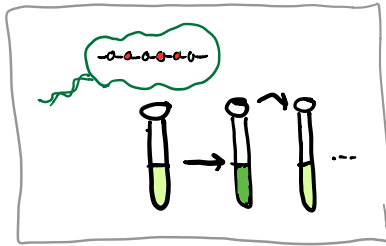
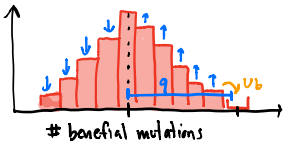
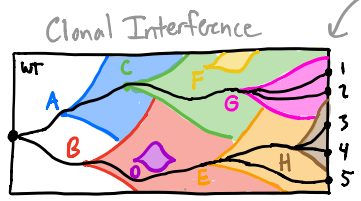
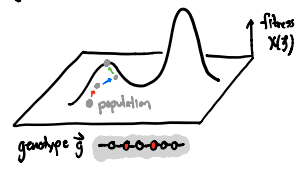
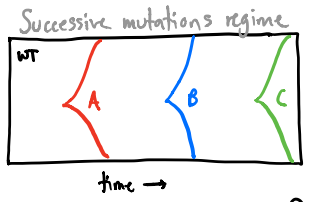
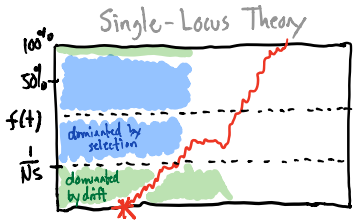
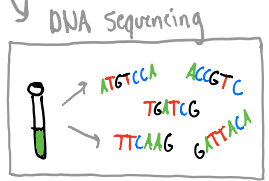
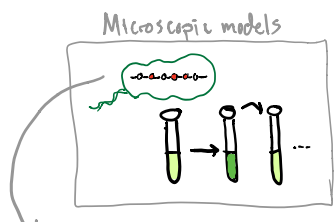


Where have we gone this quarter?



coarse-graining
 $(\Delta f \ll 1, t \gg \Delta t)$

$$\begin{aligned} \frac{\partial f(\vec{q})}{\partial t} = & \underbrace{[X(\vec{q}) - \bar{X}(t)] f(\vec{q})}_{\text{selection}} + \underbrace{\sum_{\vec{q}'} M(\vec{q}' \rightarrow \vec{q}) f(\vec{q}') - M(\vec{q} \rightarrow \vec{q}') f(\vec{q})}_{\text{mutation}} \\ & + \underbrace{\rho \sum_{\vec{q}_1, \vec{q}_2} T(\vec{q}_1, \vec{q}_2 \rightarrow \vec{q}) f(\vec{q}_1) f(\vec{q}_2) - \rho f(\vec{q})}_{\text{recombination}} \\ & + \underbrace{\sqrt{\frac{f(\vec{q})}{N}} \eta(t) - f(\vec{q}) \sum_{\vec{q}'} \sqrt{\frac{f(\vec{q}')}{N}} \eta(\vec{q}')}_{\text{genetic drift}} \end{aligned}$$

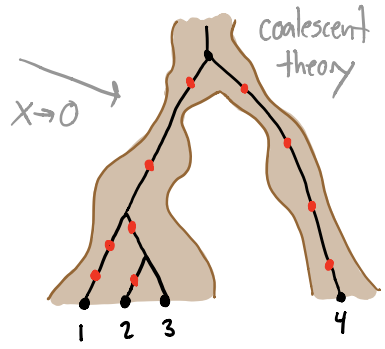


$$\frac{ds(\vec{g})}{dt} = \sim (x - \bar{x}) + \sim L \cdot \mu + \sim e + \sim \frac{\sigma^2}{N}$$

$e \rightarrow \infty$

Quasi-linkage equilibrium

$$\frac{ds_e}{dt} = \sim s_e + \sim \mu_e + \sim \frac{\sigma_e^2}{N_e}$$



$\Delta f_{ec} \ll \Delta t$

$L=1$

$L\mu \rightarrow 0$

$N_{eff} \gg 1$

$X \rightarrow 0$