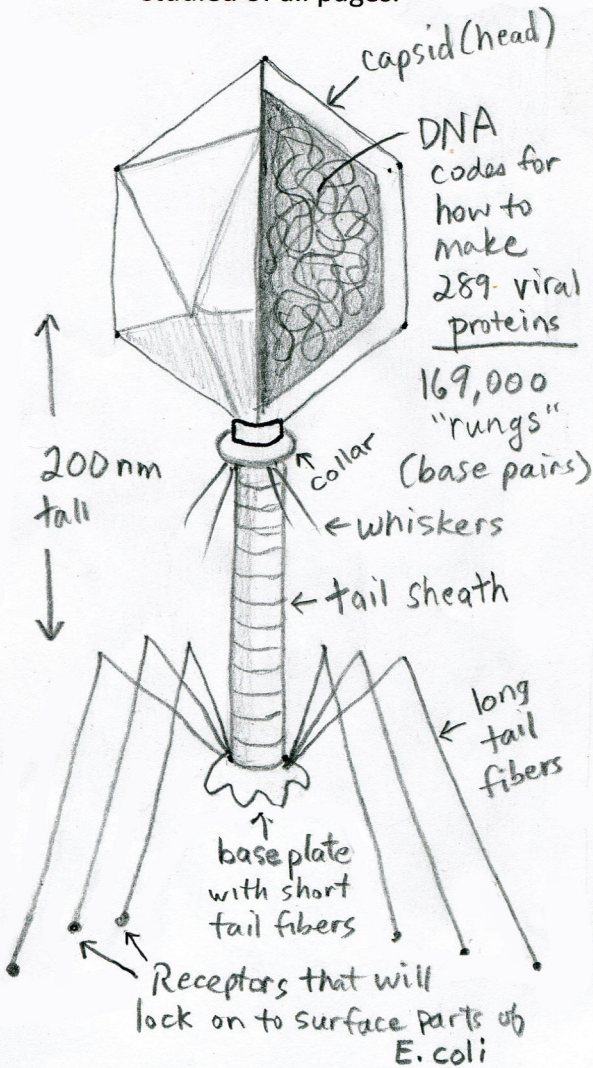
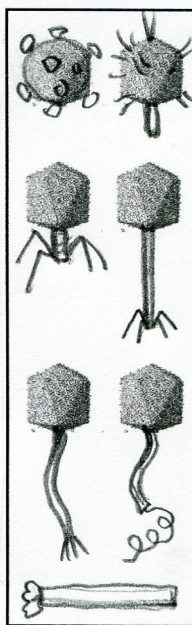


4(a): BACTERIOPHAGES

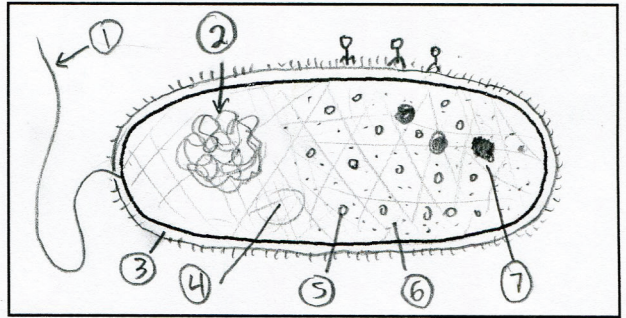
T4 is perhaps the most studied of all phages.



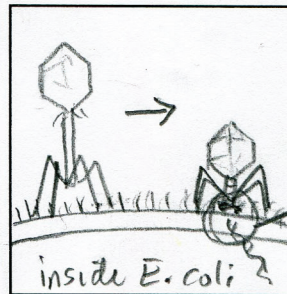
OTHER PHAGE MORPHOLOGIES



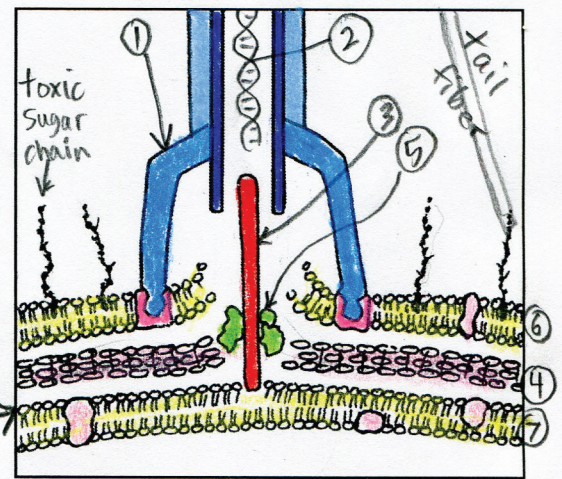
T4 attacks *Escherichia coli* (*E. coli*) bacteria



- (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*

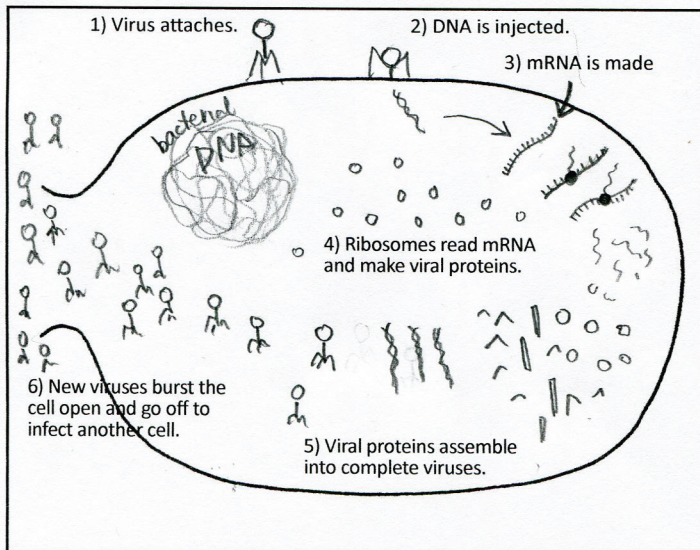


- (1) Baseplate
- (2) DNA
- (3) protein "needle"
- (4) peptidoglycan (sugars held together by proteins)
- (5) lysozymes to digest the peptidoglycan layer
- (6) outer membrane
- (7) inner membrane

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.

