

# Viruses

# Table time

- Today we are going to get in groups and share out about our own virus we had to research.
- Why?
  - We want to see what commonalities ALL viruses must share.

# Task 1

- While at your table please fill out the front side of your graphic organizer with...
  - The name of the virus
  - DNA or RNA?
  - How does it spread?
  - 1 interesting or fun fact

Your teacher will describe how we are rotating but this will be done for all group mates.

# Probe 1

- Based on your research and discussions today make a claim:
- Do you think a virus is living? Use 3 pieces of evidence.

# What is a virus NOT?

**Doesn't belong to any kingdom**

- **-It's not a plant or an animal.**

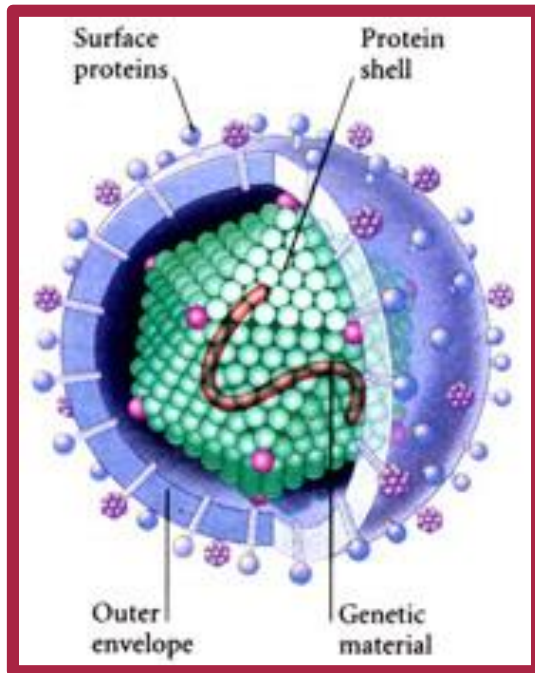
**-It's not a fungi, protist, or bacteria.**

**SO...WHAT IS A VIRUS?**

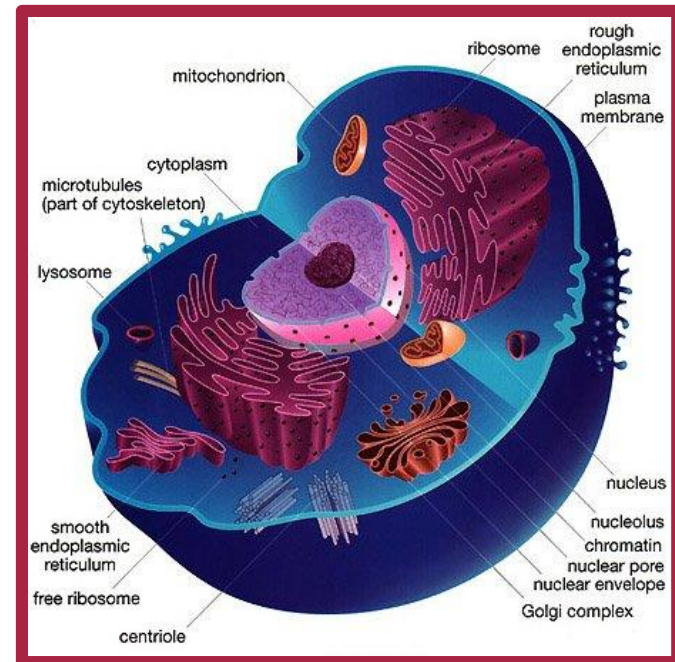
A virus is an infectious agent made up of nucleic acid (DNA or RNA) wrapped in a protein coat called a capsid.

Viruses have no nucleus, no organelles, no cytoplasm or cell membrane—Non-cellular

This is why it does NOT belong to any kingdom.



VS





Viruses have either DNA or RNA but NOT both.

Viruses with RNA that transcribe into DNA are called retroviruses.

Viruses are parasites—an organism that depends entirely upon another living organism (a host) for its existence in such a way that it harms that organism.

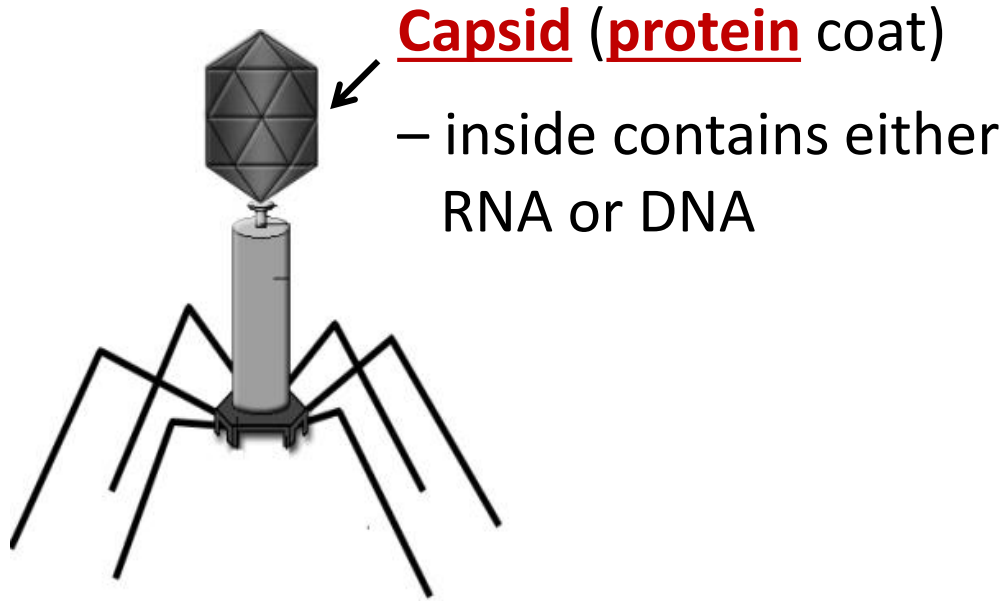


**HIV Infected Cell**

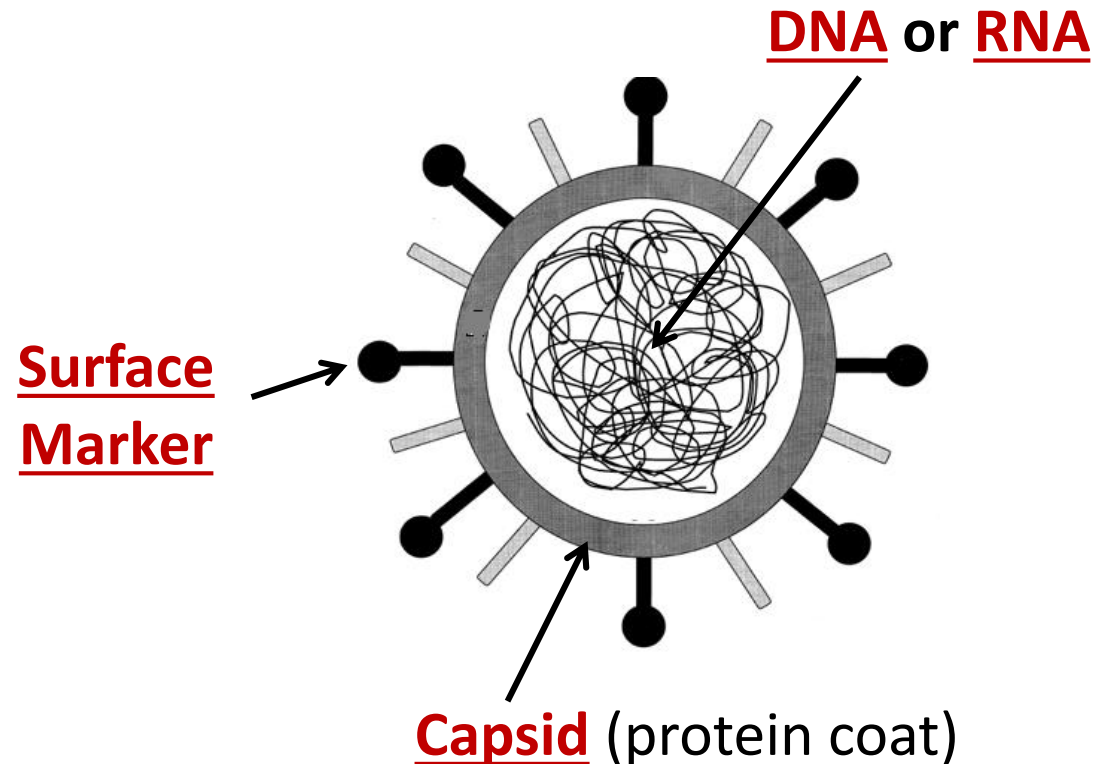
(This is the reason why HIV is so incurable.)

A flea is a parasite to a dog and is harmful to the dog.

# 1. Bacteriophage—viruses that infect bacteria



## 2. Flu (influenza), HIV





# ***VIRUS MODEL***

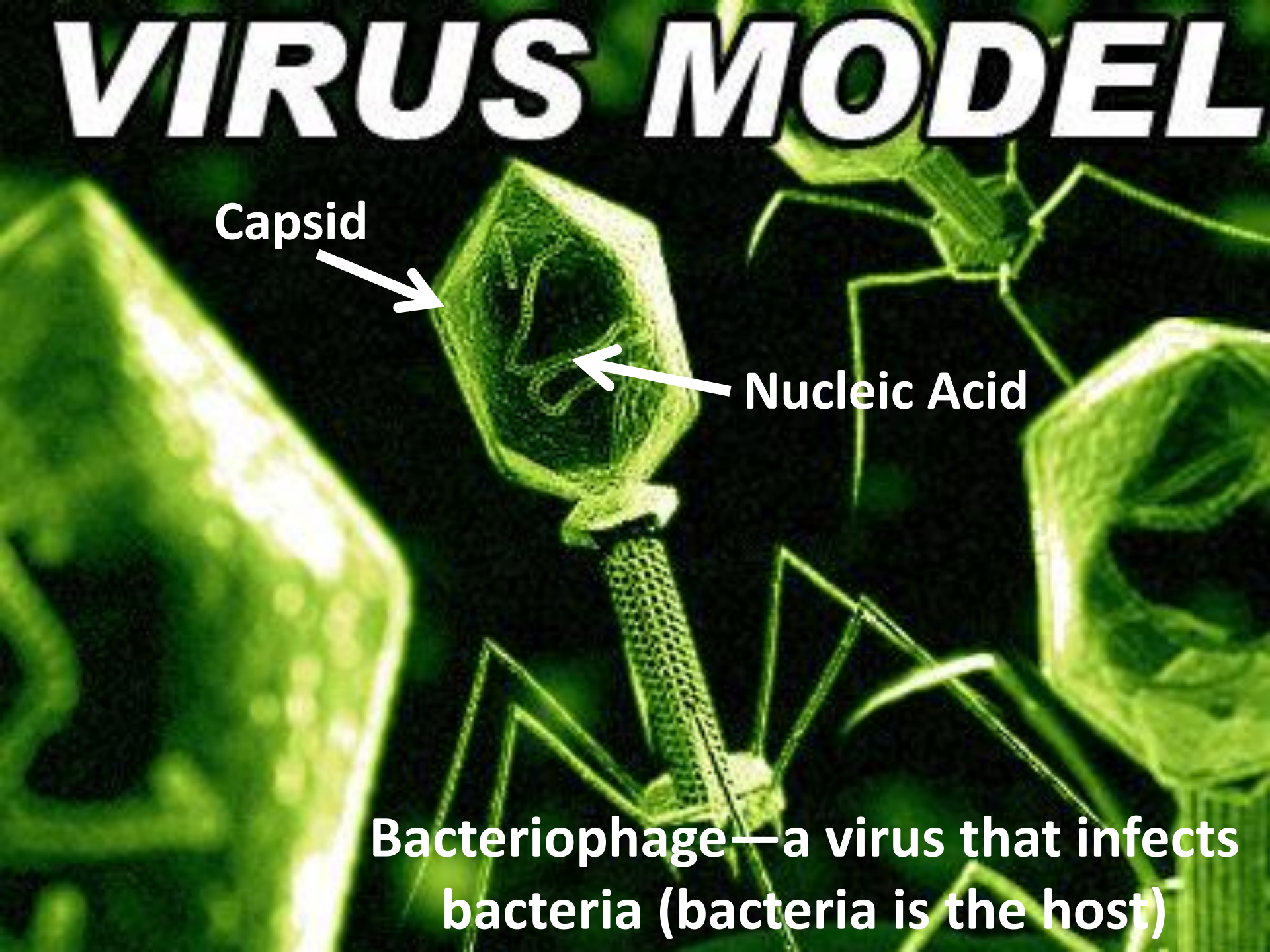
**Capsid**



**Nucleic Acid**



**Bacteriophage—a virus that infects  
bacteria (bacteria is the host)**

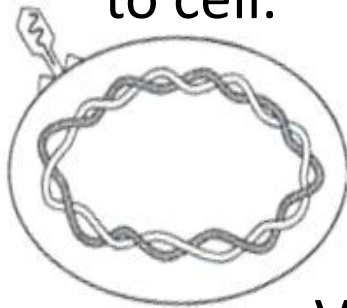


D. Replication is how a virus spreads.

A virus **CANNOT** reproduce by itself—it must invade a host cell and take over the cell activities, eventually causing destruction of the cell and killing it. (The virus enters a cell, makes copies of itself and causes the cell to burst releasing more viruses.)

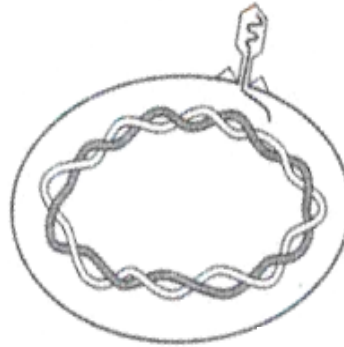
Virus attaches to cell.

Step 1



DNA/RNA injected into cell.

Step 2



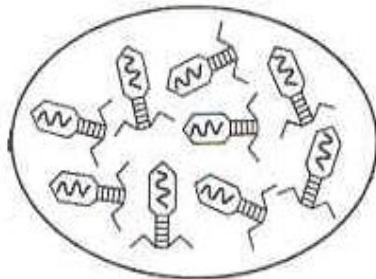
DNA/RNA is copied.

Step 3



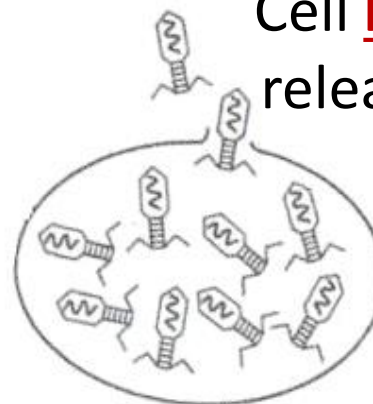
Virus copies itself.

Step 4



Cell bursts (lyses) and releases new viruses.

Step 5



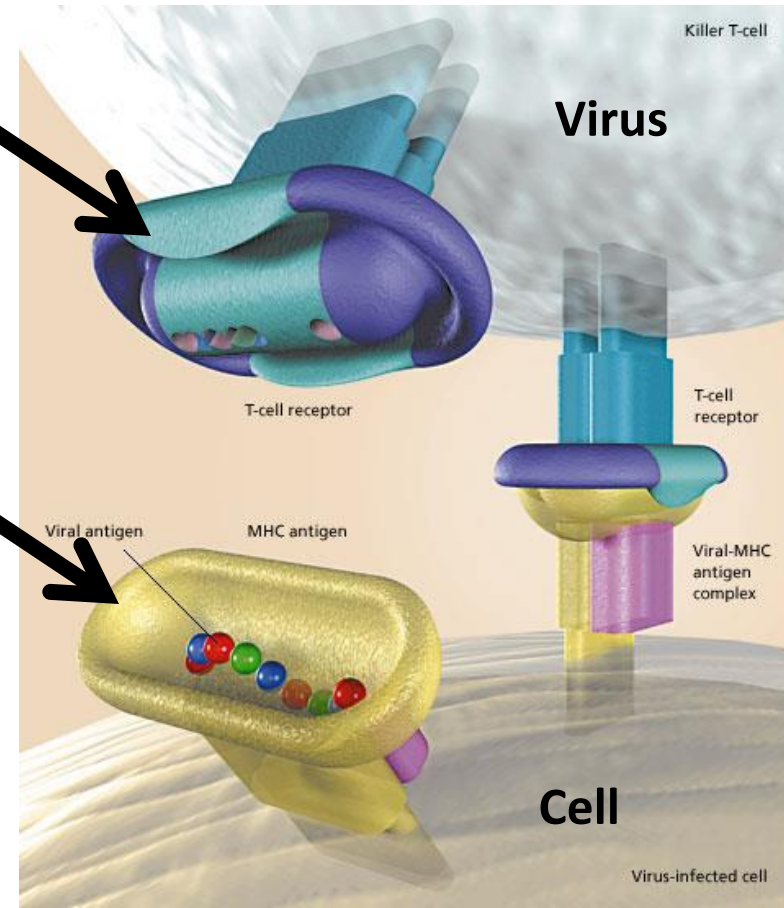
# Certain viruses can only attack certain cell types. They are said to be specific.

Example: The rabies virus only attacks brain or nervous cells.

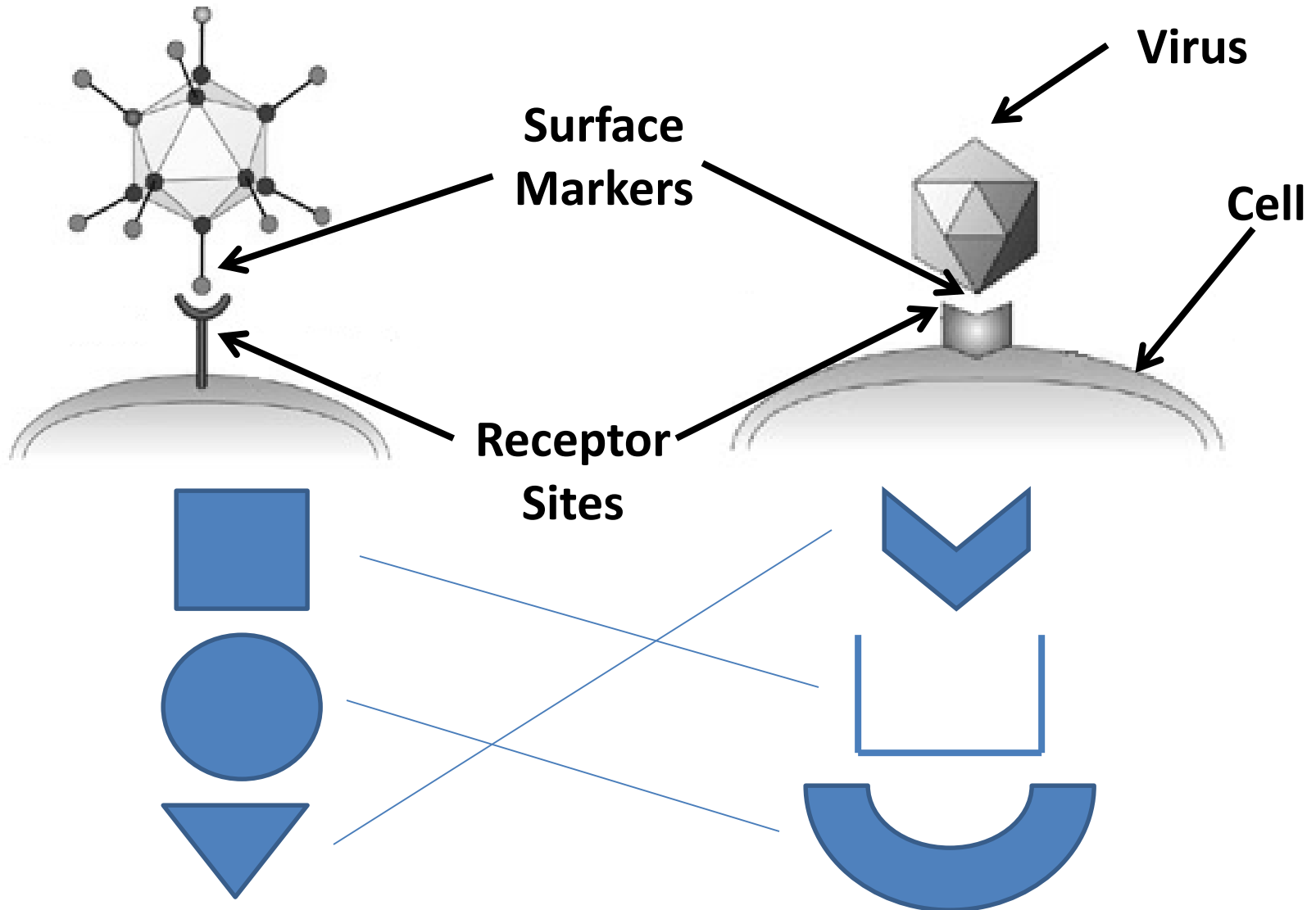
Surface Markers

Receptor Sites

It's like the pieces of a puzzle. The ends have to match up so only certain pieces fit.



A virus recognizes cells it can infect by matching its surface marker with a receptor site on a cell.





# Importance:

\*Harmful

Causes disease—pathogenic

Disease producing agent—pathogen

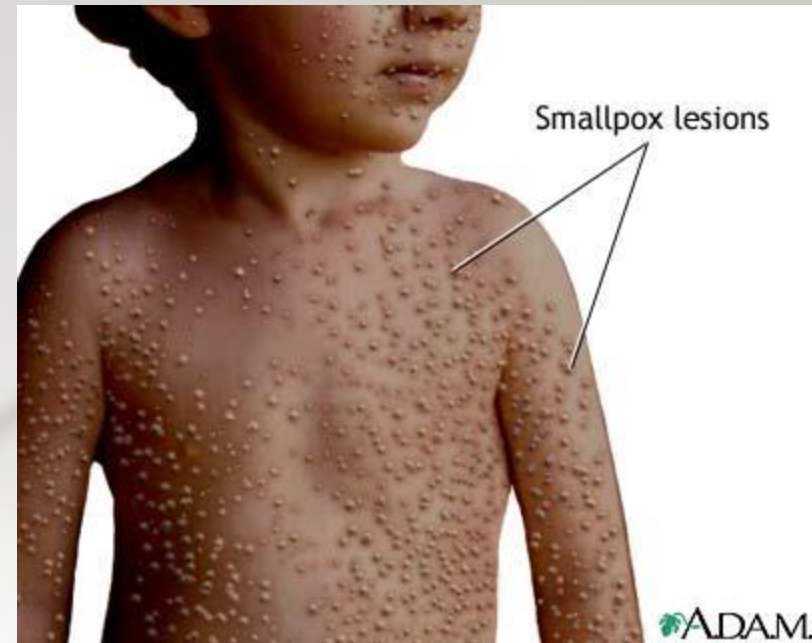
Human Diseases: Warts, common cold, Influenza (flu), Smallpox, Ebola, Herpes, AIDS, Chicken pox, Rabies

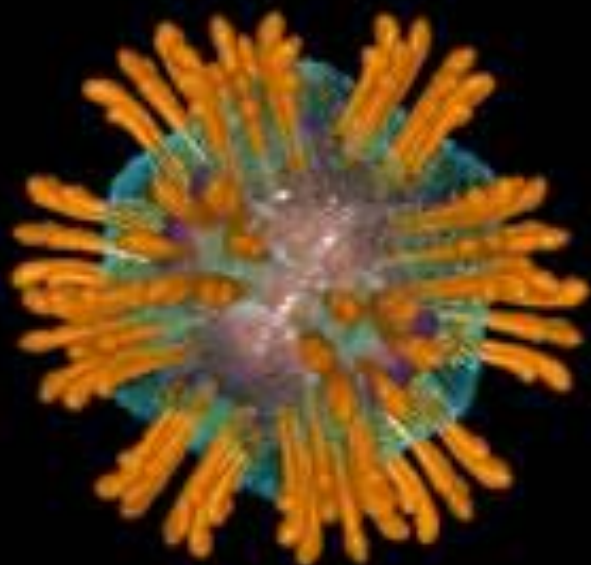
Viruses disrupt the body's normal equilibrium/balance

Viruses can be prevented with vaccines, but NOT treated with antibiotics. (antibiotics treat bacteria)

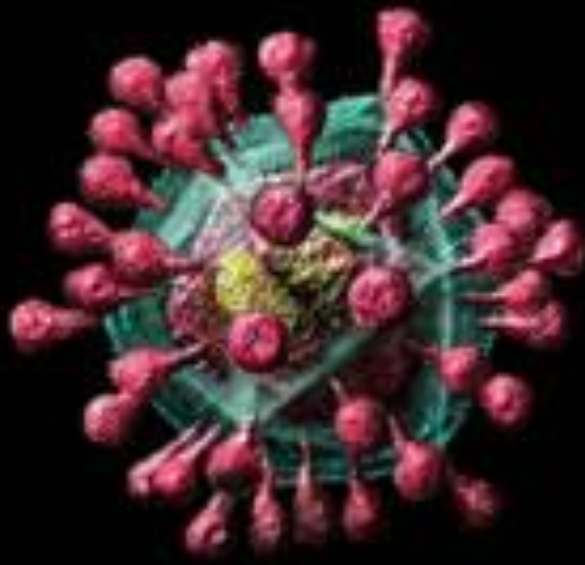
# Beneficial:

Genetic Engineering—harmless virus carries good genes into cells.

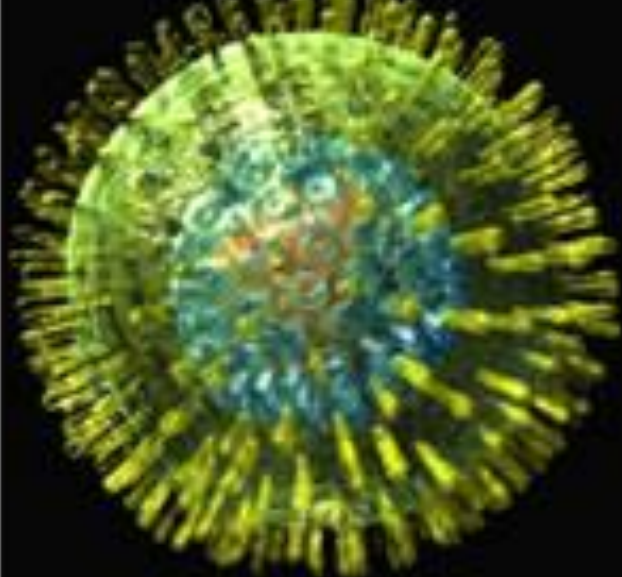




**Hepatitis C virus**



**Coronavirus**



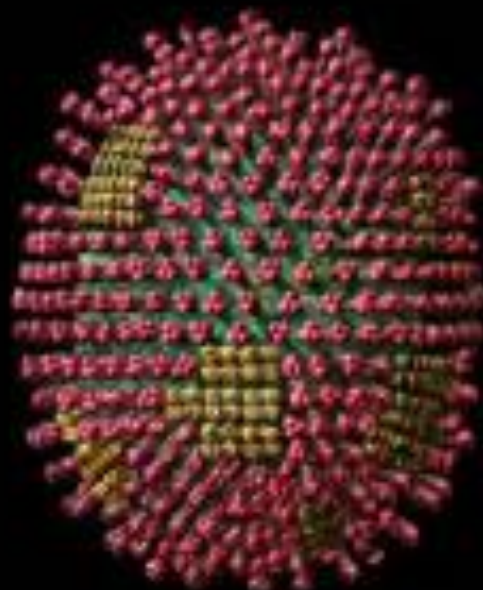
**Herpes virus**



**Bird flu virus**



**Smallpox virus**



**Influenza virus**



# Virus

# Living Cell

	<b>Virus</b>	<b>Living Cell</b>
<b><i>Structure</i></b>	RNA or DNA core (center), protein coat (capsid)	Cell membrane, cytoplasm, genetic material, organelles
<b><i>Reproduction</i></b>	Copies itself only inside host cell--REPLICATION	Asexual or Sexual
<b><i>Genetic Material</i></b>	DNA <u>or</u> RNA	DNA <u>and</u> RNA
<b><i>Growth and Development</i></b>	NO	YES—Multicellular Organisms
<b><i>Obtain and Use Energy</i></b>	NO	YES
<b><i>Response to Environment</i></b>	NO	YES
<b><i>Change over time</i></b>	Yes	YES



How many characteristics  
of life do viruses possess?

**TWO**

\*Genetic Material  
Change over Time

**Are viruses living?**

**NO**

# Probe # 2

- What commonalities do all virus share?

# Probe # 3

- Use evidence to describe why a virus is NON LIVING!
- This should be a paragraph.