

ZORK GENETICS

NAME: _____

PERIOD: ____

BACKGROUND: A long time ago, in a galaxy far, far away, a great race of beings lived on a planet called ZORK. The inhabitants were known as Zorkonians. They are made up of 10 basic genes (unit) that code for their appearance. Each one of these genes is made up 2 alleles (traits). With this in mind, there are 1,024 different possible combinations for their appearance! This is called their **phenotype** or their physical appearance. If we look at their genes, there are 59,049 different combinations of the alleles! This is called the **genotype** or genetic makeup. Remember that we use letters for the alleles that control the genes and one letter or allele is inherited from each parent. You will be using Zorks, who use the same genetic principles as a pea plant, to see how genes are passed on and inherited. You will be using Punnett Squares to do this.

Here are some things to help you. You must understand these concepts and terms! I will use traits from the table on the next page as examples.

Phenotype: The physical appearance or what the gene makes an organism look like. Examples would be two eyes, yellow hair, and green lips from a zork.

1. Dominant: The trait that is shown the most. Example: Green hair is dominant over yellow hair.
2. Recessive: The trait that is hidden. In this example: yellow hair.

Genotype: The genetic makeup of an organism. We use letters for the genotype. Remember that you need to look at the genotype to see what the phenotype will be.

Example: There is a Gene or unit for hair color in a zork. The alleles or traits (individual genes) for hair color would be yellow and green. There are 2 alleles for each gene and we use letters for each allele. The capital letters are the dominant alleles and the lower case letters are the recessive alleles.

Gene	Allele
Hair color	1. Green color = G 2. Yellow color = g

1. **Heterozygous:** The term used for different alleles. There is always one dominant and one recessive allele. Example: Gg. There is only one possibility for this!
2. **Homozygous:** The term used for having the same alleles. This will be either 2 dominant alleles or 2 recessive alleles. Example: GG or gg. There are 2 possibilities for this!

Please refer back to this to help you as you work through this assignment. You will use the table on the next page to complete the problems that follow. Everything you need is in the table! The following are the traits of a Zork, which we will use to study genetics. You will be studying one

Allele	Phenotype	Dominant/Recessive	Genotype	Phenotype	Dominant/Recessive	Genotype
T	Tall	Dominant	TT, Tt	Tall	Dominant	TT
t	Short	Recessive	tt	Short	Recessive	tt
G	Green hair	Dominant	GG, Gg	Green Hair	Dominant	GG
g	Yellow hair	Recessive	gg	Yellow Hair	Recessive	gg
E	One Eye	Dominant	EE, Ee	One Eye	Dominant	EE
e	Three Eyes	Recessive	ee	Three Eyes	Recessive	ee