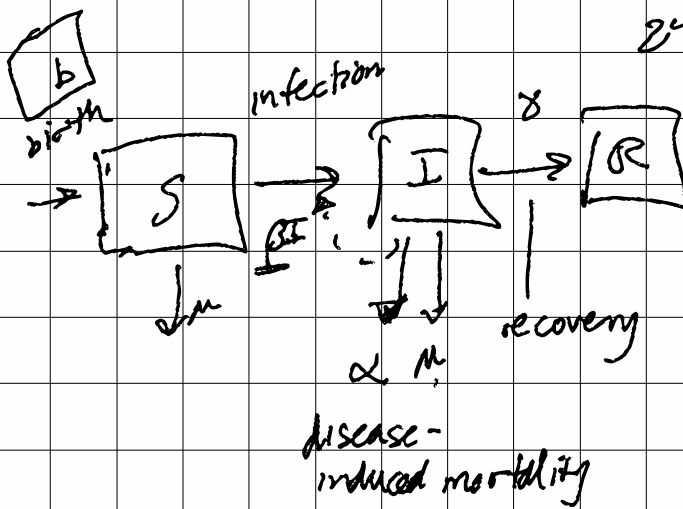


24 Jan



EPIDEMIOLOGICALLY it doesn't matter if you end up dead or with permanent immunity

DIFFERENTIAL EQUATIONS

$$\frac{dS}{dt} = \boxed{+b} - \underbrace{\beta SI}_{\text{infection}} - \underbrace{\mu S}_{\text{natural mortality}}$$

rate of change of susceptibles

S / time

$$\frac{dI}{dt} = +\beta SI - \underbrace{(\mu + \alpha) I}_{\text{mortality}} - \delta I$$

$$\frac{dR}{dt} = +\delta I - \mu R$$

$$\frac{dD}{dt} = +\alpha I$$

βSI

: transmission term.

$$\frac{(\beta I) \cdot S}{\text{density-dependent transmission}}$$

depends on NUMBER of infected hosts.
pop size (or density) increases then
the transmission rate goes up.

disease: aerosols (coughing).

20 people, 10 infected]

40 people, 20 infected.]

more likely to get infected?

$$\frac{\beta SI}{N}$$

frequency-dependent
transmission

$$\beta \left(\frac{I}{N} \right) \cdot S$$

PROPORTION infected -
sexually transmitted diseases

pollinator-borne
(fungi)