Based on what we know about meiosis…expect **random segregation** of chromosomes

**Evidence**

Meiosis in grasshopper testes

◊ One heteromorphic chromosome pair; one unpaired chromosome

◊ As predicted for random segregation:
Therefore... expect that **segregation of determinants on different chromosomes should be independent of each other**

**Mendel’s experiments cont’d...**
Segregation of alleles of one gene is independent of segregation at another gene — law of **independent assortment**

**Branch diagrams** — consider one phenotype at a time; overall ratio is product of individual ratios
Predicting the results of crosses…

For any multi-factor cross showing independent assortment –

- How many gamete classes?

- How many progeny phenotypes?

- How many progeny genotypes?
**Need:**

- to be able to predict genotype/phenotypes ratios
- large sample sizes
- systematic way of evaluating whether the observed results are really different from the expected results