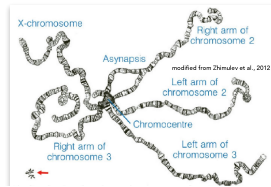


what is a model system?



How would you detect a deletion?

How would you detect a duplication?

How would you detect a chromosomal inversion?

remember: activity!!!!

Muller's approach (construct duplications / deletions for region of the gene to be analyzed)

$\frac{wt}{wt}$ produces the original phenotype

Now let us ask, is the phenotype of

$\frac{mut}{\Delta}$ the same, more, or less severe (extreme) than the phenotype of $\frac{mut}{mut}$?

To extend our analysis, let us compare the "strength" of the trait expressed in organisms with the following genotypes. Remember we have been assuming that *mut* is recessive; we find that the phenotype of

$\frac{mut}{mut}$ is more severe $\frac{wt}{\Delta}$
than that of

Muller found some.

Consider the following is the case. The trait is dominant and the phenotype of

$\frac{mut}{wt}$ is more severe than that of $\frac{mut}{2x wt}$

Muller called mutations that behaved in this way **antimorphic**, that is, the mutated gene product antagonized the function of the wild type gene product.

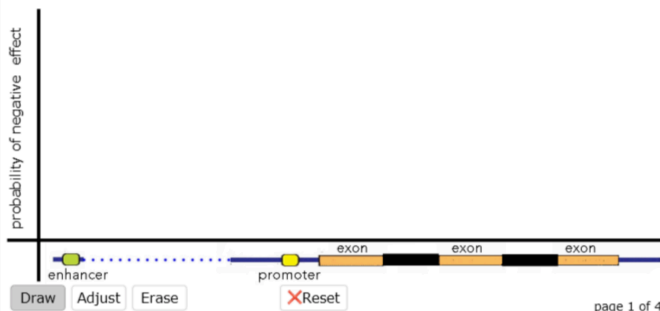
Muller identified one final class of mutation, their behavior was described by the following relationship; the phenotype of

mut is the same or mut
mut worse than Δ but different from wt
wt

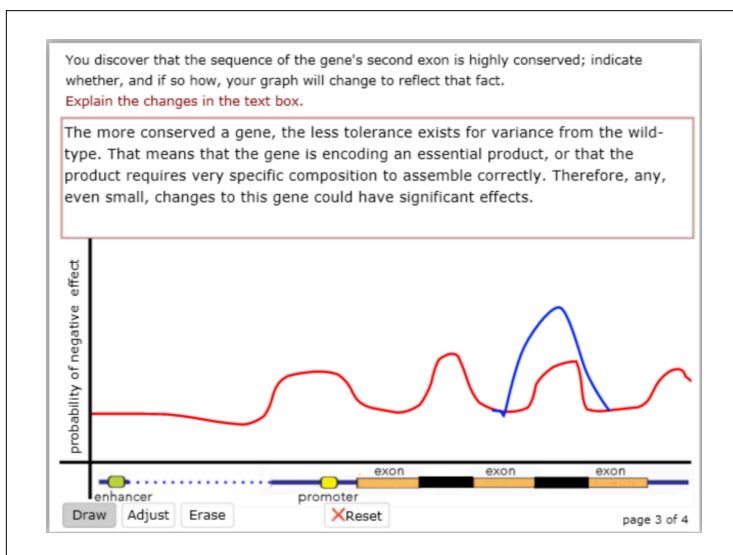
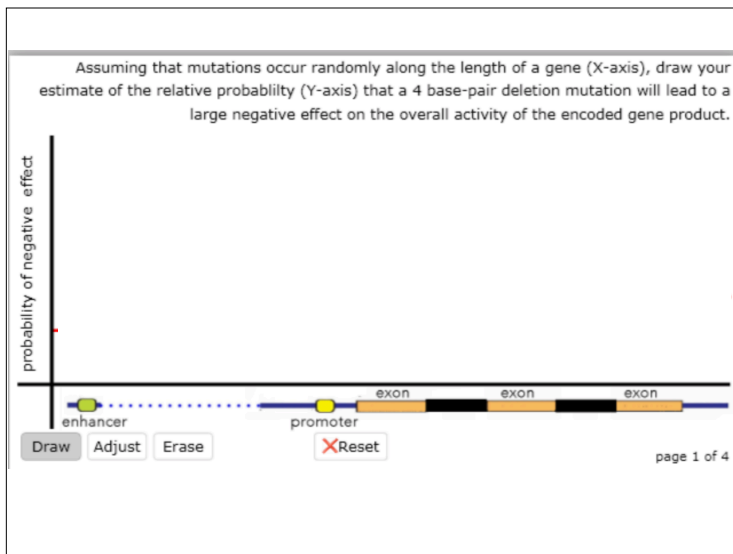
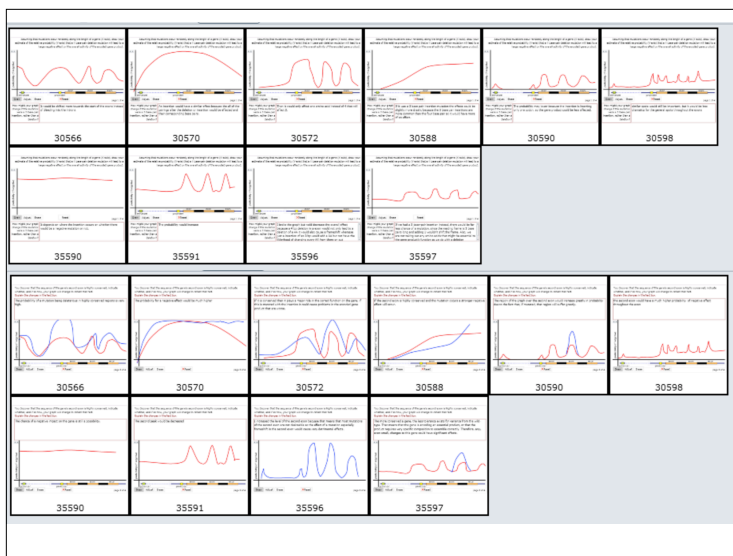
Questions to answer and ponder:

179. Within a gene, what signals and signal binding proteins are involved in gene expression? make a diagram.

Assuming that mutations occur randomly along the length of a gene (X-axis), draw your estimate of the relative probability (Y-axis) that a 4 base-pair deletion mutation will lead to a large negative effect on the overall activity of the encoded gene product.



How might your graph change if the mutation were a 3 base-pair insertion, rather than a deletion?



Questions to answer and ponder:

184. How does the position within a gene of any of the mutations mentioned above influence their effects on the function of the gene's product?

186. Describe how a DNA change (missense, non-sense, junction mutation) produce Muller's morphs.

next:

Chapter 12: Reproduction in prokaryotes and horizontal gene transfer

In which we consider how prokaryotic cells replicate asexually, and how they can (under specific conditions) pass genetic information to one another and acquire up such information from their environment.

