Virus & Bacteria Notes Name _____

VIRUSES AND BACTERIA ARE NOT THE SAME THING!

BACTERIA WERE DISCOVERED IN THE MID 1800'S AND BELONG TO THE MONERAN KINGDOM. WE ARE NOT SURE IF VIRUSES ARE ACTUALLY ALIVE!

VIRUS DISCOVERY: In the late 1800's a Dutch botanist, Matinus Beijerinck studied a disease in tobacco plants called tobacco mosaic disease. He ground up some infected tobacco leaves into a liquid and filtered the liquid through a process that would trap organisms as small as bacteria. If the disease is caused by bacteria he should be able to put the purified liquid onto healthy tobacco plants without any effect. However, when he did this the plants developed the tobacco mosaic disease. From this he could conclude: AN "AGENT" SMALLER THAN A BACTERIUM IS CAUSING THE DISEASE. HE CALLED THIS "AGENT" A "VIRUS" – MEANING POISONOUS FLUID.

Who in 1935 isolated and crystallized the first virus?

What was virus did this scientist discover?

What did this virus cause?

IS A VIRUS ALIVE?
Compare a virus to a living cell:

Traits of Life	Virus	Cell
Growth		
Homeostasis		
Metabolism		
Mutation		
Nucleic Acid		
Reproduction	Within a live cell only	Cell division (mitosis/meiosis)

Size of virus: 15-200 nm = $1x10^{-6}$mm

What are the 2 parts of a virus?

Name 4 examples of viruses, what they cause and their shape

VIRUS	DISEASE	SHAPE
1.		
2.		
3.		
4.		

- **Which of these two parts determine what cell the virus attacks (Lock & Key)?**

Lytic Cycle – The active cycle		Lysogenic Cycle – The inactive cycle	
1.	The virus attaches to the host cell	1.	The virus attaches to the host cell
2.	The virus enters the host cell	2.	The virus enters the host cell
3.	The host cell makes new viral DNA/RNA	3.	The host cell makes new viral DNA/RNA
4.	The host cell builds new viruses	4.	The host cell builds new viruses
5.	New viruses are released	------	No Release – Virus remains dormant

BACTERIOPHAGE: A virus that infects a bacterium.
What are two disease causing agents even smaller and simpler than a virus?

Who is Edward Jenner?

Virus & Bacteria Notes Name _____

FACT: YOU CAN FIT ABOUT 10,000 AVERAGE SIZE BACTERIA ACROSS A DIME!

Kingdom	Unicellular or Multicellular	Heterotroph or Autotroph	Prokaryote or Eukaryote	Cell Wall or No Cell Wall
Archaebacteria				
Eubacteria				

Examples and description

Archaebacteria	Eubacteria
1. *Methanococcus* – Produce methane gas	1. *Clostridium botulism* – paralyzes nerves
2.	2.
3.	3.
4.	4.

The following are the 3 major categories (shapes) of bacteria. What shape does each represent?

1. **Cocci –**
2. **Bacilli –**
3. **Spirilla –**

A laboratory technique used to identify some bacteria is know as "gram staining". In some bacteria the stain will be absorbed by the cell wall of the bacteria but not in other bacteria. What color will each of the following turn?

Gram positive:

Gram negative:

What is an endospore?

What are 3 significant environmental qualities that promote bacterial growth?

NUTRITION:

1. **PARASITIC – Feed off a host**
2. **MUTUALISM – Live with other bacteria**
3. **CHEMOSYNTHESIS – Produce their own chemical nutrition**

RESPIRATION:

1. **AEROBIC – Live in the presence of oxygen**
   a. **Example:**
   b. **Example:**
2. **OBLIGATE ANAEROBE – Must live without oxygen**
   a. **Example:**
3. **FACULTATIVE ANAEROBE – Live with or without oxygen**
   a. **Example:**

REPRODUCTION:

BINARY FISSION – The bacterium simply split into two new bacteria

GENETIC RECOMBINATION:

1. **TRANSDUCTION – A <u>VIRUS</u> takes DNA from one bacterium to another.**
2. **TRANSFORMATION – A <u>LIVE</u> bacterium picking up the DNA of a <u>DEAD</u> bacterium.**
3. **CONJUGATION – Direct transfer of DNA from a <u>LIVE</u> bacterium to another <u>LIVE</u> bacterium.**

List some bacteria examples or substances produced by bacteria that are good & harmful:

Good Bacteria				
Harmful Bacteria				

Who is Louis Pasteur?