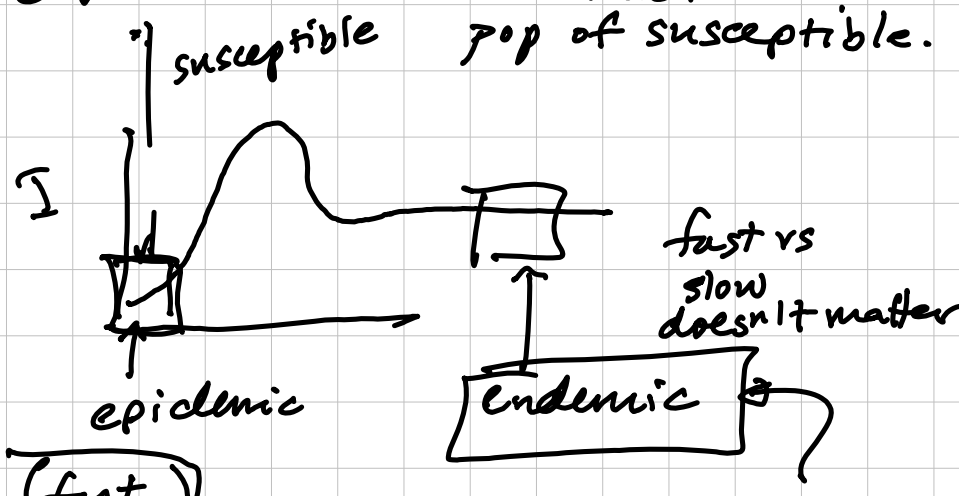
BIO 4AE3
30 Oct 2023

• virulence evolution •

ENDEMIC vs EPIDEMIC phases.

'environment' = ~~how~~ fraction of pop of susceptible.



R_0 = (transm rate) × (inf period)

PAUL EWALD (biologist) vs ANDERSON, MAY etc. (math/modelers)

what's the evolutionary effect of overall increased transmission rates?

higher transm → higher virulence

higher transm → eq virul.

TRANSIENT virulence -

- ~~optim~~ parasite at R_0 - optimal virulence.
- virulence ↑ new habitat
- virulence → as pop reaches equil.

RESISTANCE + TOLERANCE

resistance . ability to resist/ minimize infection

tolerance . reducing the parasite's effect on fitness

competence . ability to transmit disease

MECHANISMS .

active defenses.
recognition + effectors.
→ SPECIFIC.
(inverse matching alleles)

~~CONSTI~~ CONSTITUTIVE . always-on

e.g. changing cell surface receptors.

CCR5 - Δ32 allele . HIV