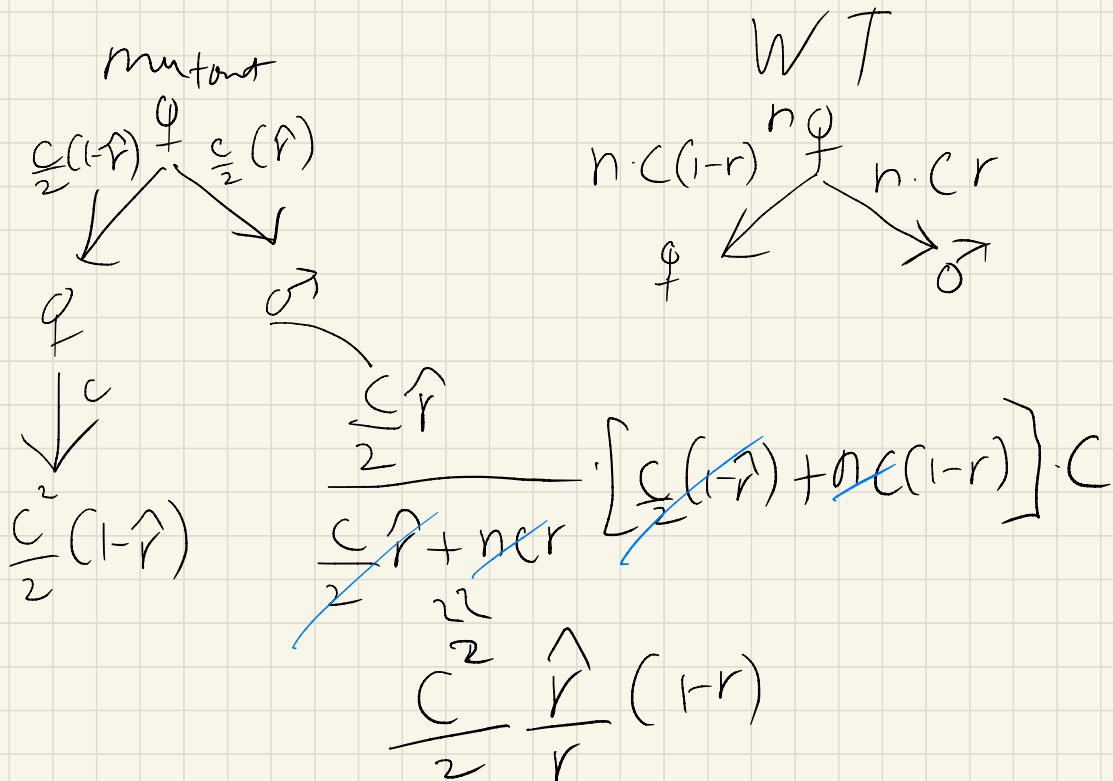


$C \equiv \text{Clutch size}$      $r \equiv \% \sigma^{\rightarrow} \text{ wild type}$      $\hat{r} \equiv \% \sigma^{\rightarrow} \text{ mutant}$   
 $1-r \equiv \% \text{ wild type}$      $1-\hat{r} \equiv \% \text{ mutant}$

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So

$$\hat{R}_0 \approx \frac{C^2}{2} (1-\hat{r}) + \frac{C^2}{2} \frac{\hat{r}}{r} (1-r)$$

and

$$R_0 = C^2 (1-r)$$

So

$$\hat{R}_0 \approx \frac{C^2}{2} (1 - \hat{r}) + \frac{C^2}{2} \frac{\hat{r}}{r} (1 - r)$$

and

$$R_0 = C^2 (1 - r)$$

$$\lambda(\hat{r}, r) = \frac{\hat{R}_0}{R_0} = \frac{1}{2} \left[ \frac{(1 - \hat{r})}{1 - r} + \frac{\hat{r}}{r} \right]$$

$$\frac{d\lambda(\hat{r}, r)}{d\hat{r}} = \frac{1}{2} \left[ \frac{-1}{1 - r} + \frac{1}{r} \right]$$

$$\text{so } \frac{d\lambda(\hat{r}, r)}{d\hat{r}} > 0 \text{ if } 1 - r > r$$

if  $r < \frac{1}{2}$ ,  $\hat{r} > r$

invades.

if  $r > \frac{1}{2}$ ,  $\hat{r} < r$

invades

