

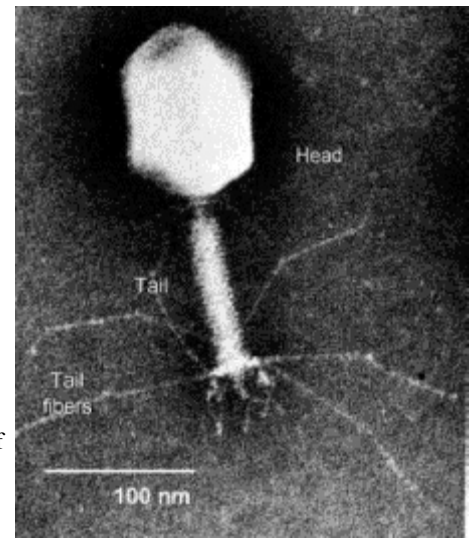
PHAGE RECOMBINATION

rvsd 2/2/94, 31 Jan 00, 6 Feb 04, 9Feb09 8Feb10,2Feb11
SGML, p. 235-) GMSLG 7th, pp 222-231, GWLC, 9th: 181-213

life cycle: (p 201)

- infection: <http://www.youtube.com/watch?v=41aqxcxsX2w>
- synthesis of materials
- destruction of host DNA
- assembly
- lysis
- release

Moving gif of life cycle: <http://www.slic2.wsu.edu:82/hurlbert/micro101/images/101PhageLife.gif>
Titer on **lawn** of indicator bacteria, form **plaques**. (p 202)



Hershey's T2 mutants:

- host range** h^- infect two *E coli* strains, h^+ only one (cloudy plaque)
- rapid lysis** r^- forms lg plaque, r^+ small plaque (slow)

On mixed lawn, four plaque morphologies develop: clear, cloudy, lg and small (p 203)

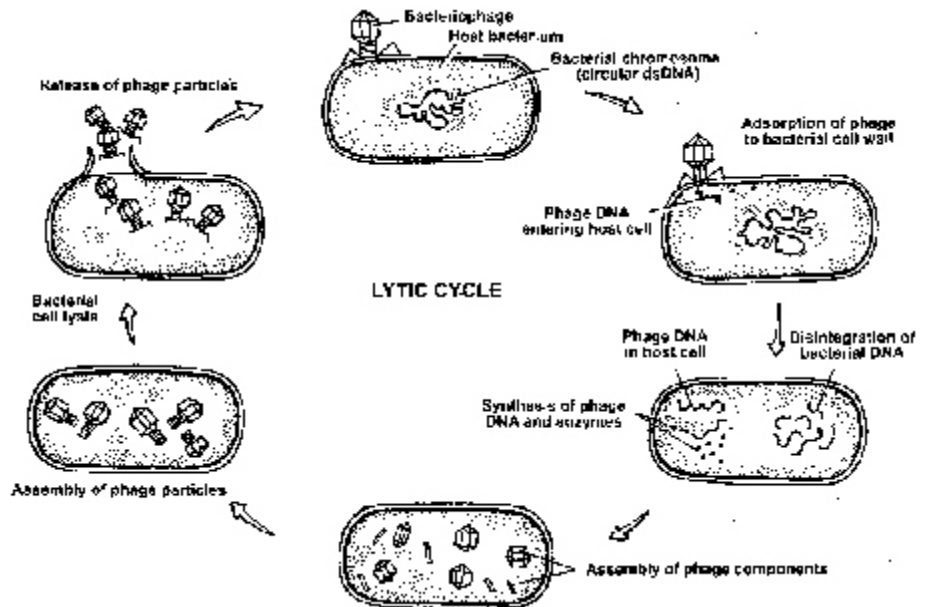
mixed infection (203) (adequate **multiplicity of infection**), so most cells have DNA from each parent.

crossed rapid lysis ($h^- r^+$ = large cloudy) times clear plaque ($h^+ r^-$ = small clear)

score for recombinants:

wt = cloudy small, double mutant = clear large (plate on p 294)

Phage have circular maps.



LYSOGENY: (P 208)

Lwoff studied *Bacillus megaterium*, showed it carried stable phage (19 generations) but occasionally could enter lytic cycle.

temperate phage (not **virulent**) forms **prophage**

Prophage protects against superinfection.

lambda lysogens in Hfrs: when transferred to non lysogenic strain, get no lysogenic recombinants, reciprocal does.

Time of entry studies show recombination occurs until gal locus enters, then nothing: assume attachment near gal locus, thus entry of lambda prophage in non repressed cell causes lytic cycle.

Integration (as in Allen Campbell's model) confirmed by increased distance between bridging markers

TRANSDUCTION: (p 205)

Lederberg and Zinder

1951: mixed two strains of *Salmonella*, phe-, trp-, tyr-, times his-, met-Got w.t. recombinants. But did *not* require contact, not conjugation.

Found it to be P22 phage. generalized transduction, picks up fragments of host DNA, acts as vector.

If two genes are closely linked, cotransduction occurs, can map closely linked markers (up to 1.5 minutes) (p 206)

