

6 KINGDOMS OF LIFE

- Archaeobacteria
- Eubacteria
- Protista (Protists)
- Fungi
- Plantae (Plants)
- Animalia (Animals)

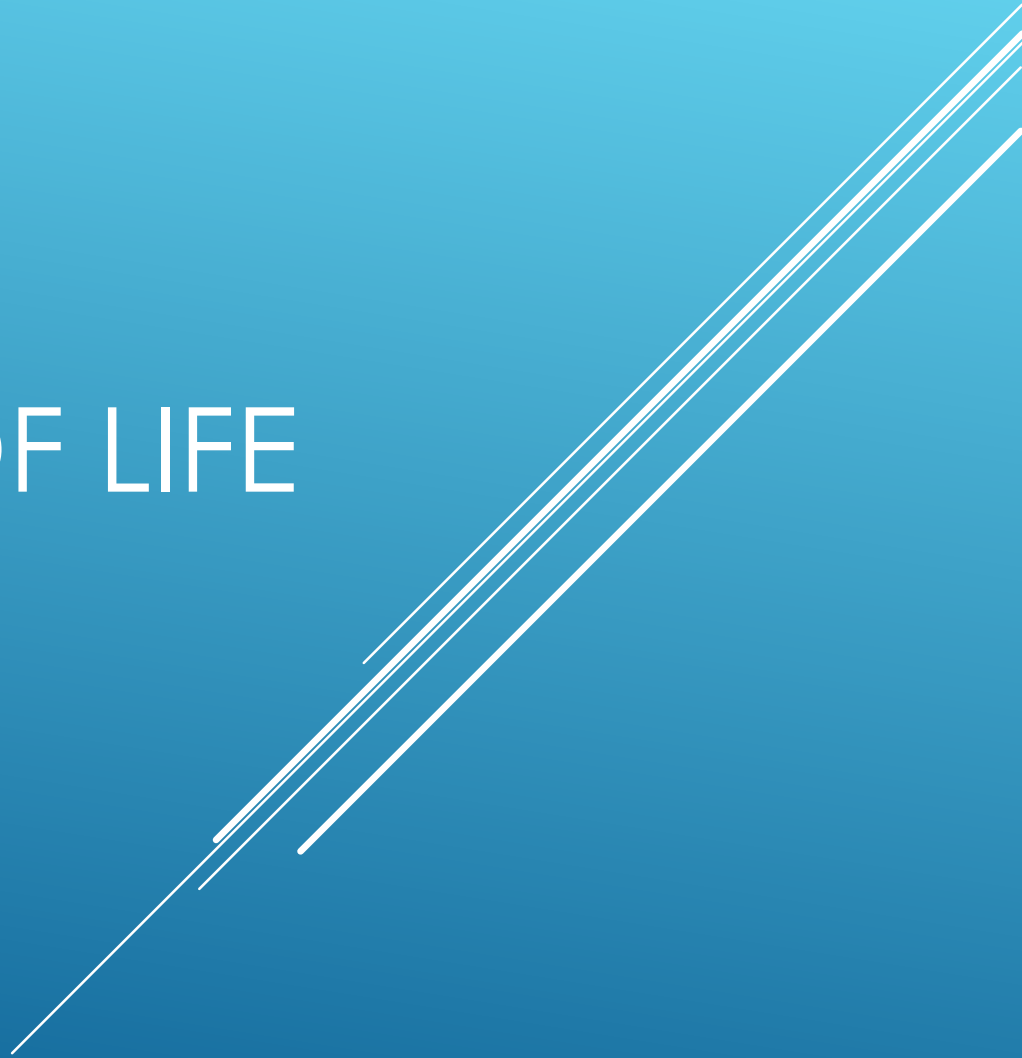
Viruses aren't a kingdom because they are considered non-living

KINGDOMS OF LIFE

A decorative graphic consisting of several parallel white lines of varying lengths, slanted diagonally from the bottom-left towards the top-right, located in the lower right quadrant of the image.

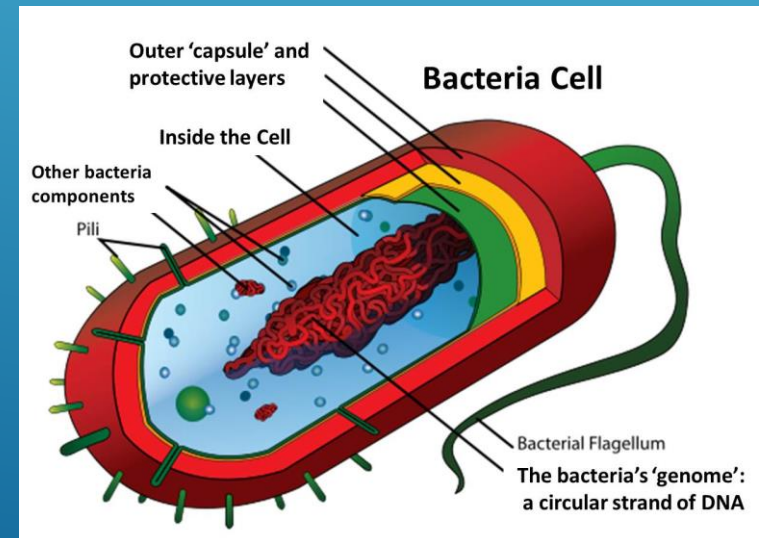
KINGDOMS OF LIFE

Bacteria



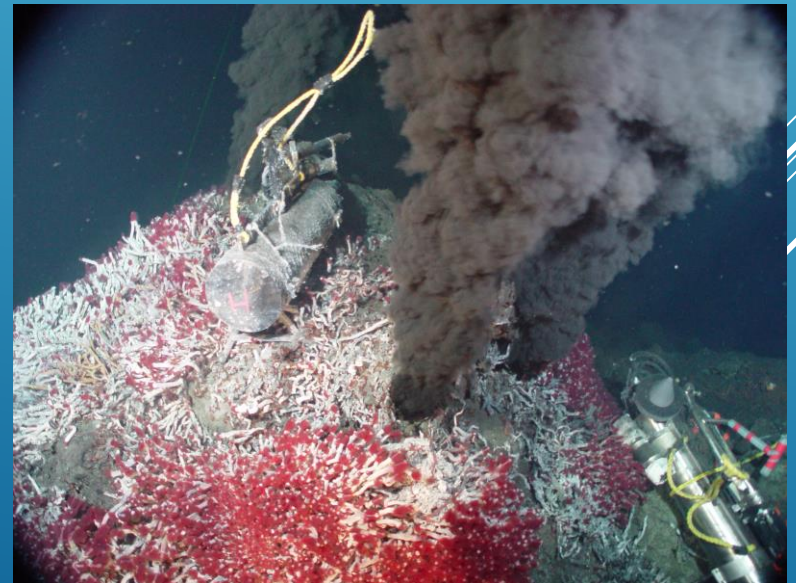
BACTERIA

- ▶ Single-celled (uni-cellular)
 - ▶ Prokaryotic
- ▶ Lack cell structure
- ▶ No nuclear membrane
- ▶ Reproduction: asexual
- ▶ Locomotion: flagella
- ▶ Both heterotrophic and autotrophic



ARCHAEBACTERIA

- ▶ Found in extreme environments:
 - ▶ Very hot
 - ▶ No oxygen
 - ▶ Highly acidic
- ▶ Examples of environments:
 - ▶ Hot springs of Yellowstone
 - ▶ Deep ocean thermal vents
 - ▶ Brine marine environments



EUBACTERIA

- ▶ Live everywhere: fresh water, salt water, land, and within the human body
- ▶ Have a cell wall
- ▶ Examples:
 - ▶ *E. coli* – lives in human intestines
 - ▶ *Streptococcus pneumoniae* – causes strep throat
 - ▶ *Salmonella enterica* – food poisoning
 - ▶ *Mycobacterium tuberculosis* – causes tuberculosis



CYANOBACTERIA

- ▶ Photosynthetic
- ▶ Often called “blue-green algae”
 - ▶ THEY ARE NOT ALGAE!!!
- ▶ Live in water
- ▶ Produce their own food



Cyanobacteria

40 μm



VIRUSES

Living or non-living?

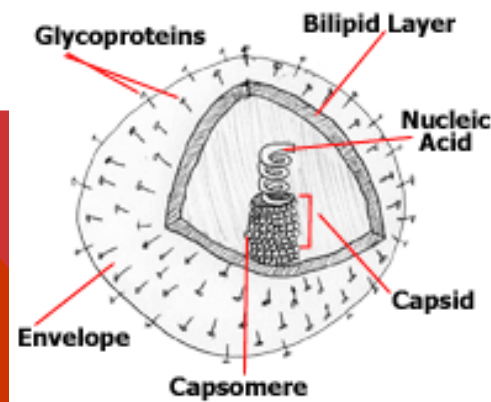
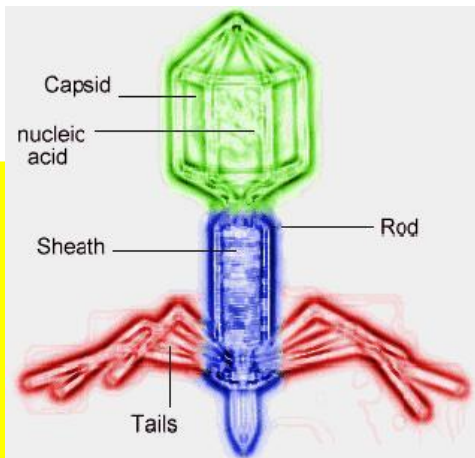


VIRUSES

VIRUS STRUCTURE

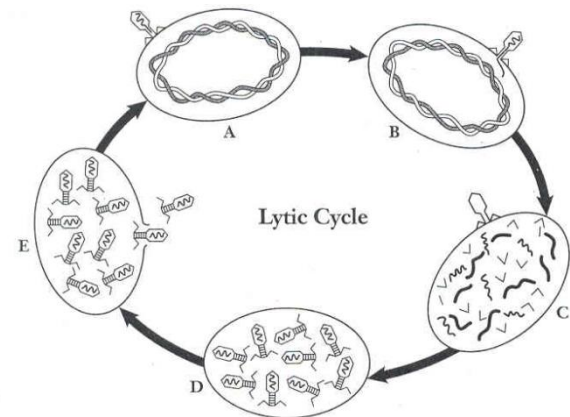
A virus is not made of cells

It is **nucleic acid** (DNA or RNA) surrounded by **protein coat** (Capsid)



VIRAL REPRODUCTION

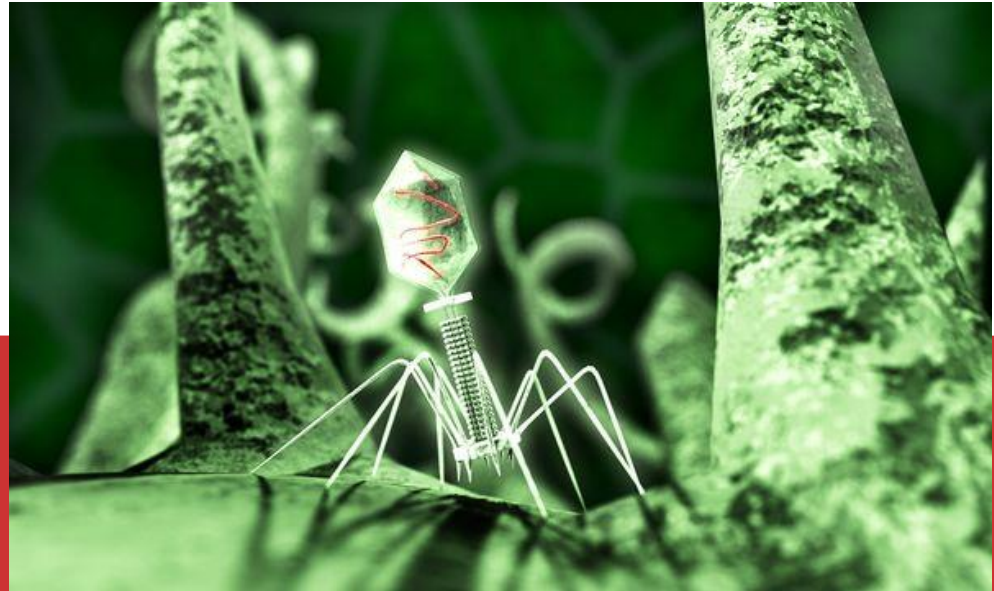
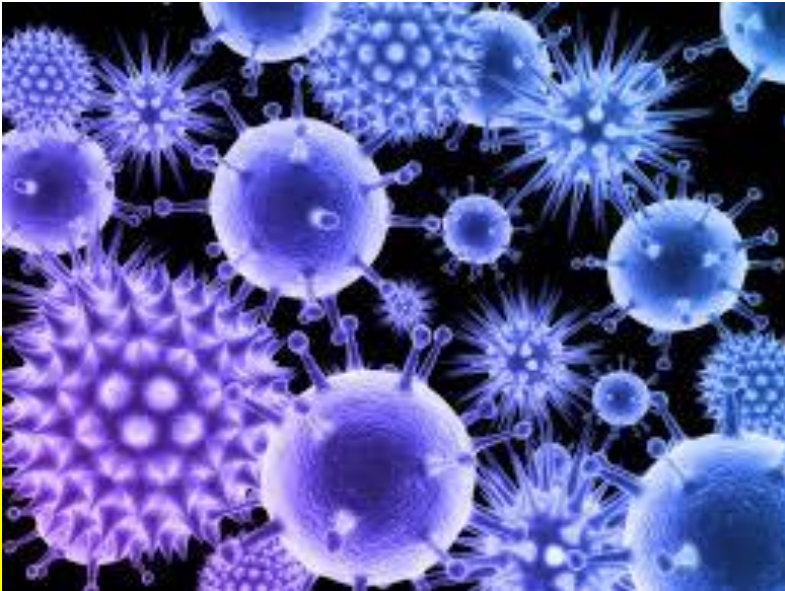
- Virus can't reproduce unless it is inside a living cell (host cell)
- The virus uses the cells enzymes and ribosomes to make DNA and protein
- New viruses either bud off of the cell or the cell bursts, releasing lots of viruses

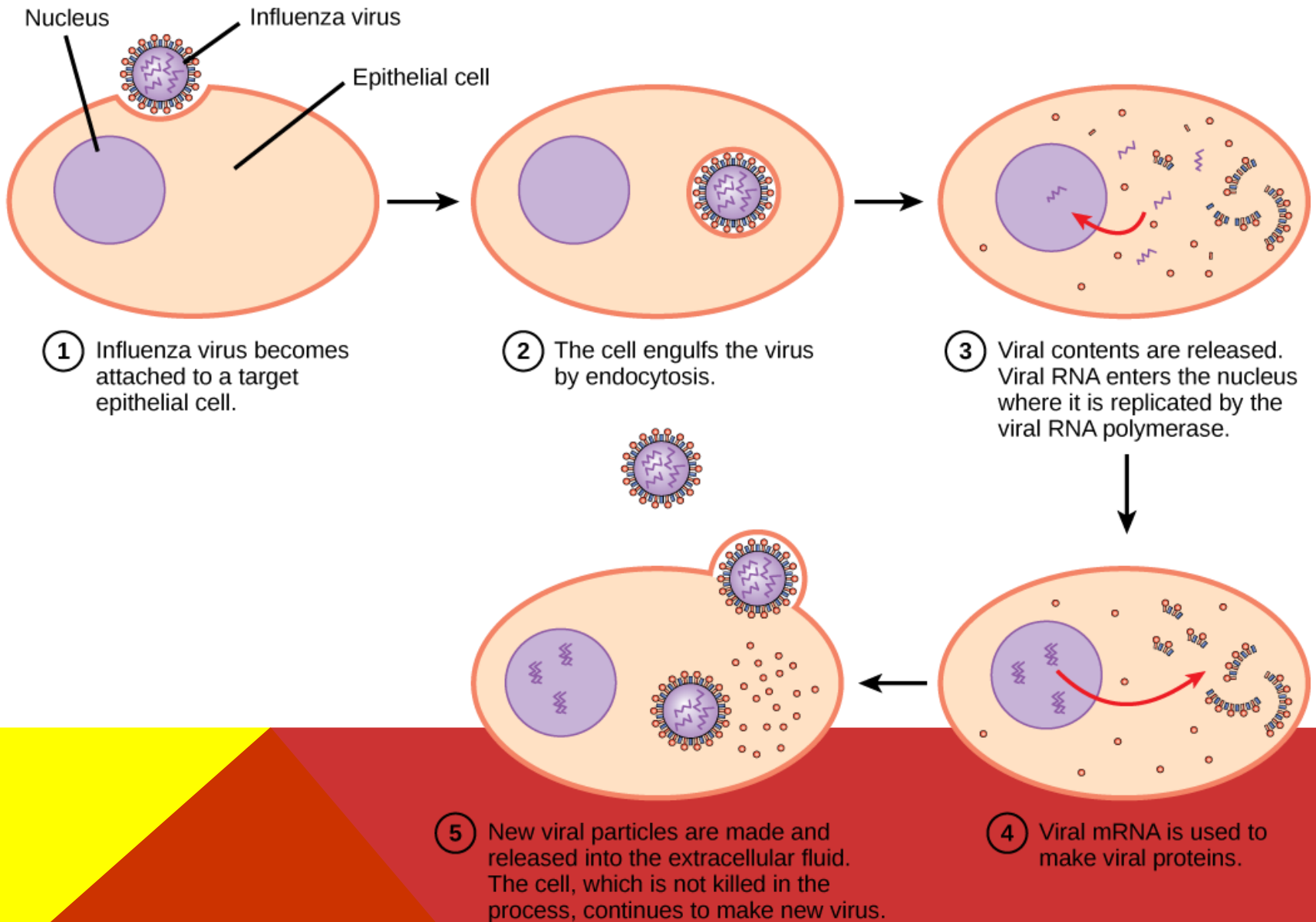


DISEASE CAUSING VIRUSES

Examples:

- Influenza – the flu
- HIV/AIDS – human immunodeficiency virus
- Coronaviruses – common cold





IMMUNITY

B-cells

- White blood cell
- Make antibodies

T- helper cells

- White blood cell
- Help coordinate immune response

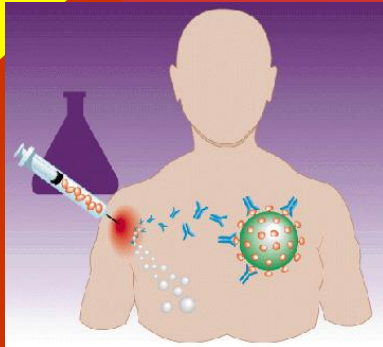
T-killer cells

- White blood cell
- Kill virus infected cell

PASSIVE VS. ACTIVE IMMUNITY

PASSIVE IMMUNITY

- Person does NOT make memory cells or antibodies
- Antibodies only are transferred
- Doesn't provide long-term protection
- Natural: from breastfeeding
- Artificial: Rabies “shot”



ACTIVE IMMUNITY

- Person DOES make antibodies AND memory cells
- Provides long term immunity
- Natural: you have disease
- Artificial – you get a VACCINATION

