**Unit 7: Mechanisms of Evolution - *Mutation & Recombination* Guided Notes**

**Standard**

SC.912.L.15.15 Describe how \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ increase genetic variation.

**Lesson Guiding Question**

How do mutation and genetic recombination \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_?

**What do we know already?**

* Chromosomes carry traits that are controlled by genes
* Changes in genes & chromosomes are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Genotype is the combination of alleles (versions of a trait)
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of those traits

***How does natural selection affect a genotype if it only acts on the phenotype?***

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**Populations & Gene Pools**

* Populations are a group of individuals of the same species that can mate to produce offspring…
* ...because they interbreed, they share a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ = all the different genes/alleles within a population
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Mouse Allele Frequency Practice**

* Turn to page 483 in your textbook
* Look at figure 17-2
* To determine whether a population is evolving, scientists study its allele frequencies

1. If there are 25 individuals in the population, how many total alleles are present? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Calculate the number of mice with each genotype.
   1. homozygous black \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   2. heterozygous black \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   3. homozygous brown \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Calculate the number of B alleles (B = black) and b alleles (b = brown). \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. If the current generation of mice had no offspring, how would this affect the allele frequency of the b allele in the next generation?

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**Evolution**

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* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* If no changes occur and natural selection is not acting on phenotypes, there is no change in allele frequency in that population over time

**Genetic Variation Graphic Organizer**

