

Ch 19 Bacteria and Viruses

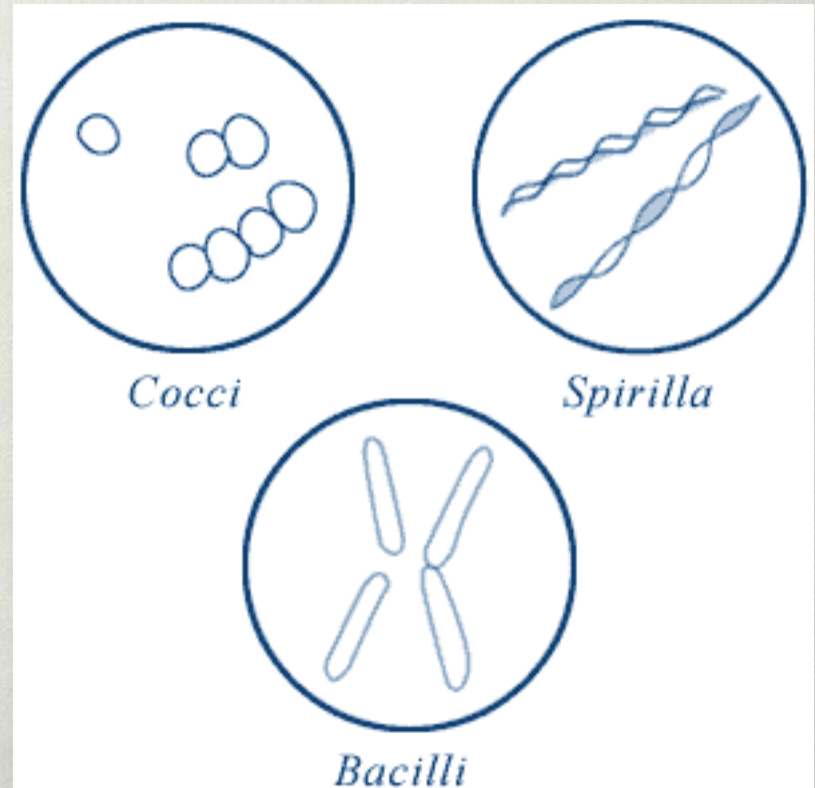
19-1 Bacteria

19-2 Viruses

19.3 Diseases caused by Bacteria and Viruses

19-1 Bacteria

- ❖ The smallest and most common microorganisms are Prokaryotes- unicellular organisms that lack a nucleus
- ❖ Draw the 3 types:
 - ❖ Cocci-
 - ❖ Bacilli-
 - ❖ Spirilla



19-1 Bacteria

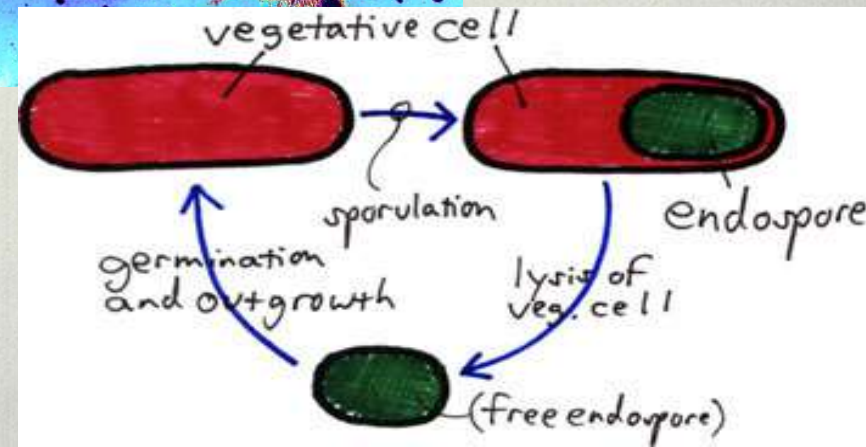
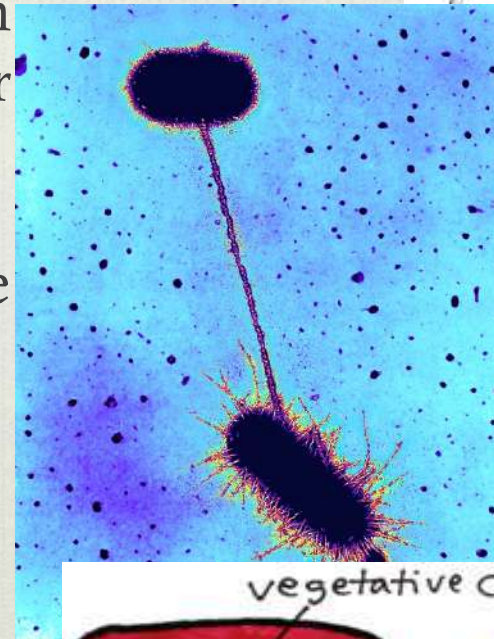
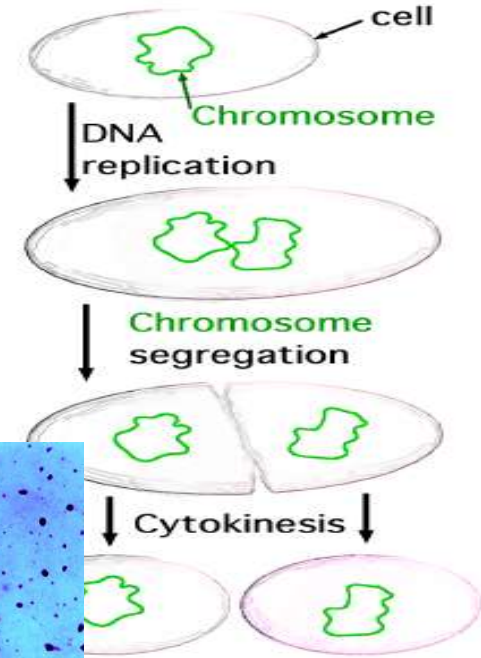
- ❖ Most heterotrophic prokaryotes must take in organic molecules for energy and carbon which are called Chemoheterotrophs
- ❖ Some bacteria can photosynthesize, but still have to take in organic compounds which are Photoheterotrophs
- ❖ Photoautotrophs use light energy to convert CO₂ and H₂O to carbon compounds and oxygen similar to plants
- ❖ Chemoautotrophs use carbon dioxide, but instead of sunlight they use chemical reaction involving ammonium, hydrogen sulfide, nitrites, sulfur, and iron

19-1 Bacteria

- ❖ Bacteria that require a constant flow of oxygen- Obligate aerobes
- ❖ Obligate anaerobes do not require oxygen and will die in its presence
- ❖ Bacteria that can survive with or without oxygen are considered Facilitated anaerobes



19-1 Bacteria



- ❖ When a bacteria doubles in size it replicates its DNA and goes through Binary fission to produce 2 daughter cells
- ❖ During Conjugation a hollow bridge forms between two bacterial cells, and genes move from one cell to another
- ❖ When growth conditions become unfavorable many bacteria produce Endospores, or thick enclosures

19-1 Bacteria

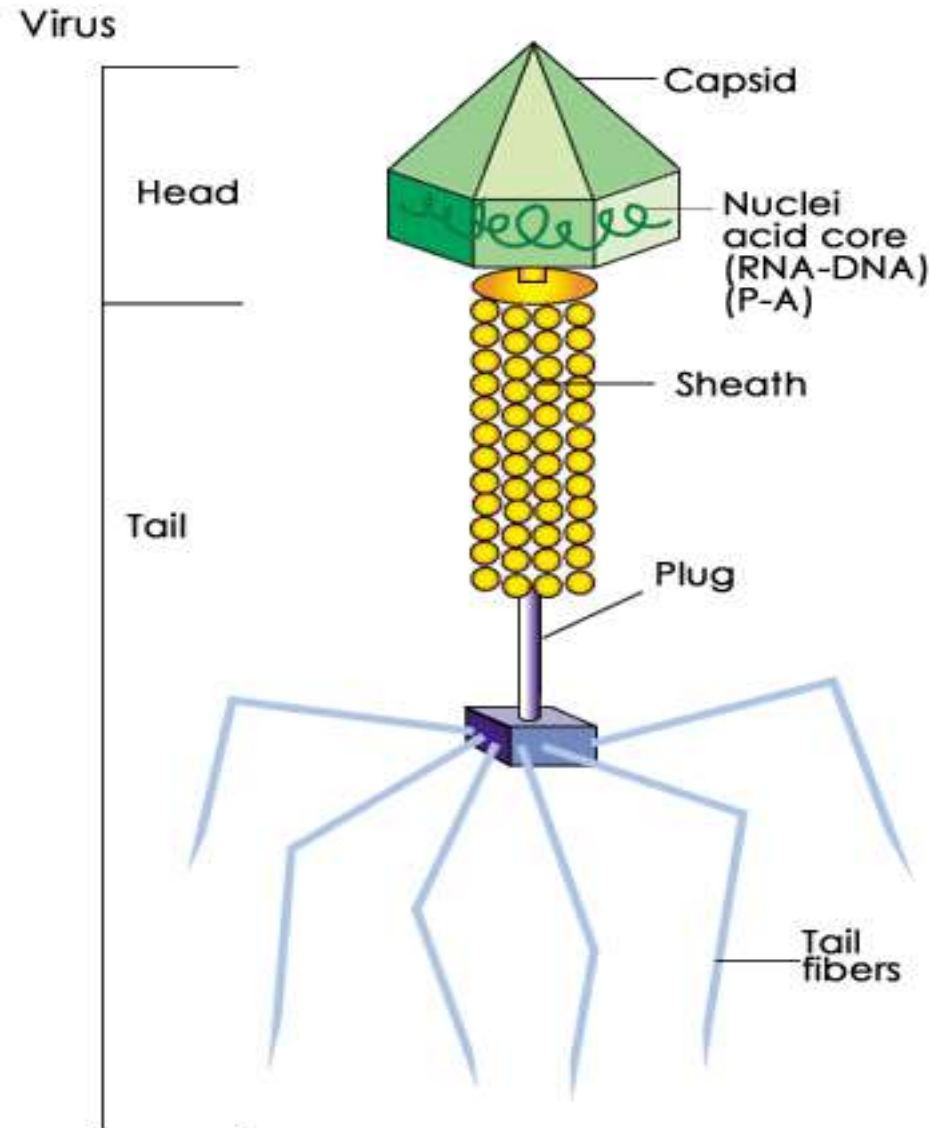
- ❖ Bacteria are vital to maintaining the living world
- ❖ Bacteria help in breaking down organic material back to its raw elements
 - ❖ Decomposing dead plants/animals and treating sewage waste
- ❖ The process of converting nitrogen gas (80% of our atmosphere) into a form plants can use is known as Nitrogen Fixation
- ❖ Human use-cleaning up oil spills, synthesizing drugs and in our stomach digesting our foods

❖ Pg 477 (1-5)

❖ Viruses tomorrow

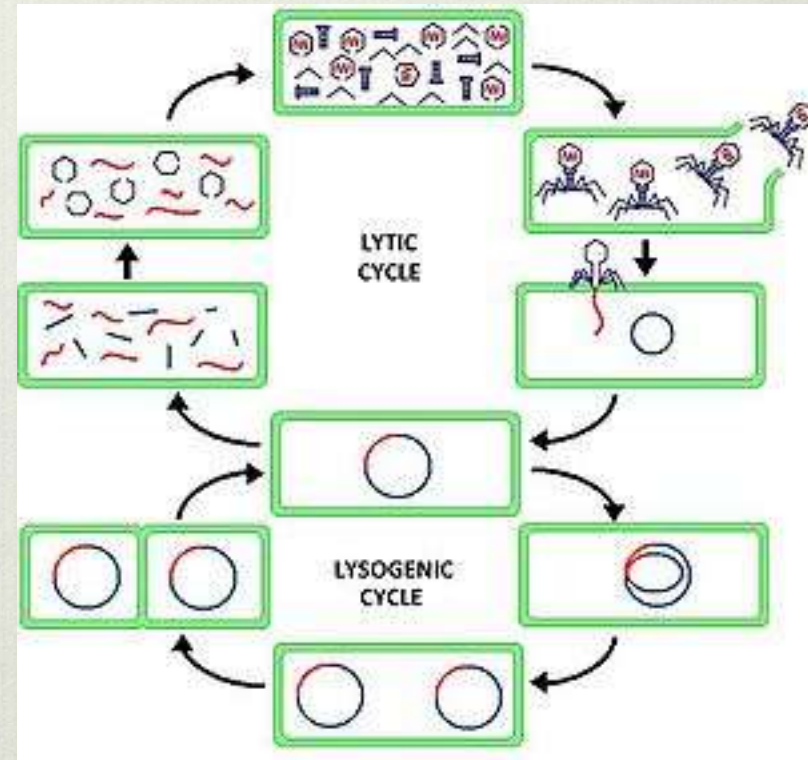
19-2 Viruses

- ❖ Viruses are particles of nucleic acid, protein and in some cases Lipids
- ❖ The protein coat that holds the DNA or RNA and allows a virus to enter a host is the Capsid
- ❖ Remember, Viruses that infect bacteria are **Bacteriophages**



19-2 Viruses

- ❖ Viruses have 2 life cycles that can occur when they enter a host
- ❖ Lytic infection- virus enters a cell, copies itself and causes the cell to burst
- ❖ In a Lysogenic infection, a virus integrates its DNA into the DNA of the host cell, and the viral genetic information replicates along with the host cell's DNA
 - ❖ The viral DNA is called a Prophage

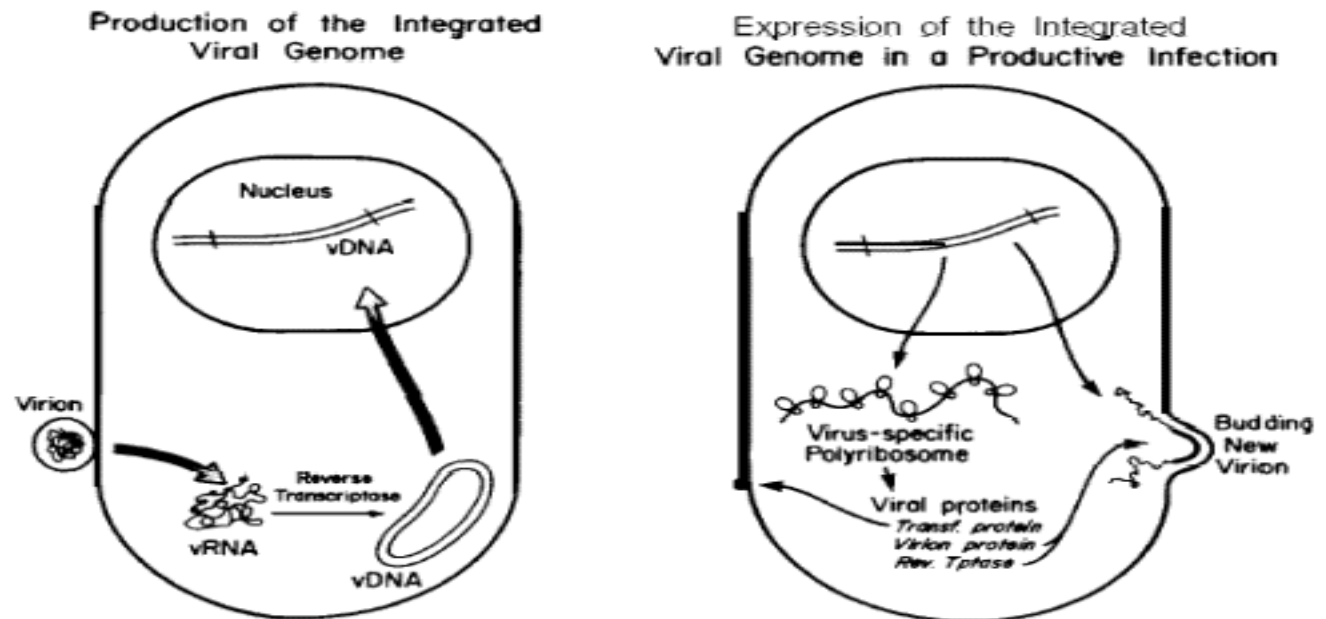


19-2 Viruses

Some viruses contain RNA as their genetic information and they are called Retroviruses

❖ They produce DNA that will turn into a prophage

❖ These are important because they can remain dormant until they choose to make the DNA



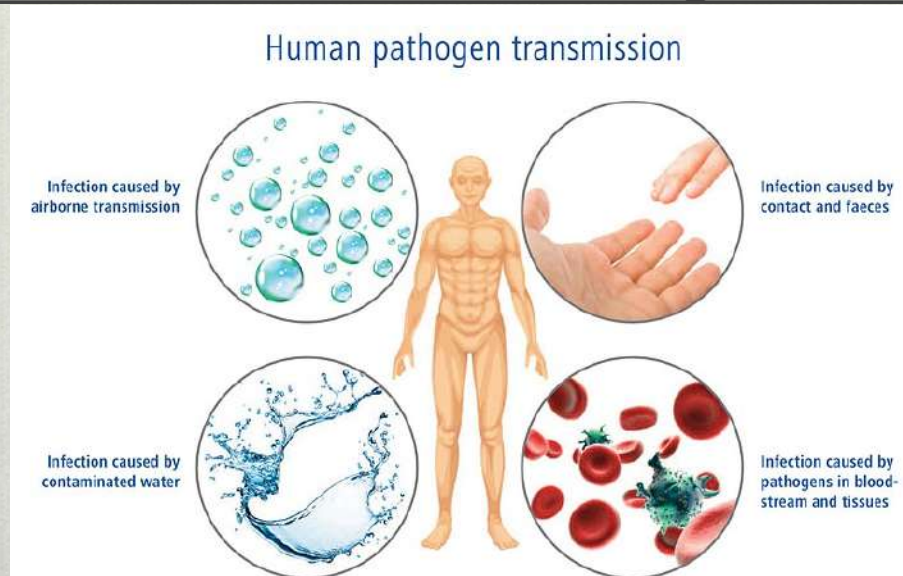
Read pg 484 Answer Research and decided #2 & #3

Copy Timeline in notebook on pg 486-487 no pictures

Complete Instagram assignment on google documents.
Worth 10 Pts. Have fun with it. Due thurs after school

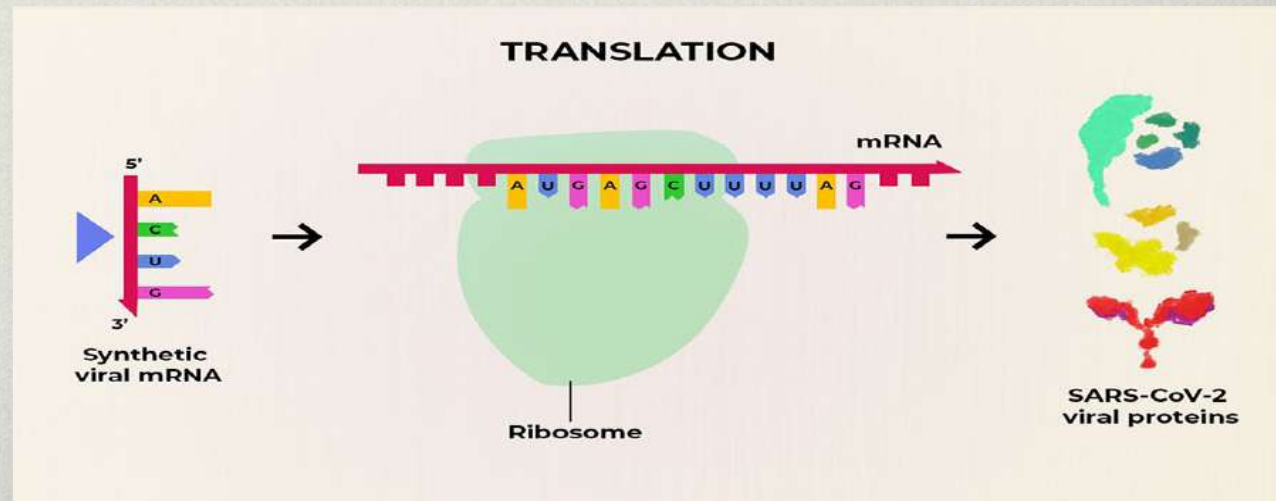
19-3 Diseases Caused by Bacteria and Viruses

- ❖ Any Bacteria or Virus that cause a disease are called Pathogens
- ❖ Bacteria cause disease in 2 ways
 - ❖ Infected tissue is broken down for food
 - ❖ Release toxins that travel through the host



19-3 Diseases Caused by Bacteria and Viruses

- ❖ A Vaccine is a preparation of weakened or killed pathogens (not the case for the COVID Vaccine)
- ❖ Antibiotics are compounds that block the growth and reproduction of bacteria.
- ❖ There are various methods used to control bacterial growth including sterilization(heat), disinfectants(soap) and food processing(fridge)



19-3 Diseases Caused by Bacteria and Viruses

- ❖ Like bacteria, viruses produce disease by disruptive the body's normal equilibrium. (cant be treated with Antibiotics)
- ❖ Virus like particles- RNA molecule with no surrounding capsid
 - ❖ Viroids-Infect plants- stunts growth in potatoes, tomatoes, apples, citrus
 - ❖ Prions- Protein infectious particles in animals. Strongest example is Mad Cow Disease.

- ❖ In notebook copy fig 19-13- chart on Bacterial and viral diseases.
- ❖ Pg 490 (1-6)
- ❖ Pg 493 (1-15)
- ❖ Kahoot in a bit
- ❖ Quiz on Monday