

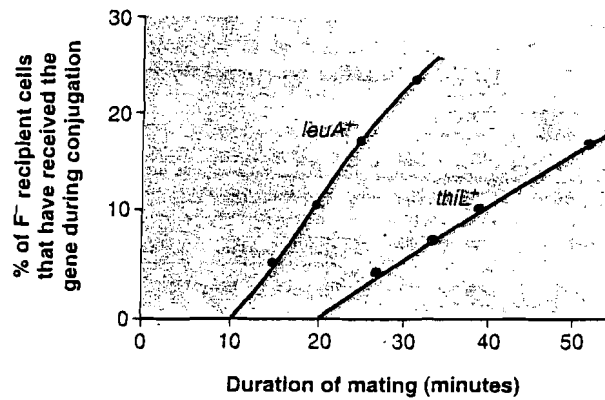
Exam 2 Review

- Heritability can be defined as the
 - phenotypic similarities observed among family members
 - influence that one gene has on the expression of an unrelated gene
 - degree to which phenotypic variation is influenced by heredity
 - contribution of mutations to the degree of variability within a population
 - degree to which phenotypic variation is influenced by the environment
- Which of the following traits has a continuous distribution?
 - amount of milk produced by cows
 - learning ability in humans
 - human fingerprint patterns
 - all of the above
- If two genes are not linked, then the expected phenotypic ratio resulting from a test cross would be
 - 9:3:3:1
 - 1:2:1
 - 3:1
 - 1:1:1:1
 - 1:1
- Morgan and his group found that among the offspring of genetic crosses, parental phenotypic classes were the most frequent, while recombinant classes occurred less frequently. This observation led Morgan to conclude that
 - all genes are linked
 - alleles of some genes assort together
 - alleles of linked genes assort independently
 - all linked genes assort independently
- One hundred fifty six tetrads were analyzed following a series of two point crosses in yeast. One hundred two of the tetrads were parental ditype, 40 were T tetrads and the remaining 14 were non-parental ditype. The frequency of recombination between the two genes is
 - 14
 - 22
 - 34
 - 45
 - 50
- An Hfr strain of *E. coli* with the genotype $a^+ b^+ c^+ d^+ e^+ f^+$ is mated with an F⁻ auxotrophic strain with the genotype $a^- b^- c^- d^- e^- f^-$. Conjugation is stopped at 10 minutes intervals and the genotypes of the resulting conjugants are determined. The following results are obtained:

After 10 minutes	e^+
After 20 minutes	$a^+ e^+$
After 30 minutes	$a^+ b^+ e^+$
After 40 minutes	$a^+ b^+ d^+ e^+$
After 50 minutes	$a^+ b^+ c^+ d^+ e^+$
After 60 minutes	$a^+ b^+ c^+ d^+ e^+ f^+$

What is the correct order of genes on this bacterial chromosome?
 - a-b-c-d-e-f
 - c-d-e-f-a-b
 - e-a-b-d-c-f
 - f-e-d-c-b-a
- An Hfr strain that is $leu^+ A^+$ and $thi^+ L^+$ was mated to a strain that is $leu^- A^-$ and $thi^- L^-$. In the data points shown below, the mating was interrupted and the percentage of recombinants for each gene was determined by streaking on plates that lacked either

leucine or thiamine as shown in the graph. What is the map distance (in minutes) between these two genes?



- A. 10 B. 15 C. 20 D. 25 E. 30

8. For two linked genes, C and D with alleles in coupling, which of the following arrangements would indicate that recombination had occurred between the two genes?

- A. C⁺ D⁺ / C⁻ D⁻ B. C⁻ D⁻ / C⁺ D⁺ C. C⁺ D⁻ / C⁺ D⁻ D. C⁺ D⁻ / C⁻ D⁺

9. The transformation frequencies for genes A and B are each 10^{-3} . The frequency of co-transformation for these two genes is also 10^{-3} . Therefore, these genes are probably

- A. very close to one another on the chromosome
 B. on the two different chromosome
 C. far apart from one another on the chromosome
 D. on two separate plasmids inside the cell
 E. all of them are correct