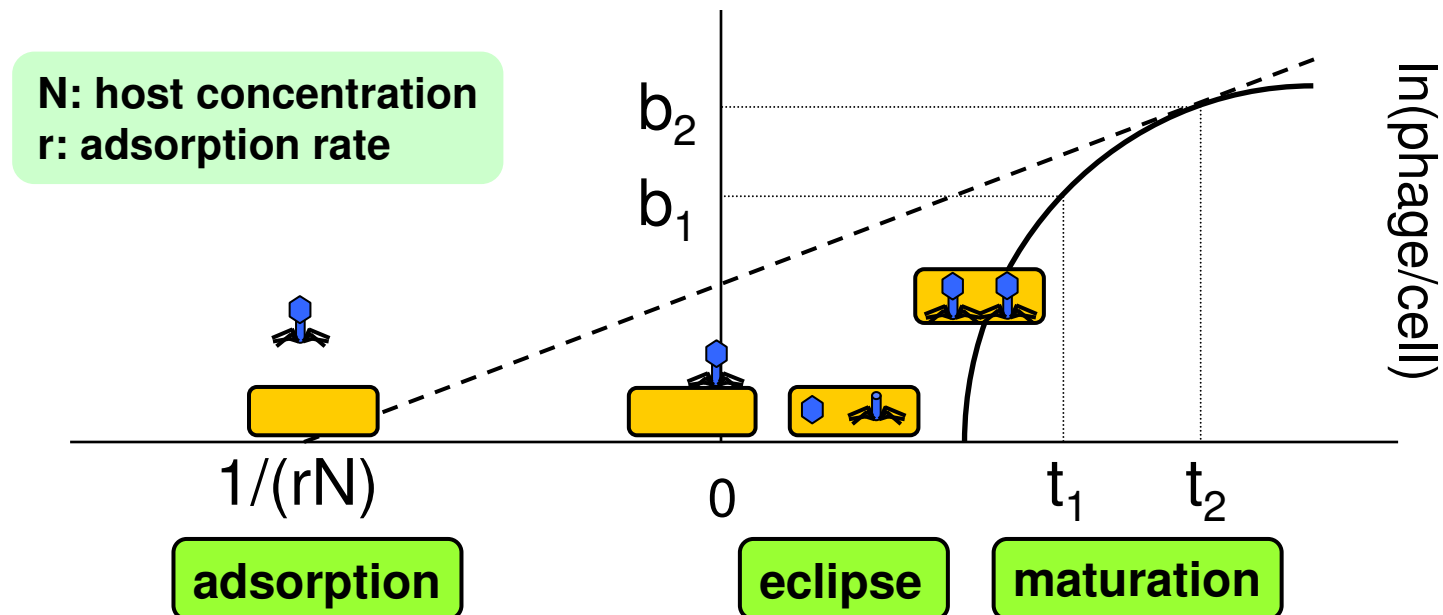




# When?



# Graphical Solution of the Optimal Lysis Time

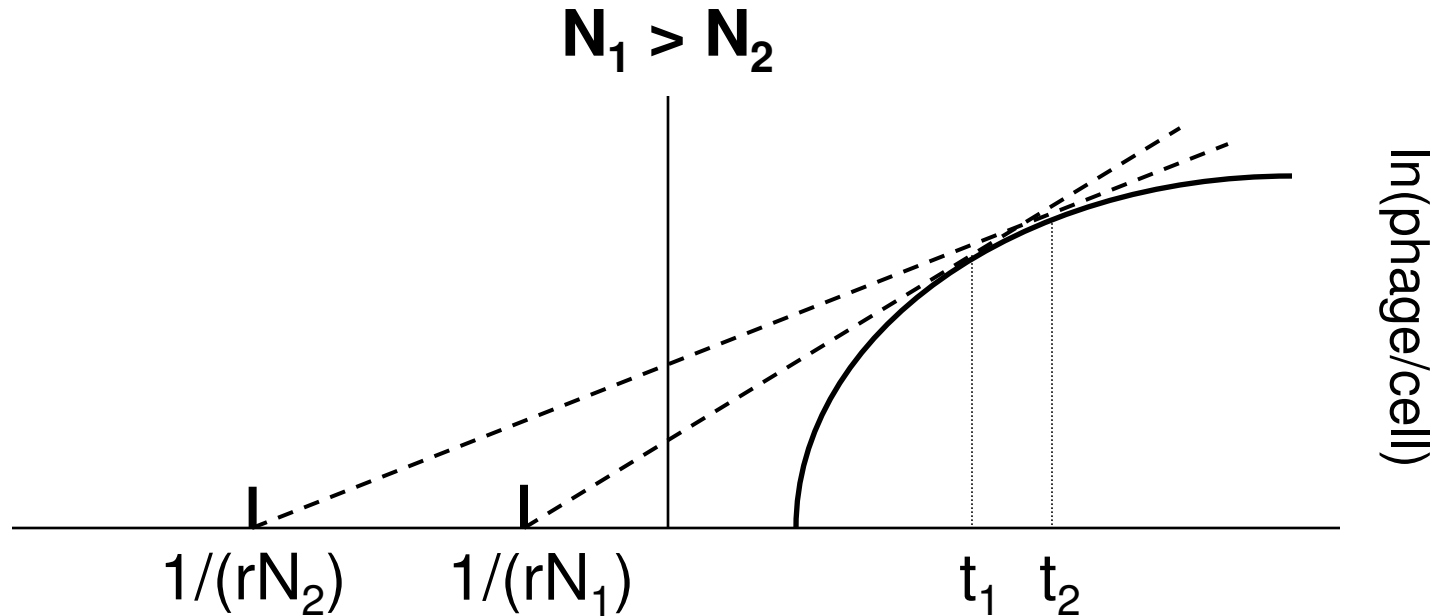


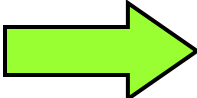
The lysis time  $t$  is optimal when

$$\frac{d \ln(b)}{d t} = \frac{\ln(b)}{1/(r N) + t}$$

# Evolution of Optimal Lysis Time

Environments with different host quantities:

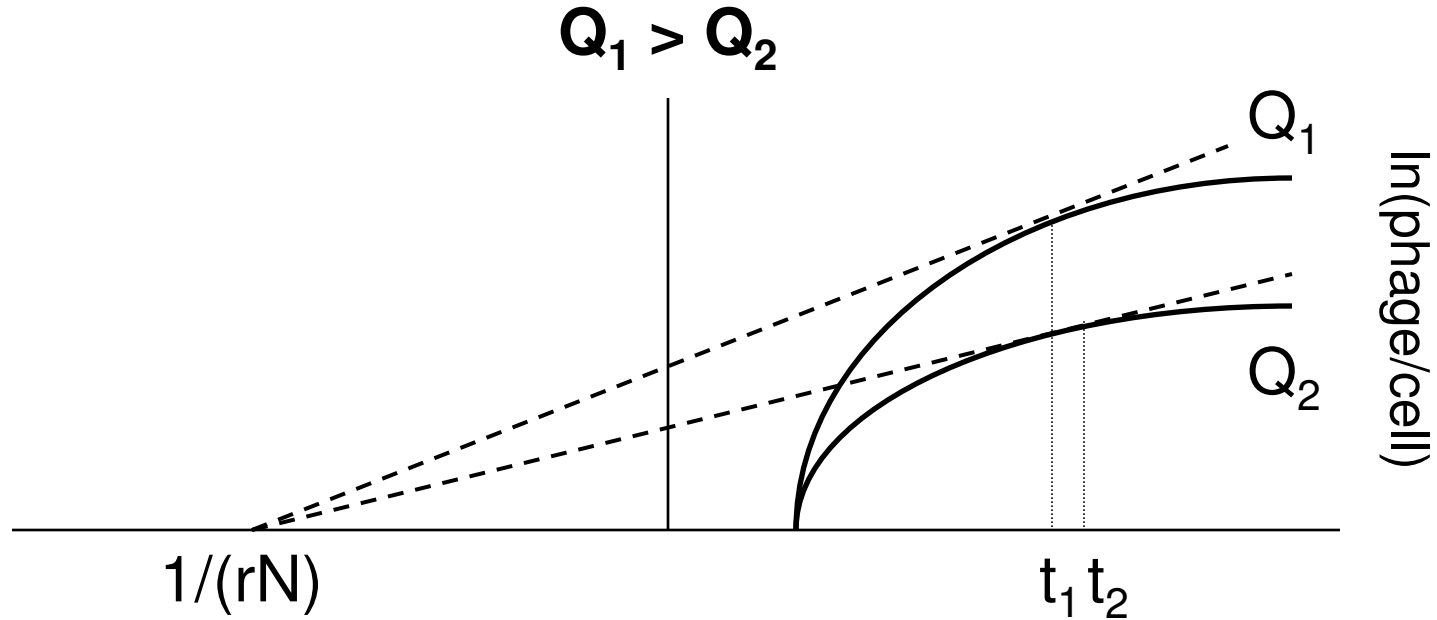


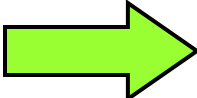
$N_1 > N_2$    $t_1 < t_2$

Wang et al. (1996) *Evol. Ecol.* 10: 545-558.

# Evolution of Optimal Lysis Time

Environments with different host qualities:



$Q_1 > Q_2$    $t_1 < t_2$

Wang et al. (1996) *Evol. Ecol.* 10: 545-558.

# Summary

- (1) High host quantity promotes shorter lysis time, and vice versa.**
- (2) High host quality promotes shorter lysis time, and vice versa.**
- (3) An optimal lysis time implies that the phage fitness would be diminished if the lysis occurred too early or too late.**