

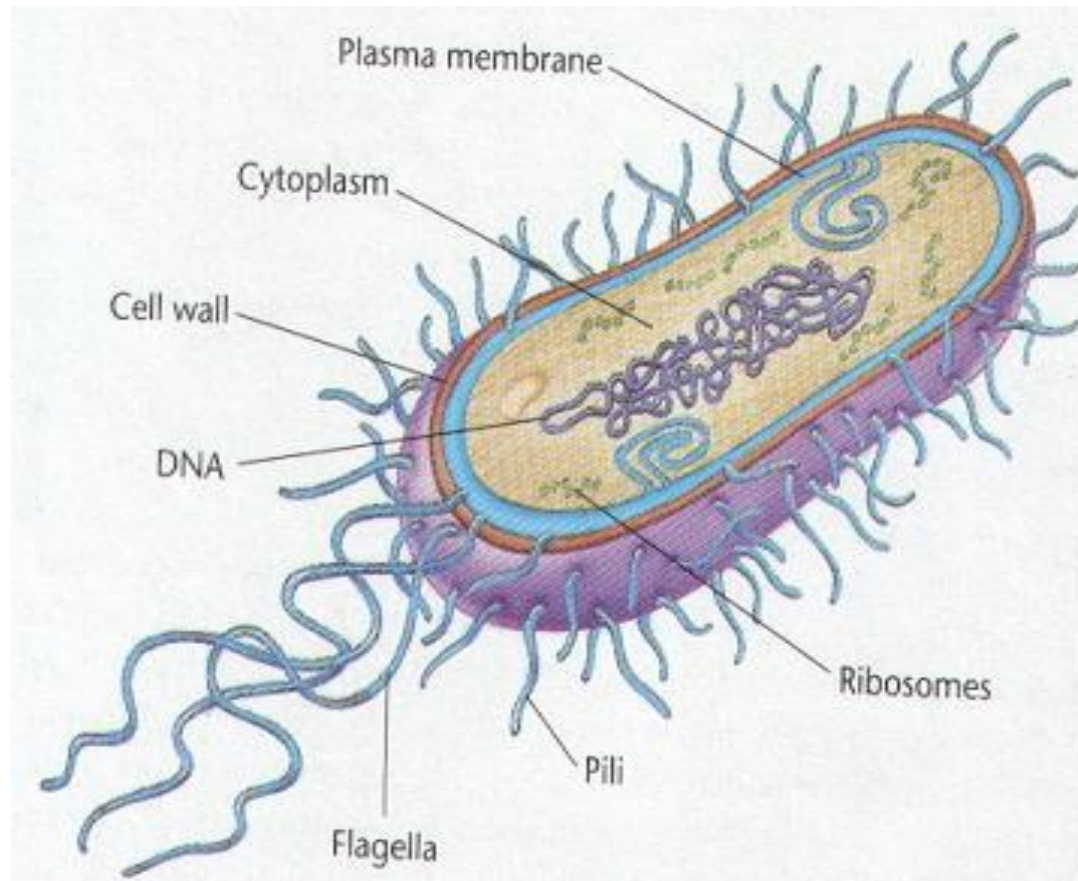
What are characteristics of Life??

1. Made of cells
2. Able to reproduce
3. Can move
4. Require food
5. Eliminate waste
6. Show signs of metabolism

Bacteria

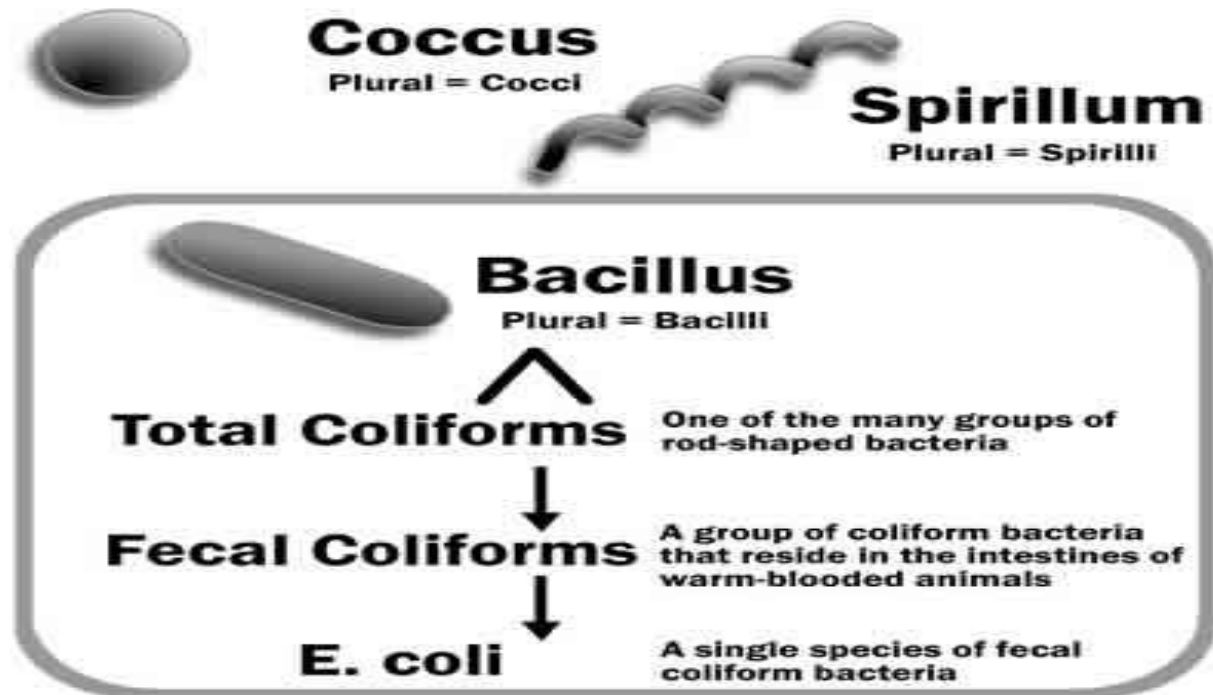
- Kingdom Archaeobacteria – simplest
- Kingdom Eubacteria – more complex
- Characteristics:
 - Unicellular/Colonial
 - Prokaryotic
 - Anaerobic(-O₂)/Aerobic (+O₂)
 - Some are *Pathogenic* – disease causing)
 - Some are very helpful
 - Ex. E.Coli in our intestines help us digest our food
 - Bacteria is used to make dairy products like yogurt and cheese

Bacteria



Shapes of Bacteria

- There are 3 shapes:
- 1. Coccus – spherical
- 2. Bacillus – rod shaped
- 3. Spirillum – spiral shaped

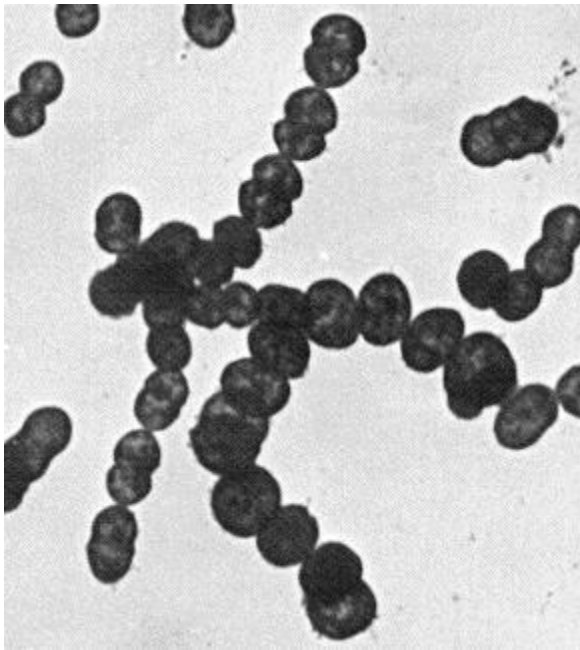


Bacterial colonies

- Diplo – 2 bacteria connected
- Strepto – a string or filament of bacteria
- Staphylo – a cluster of bacteria

- What would *Streptococcus* bacteria look like?

Streptococcus

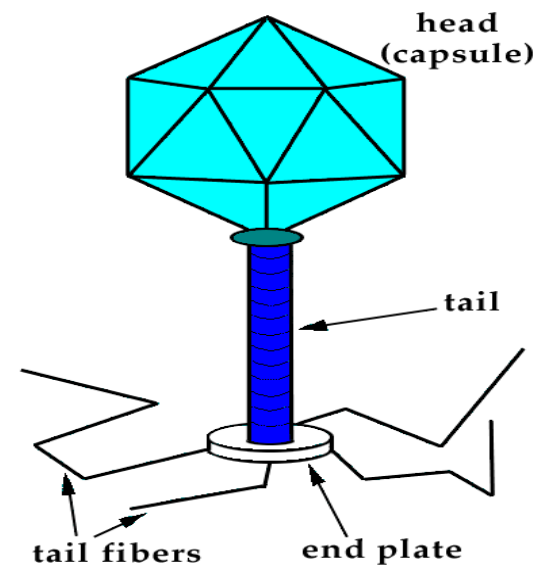


How do antibiotics work?

- Some interfere with the protein production in the bacteria
- Some break holes in the cell wall
- Bacteriologists test the cell wall of bacteria to determine what antibiotic will work best
- Gram positive stain purple
- Gram negative stain pink
- Antibiotic Resistance

Viruses – Living or non-living?

- Viruses show no signs of being alive
- They are a collection of **nucleic acids** surrounded by **protein (capsid)**.
- Viruses



T4 Virus – “*Bacteriophage*”

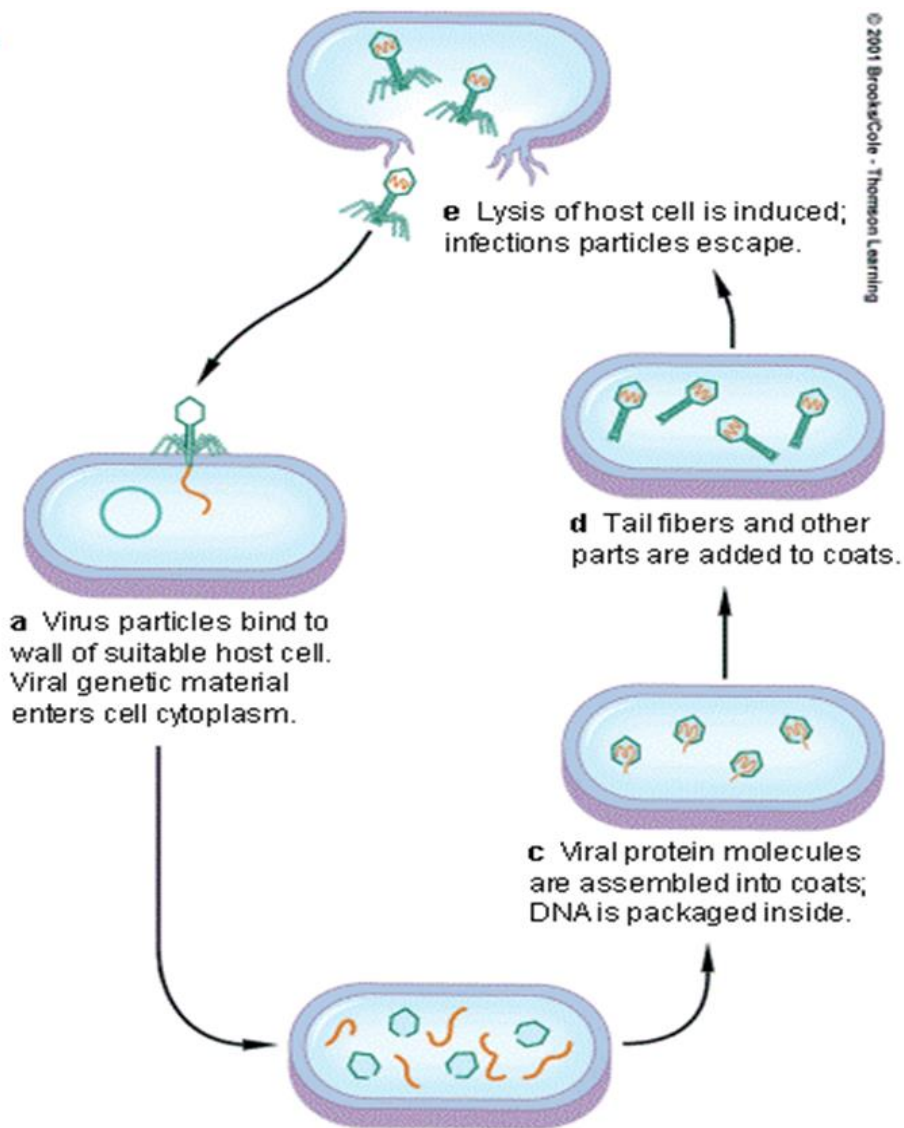
- T4 virus is a virus that attacks a bacteria cell
- The tail fibers of the virus must match the cell receptors of the bacteria cell.
- The virus injects it’s viral DNA into the host cell
- The viral DNA takes the cell hostage and demands that the host cell does 2 things:
 - 1. Replicate viral DNA
 - 2. Produce Viral protein
- The viral particles assemble in the host cell
- The host cell bursts (Lysis) and releases the new viruses
- [Viral Infection](#)
- [Lytic Virus](#)



Lytic Viruses

- Infect and Affect quickly
- Ex cold virus/flu virus, Herpes Virus
- See page 56 for the lytic cycle.

LYTIC PATHWAY



Lysogenic Virus

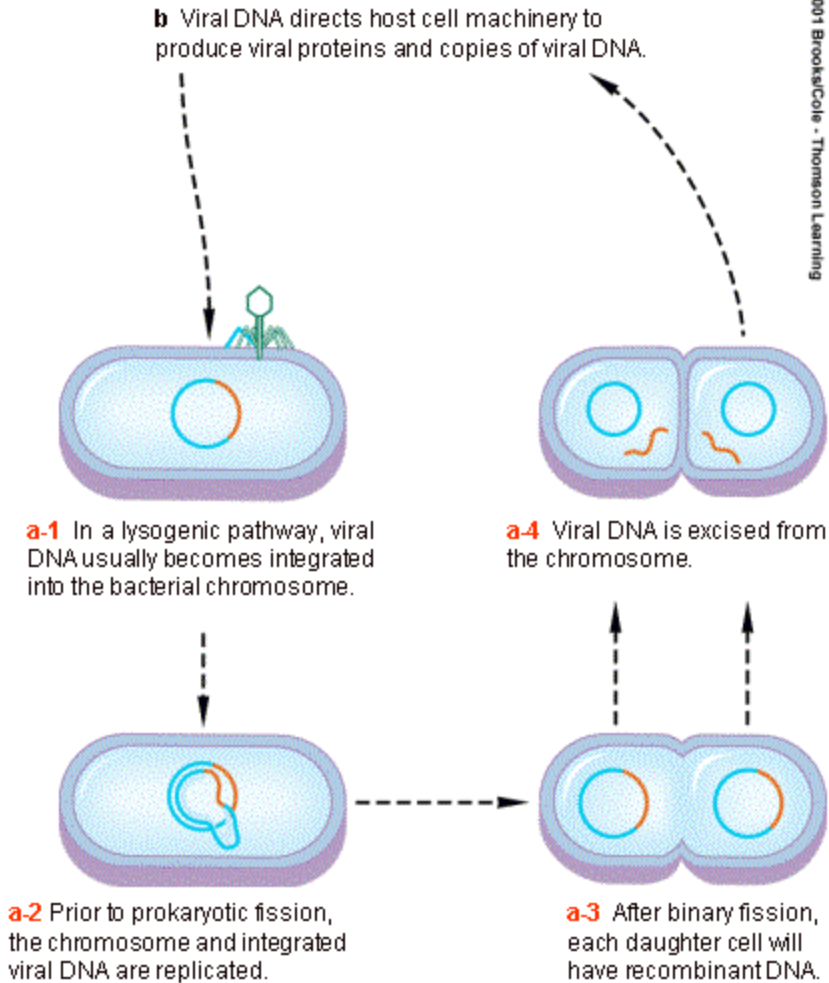
- Infects but doesn't Affect quickly.
- Viral DNA attaches to the host cell's DNA.
- When the infected cell divides, each daughter cell is infected as well.
- Eventually the virus kicks into the Lytic cycle and the host is destroyed.
- **Incubation Period** – time between the virus infecting and the host cell being affected
- Ex HIV – incubation period 6 mo. to 10yrs+

Lysogenic Virus

LYSOGENIC PATHWAY

Latent period
extends the
cycle

Viral DNA
becomes
part of host
chromosome
for a time



How small are viruses?

- How big are viruses?
- **Prions** – mutant strands of protein that can cause infections
 - Ex. – Mad cow disease
- **Viroids** – mutant chunks of DNA (RNA) that can cause infections
 - Ex. – some plant infections