobacillus acidophilus* found to have health benefits. Naturally found in mouth, intestinal track, yogurt. Used in yogurt fermentation

