

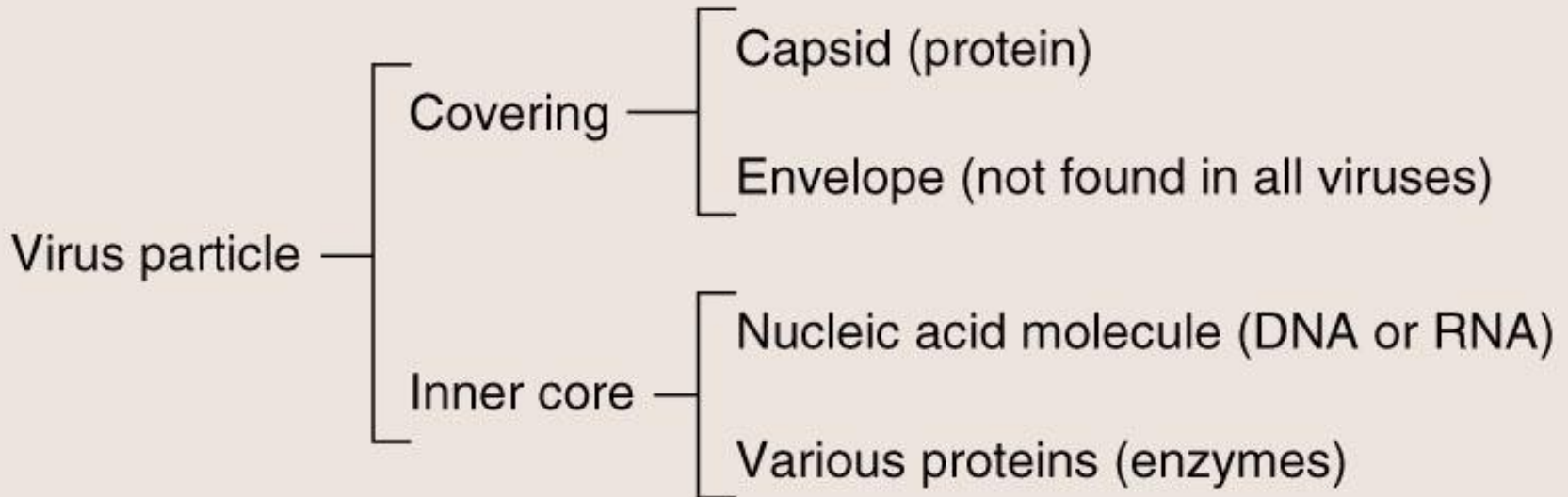
# Viruses

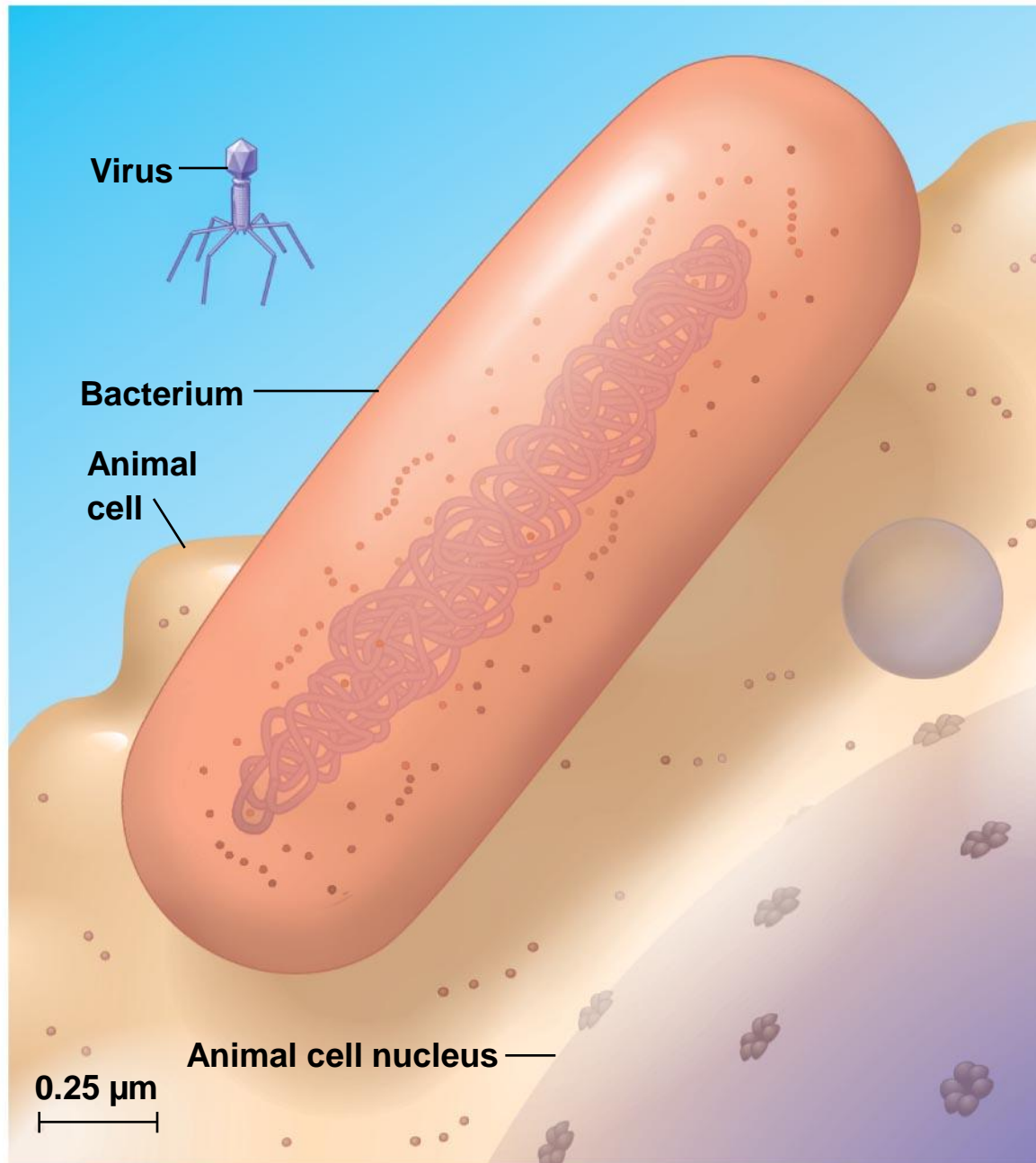
= pathogens (disease causing agent)

# Viruses

- Viruses are microscopic and non-cellular
  - consist of two parts
    - outer protein capsid
    - inner core of nucleic acid (DNA or RNA)

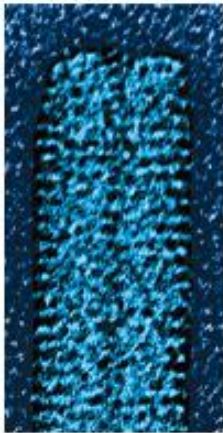
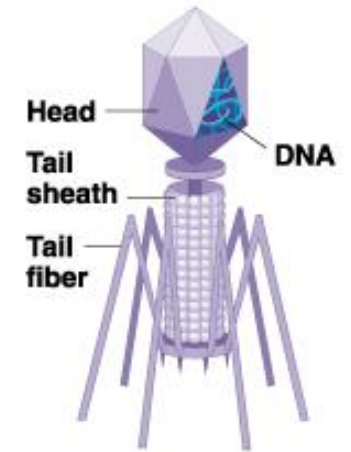
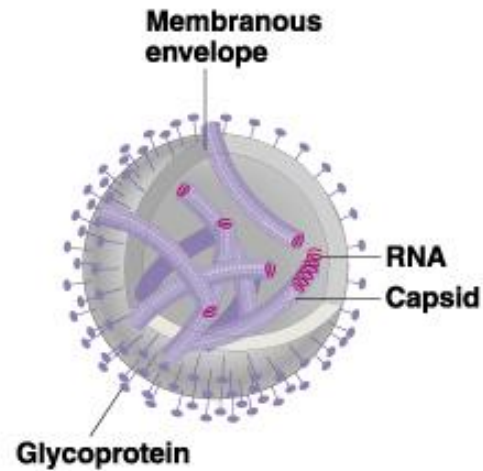
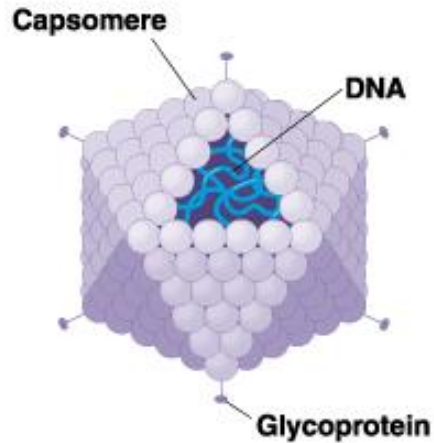
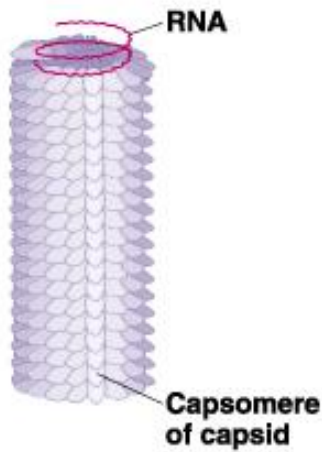
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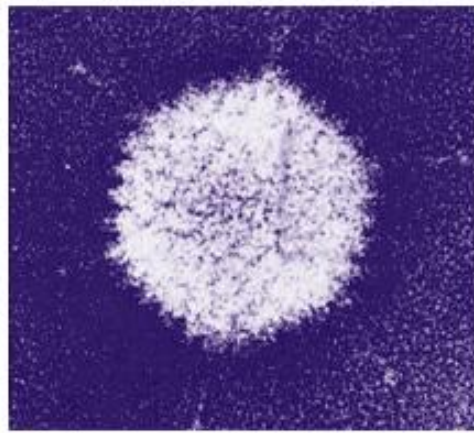
- Viruses have various shapes:
  - Irregular or tadpole ex. T4 bacteriophage
  - Rod shaped ex. Tobacco mosaic virus
  - Spherical ex. Adenovirus and influenza

# Viral shapes and structures



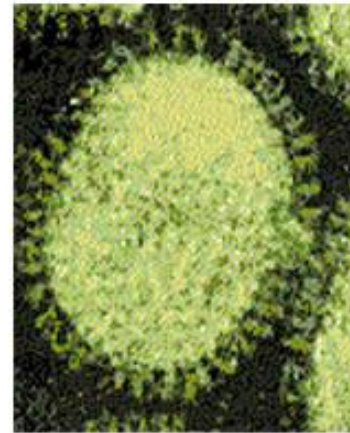
10  $\mu$ m

(a) Tobacco mosaic virus



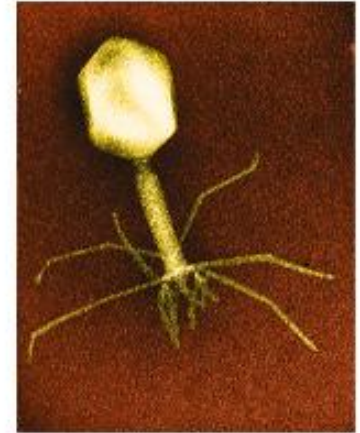
50  $\mu$ m

(b) Adenovirus



25  $\mu$ m

(c) Influenza virus

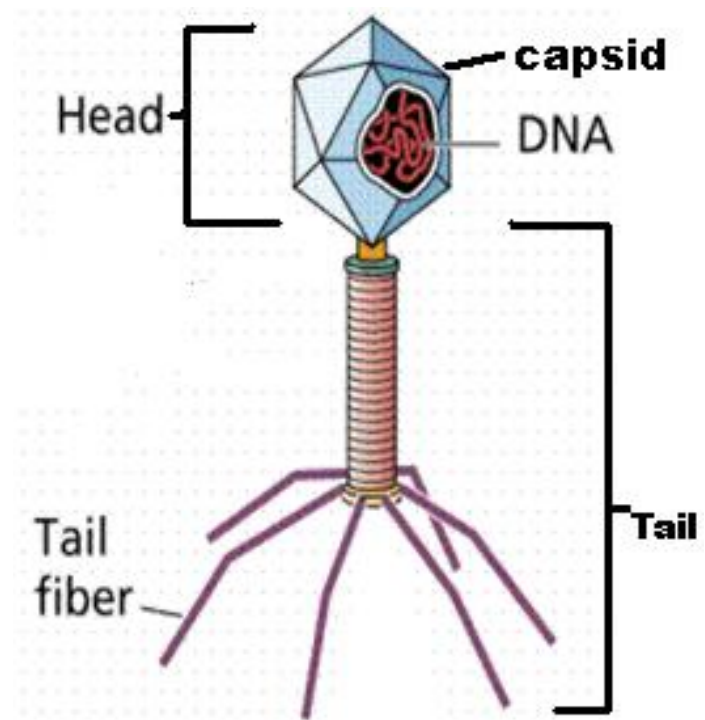


50  $\mu$ m

(d) T-even bacteriophage

# Structure of a Bacteriophage

- A virus that infects only bacteria.  
Ex. T4 bacteriophage



- Some viruses have an envelope = extra protective coat of protein and fat!

# Living characteristics of viruses

- Has nucleic acid core – DNA or RNA
- Able to reproduce – in host cell only
- Able to invade a host cell and take over its reproductive machinery
- Causes a contagious disease
- Able to mutate



## Non living characteristics of viruses

- No metabolic needs – does not need to eat, sleep, breathe..
- Not made up of cells
- Able to be crystallized – when liquid evaporates.
  - Can await a new host in this form.
  - Length of time varies based on type of virus

- Because viruses have characteristics like living and non-living things, they are considered to be transitional between life and non-life

