

Boomer 211 - Population Genetics; Ch. 23 and Beyond; Lab/Lecture Same

Ladybug Population Generation One	Calculate TOTAL # A	Convert to % A
AA = 200 Aa = 100 aa = 200	Calculate Total # a	Convert to % a

Ladybug Population Generation Two	Calculate TOTAL # A	Convert to % A
AA = 300 Aa = 100 aa = 100	Calculate Total # a	Convert to % a

In the language of population genetics, p =

q =

	p	q
Ladybug Generation 1		
Ladybug Generation 2		

Class brainstorming - what might cause a shift in allele frequencies (% A/a or p/q)?

Hardy-Weinberg (1908) predicted allele frequencies would NOT change if...

Genetic Drift: allele % fluctuations due to

Predicting and Detecting Variation

For dom/rec traits, which is only genotype you know for certain based on phenotype?

HW developed a useful predictive equation:

Let's say you want to predict the # carriers of a new recessive disease allele.

Epidemiology Data from Monmouth aa = 1600/10,000	Calculate p
Calculate q	Calculate p^2 & $2pq$

Check Work! Does $p^2 + 2pq + q^2 = 1$? What does this data mean???
Lab: Aside from disease/carrier status, why is knowing heterozygosity important?

Many alleles display polymorphisms detectable at

Now consider sickle cell polymorphism...

Prokaryotes make protective nucleases called (20.1-2)

e.g. Ddel cuts - distinguishes hemoglobin alleles (Fig. 20.9)

In lab, you will explore protein gels of enzyme complexes to predict genotypes.

Consider that some enzymes are made of single proteins -

Hom/Dom	Hom/Rec	Het/Dom

Others are made of multiple proteins - e.g.

Hom/Dom	Hom/Rec	Het/Dom

Population Genetics and Evolution

Do any populations meet HW conditions?

Evolution: in the genetic makeup of a population