

B10 4AES - 20 Oct.

RED QUEEN

qualitative antagonistic coevolution

potential problems

(skepticism of parasite-driven explanations for recombination)

- need strong effects of parasites
- snails/Lively:
 - can sexuals compete against a diverse set of clones?
 - ↳ EPISTASIS (Metzger et al 2016)
- a tiny bit of outcrossing/recombination can maintain diversity pretty well

bdelloid rotifers

EVOLUTION of VIRULENCE

def: decrease in host fitness due to a parasite

- property of the parasite {
- loss of VIABILITY, Fecundity, mating opportunities...
 - NARROW - ~~par~~ rate of parasite-induced mortality

RESISTANCE

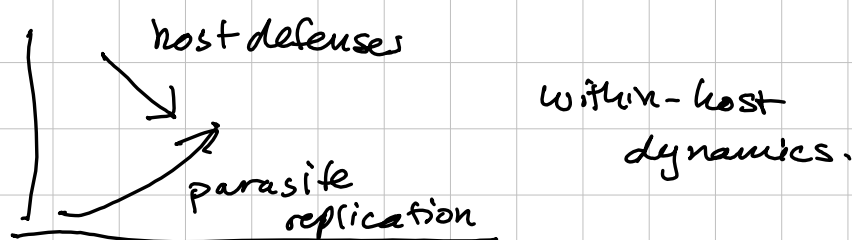
host's ability to reduce parasite load

TOLERANCE

host's ability to support parasites without losing fitness

CASE MORTALITY . probability of dying from infection.

parasite A harms host A
parasite B harms host B



increased replication → virulence
increased defenses → resistance

PARASITE LOAD

balance between parasite replication + host CLEARANCE
(getting rid of parasites)

"trench warfare", not "Red Queen"

evolution of virulence in novel host-parasite associations:

- syphilis.
 - 'great pox' (1495)
 - virulence decreased rapidly ~50 years.

sampling bias?

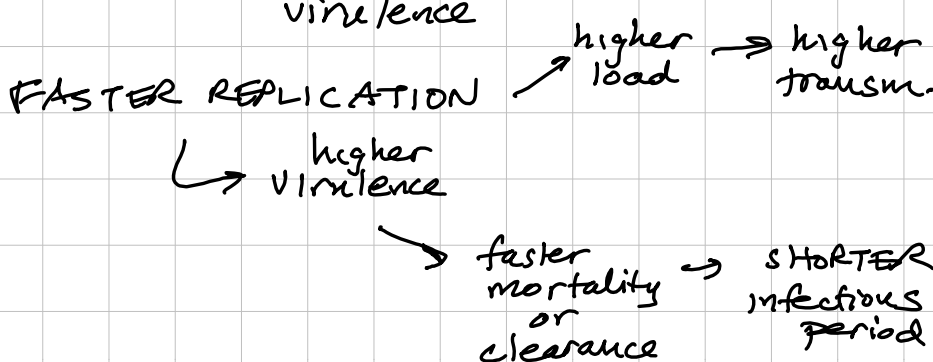
GROUP SELECTION

↳ tradeoff theory

- Host-LEVEL selection (populations of parasites within 1 host)
 - ① low mutation rate, ③ diversity of infecting propagule?
 - ② low coinfection
 - ↳ parasites in a host will be closely related

transmission rate

is negatively correlated with virulence



Myxomatosis