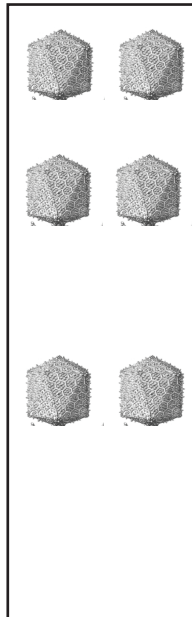


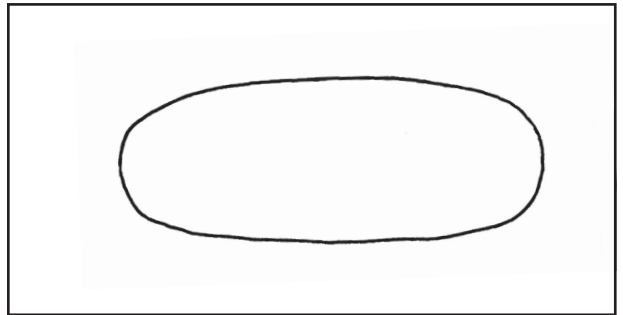
# 4(a): BACTERIOPHAGES

T4 is perhaps the most studied of all phages.

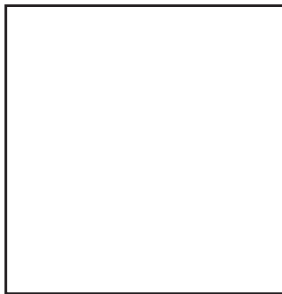
OTHER PHAGE MORPHOLOGIES



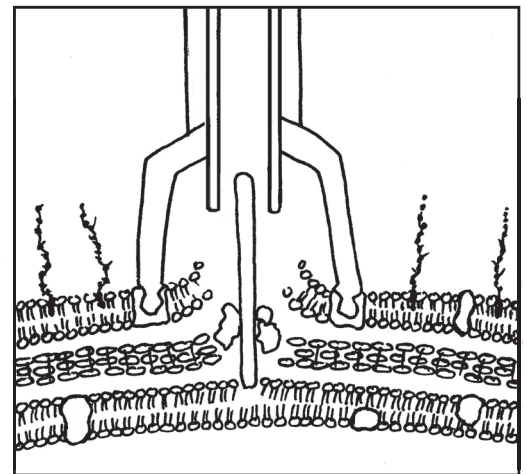
T4 attacks *Escherichia coli* (*E. coli*) bacteria



- (1) flagellum
- (2) Bacterial "nucleoid" made of DNA
- (3) cell envelope made of membrane and wall
- (4) cytoskeleton framework that gives shape to the cell
- (5) ribosomes
- (6) enzymes (little task "robots")
- (7) inclusions (viral production sites)



The tail sheath contracts and injects the DNA into *E. coli*

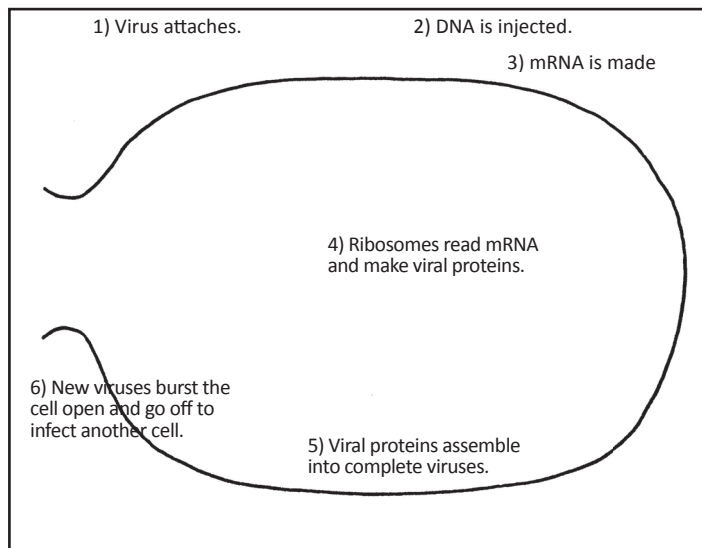


- (1) Baseplate
- (2) DNA
- (3) protein "needle"
- (4) peptidoglycan (sugars held together by proteins)
- (5) lysozymes to digest the peptidoglycan layer
- (6) outer membrane
- (7) inner membrane

Phages have two life cycle options: **lytic** or **lysogenic**.

## LYTIC (causes bacteria to burst)

The virus replicates quickly (30 minutes) and then causes the cell to burst, releasing 100-150 new viruses. New viruses infect more cells.



## LYSOGENIC (hides in bacteria's DNA)

The viral DNA is incorporated into the bacteria's DNA, so when the bacteria reproduces by fission, the viral DNA is also copied.

