

MCB 142 Discussion

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1 Announcements

Quizzes will be handed back at the end of section. The answer key to all the questions given to all sections is posted on the website (under Christine Preston). If you have any questions about the quiz, please come talk to me during my office hour or email me. I will only regrade in the case of an addition error.

2 Key Concepts

1. How do you know if two genes are linked?
2. How do you calculate recombination frequency?
3. Remember: no recombination in male *Drosophila* when producing gametes!
4. What is the chi-square test? How do you calculate the chi-square statistic?
5. What is the physical basis for recombination?
6. What is interference? How do you calculate it?

3 Practice Problem

R.A. Emerson crossed two different pure-breeding lines of corn and obtained a phenotypically wild-type F1 that was heterozygous for alleles of three different genes that determine recessive phenotypes:

- *an* determines the mutant phenotype *anther*
- *br* determines the mutant phenotype *brachytic*
- *f* determines the mutant phenotype *fine*

He test-crossed the F1 to a tester that was homozygous recessive for the three genes and obtained these progeny phenotypes:

- Anther - 355
- Brachytic, fine - 339
- Wild-type - 88
- Anther, brachytic, fine - 55
- Fine - 21
- Anther, brachytic - 17
- Brachytic - 2
- Anther, fine - 2

What are the genotypes of the parental lines?

Draw a linkage map for the three genes (include map distances).

Calculate the interference value.

On your own: calculate the chi-square statistics for linkage between *an* and *f*, *f* and *br*, and *an* and *br*.