**Sex-Linked Traits, Selective Breeding, and Environmental Factors on Genetics**

**Objective 13: I can describe sex-linked traits**

The Sex Chromosomes \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* The sex chromosomes carry genes that determine whether a person is\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_
* They also carry genes that determine \_\_\_\_\_\_\_\_\_\_\_\_\_\_ traits.
* Eggs carry \_\_\_\_\_\_\_chromosomes (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the male’s sperm carry the \_\_\_\_\_and \_\_\_\_\_\_\_\_\_ carry the \_\_\_\_\_
* If an egg (X) is fertilized with a sperm cell carrying an X, it will be a \_\_\_\_\_\_\_\_\_\_(X from mom, X from dad, \_\_\_\_\_\_\_\_\_\_= Girl)
* If an egg (X) is fertilized with a sperm cell carrying a \_\_\_\_\_, it will be a \_\_\_\_\_\_\_ (X from mom, Y from dad, \_\_\_\_\_\_\_\_=Boy)
* The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (sperm cell) determines the gender of the baby – the egg is ALWAYS an X

**Sex-Linked Genes**

* Genes on the X and Y chromosomes are often called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ because their alleles are passed from parent to child on a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Traits controlled by sex-linked genes are called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Why do sex linked traits happen?
	+ The \_\_\_\_\_\_\_\_ chromosome from the mother is bigger than the \_\_\_\_\_\_\_ chromosome from the father. **Remember the chromosomes pair up**
	+ \_\_\_\_\_\_\_\_\_\_\_ =X \_\_\_\_\_\_\_\_= Y or X, when the X and the Y pair up it looks like this
* Remember that females are X X chromosomes, whereas males are XY chromosomes Sex-Linked Genes
* Unlike most chromosome pairs, the X and Y chromosomes **have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ genes**
* ***Most of the genes on the X chromosome are ­­­­­­­­­­­­­\_\_\_\_\_\_\_\_\_\_ on the\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_***
* Therefore, an allele on an X chromosome may have no corresponding allele on a Y chromosome
* Because males have only \_\_\_\_\_\_\_\_\_ \_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are more likely than females to have a sex-linked trait that is controlled by a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Colorblindness is a trait controlled by a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ allele on the X chromosome.
	+ More \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are colorblind
	+ Notice, however, that the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a carrier of colorblindness
	+ A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a person who has \_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ allele for a trait and \_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ allele

**Objective 14: I can describe selective breeding**

* Selecting \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ traits and using the organisms with those desirable traits to produce offspring with the same traits
* How has man has changed the traits of organisms through **Selective Breeding?**
	+ Dogs have been breed to be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Dog breeders have been \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ for desirable traits for centuries.
	+ Farmers have cultivated many popular vegetables from wild mustard, Cauliflower, broccoli, and kale have all been selectively bred from wild mustard.

Nature provides variation, humans \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_variations of genes that are useful.

* + Example - a farmer breeds only his best livestock
	+ In essence, when humans selectively breed organisms for certain traits, they are selecting for certain \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Objective 15: I can describe how \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_factors can have an impact on a person’s genetic makeup.**

* The effects of genes are often influenced by the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_—an organism’s surroundings
* Many of a person’s characteristics are determined by an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ between genes and the environment.
	+ Examples of Environmental Factors
		- \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – some may be genetic but most come from hard work and dedication
		- \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ can be affected by diet, smoking, damage to a growth plate, ingestion of large amounts of caffeine at a young age
		- \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – UV exposure and skin cancer
		- \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – same as athletics – hard work and dedication – singing lessons with some natural ability
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_plays a HUGE role in determining many factors that may have an effect on our genetics such as:
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Other environmental factors such as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ use can affect a person’s genetics.