

EVOLUTION of VIRULENCErecognition vs effectors

(RQ)

↑

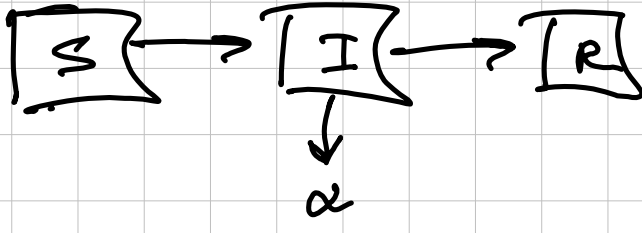
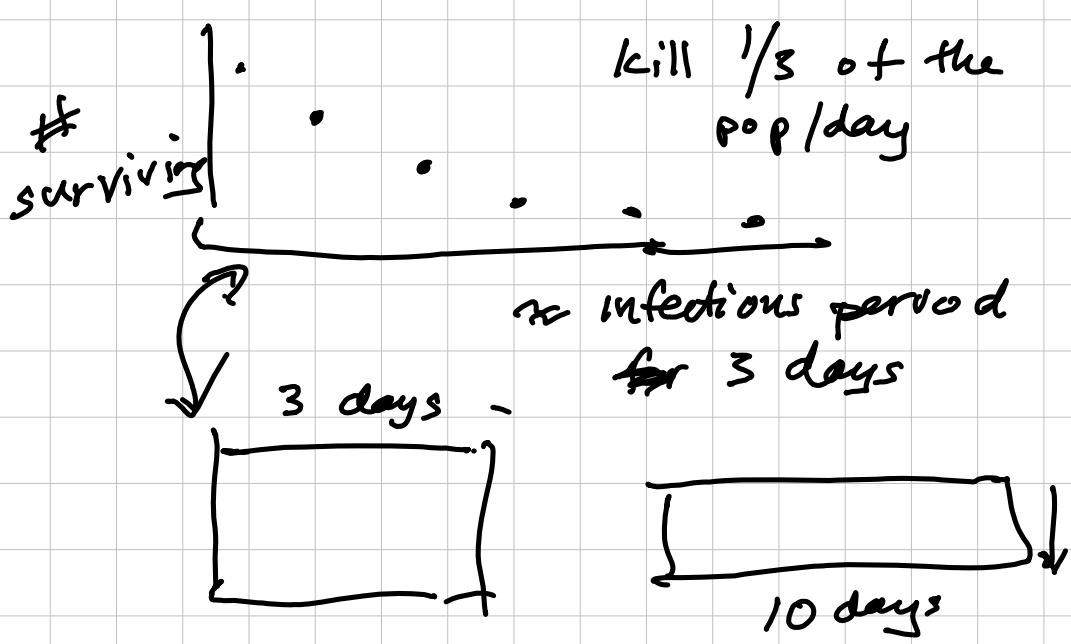
virulence (parasite)
tolerance } (host)
resistanceVIRULENCE

- loss of host fitness due to parasite infection -

- host killing
- loss of fecundity
- castration
- loss of resources

PROXIES

↳ narrow-sense

rate of host-killing≠ case fatality rate.
infection

- transmission rate ↔ virulence rate

↗ parasite load /
replication rate /
↖ use of host resources

Classical dogma (1970s)

parasites always evolve
toward commensalism
(lower virulence)

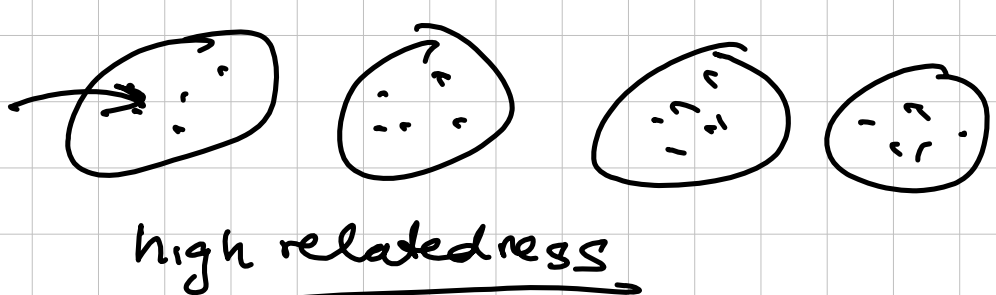
- ~~event~~ newer host-parasite associations would be more virulent

Syphilis

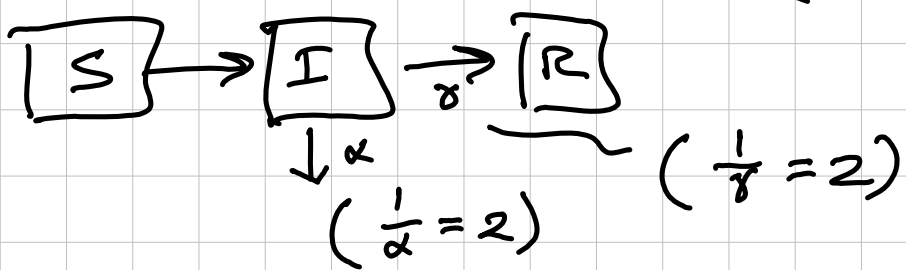
1495 'great pox'

≈ ~~down~~ over 50 years,
virulence decreased.

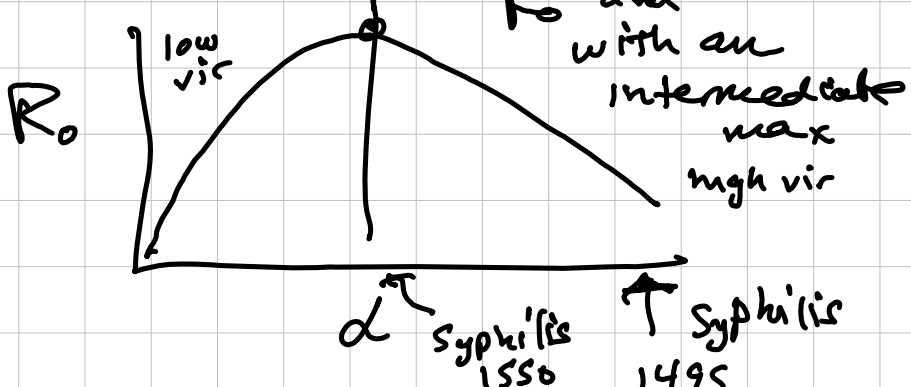
? host evolution?

group selectiontradeoff theoryhost-level selection.high relatedness

$$R_0 = \text{transmission rate } (\beta) \cdot \text{infectious period } \left(\frac{1}{\alpha + \gamma} \right)$$



LEADS to a relationship betw
 R_0 and α
with an intermediate max

CLEARANCE rate ~~←~~
($\gamma + \alpha$)classical dogma: from
sampling bias?