

Station 1: Genetics Vocabulary Card Sort

Match the correct word with its correct definition.

Trait	any characteristic that can be passed from parent to offspring	Allele	alternative version of a gene
Heredity	the passing of traits from parents to offspring	Dominant Allele	allele is always expressed. Represented by a capital letter
Genetics	study of heredity	Recessive Allele	only expressed if both alleles are recessive. Represented by a lower case letter
Gene	each section of DNA that is used to make a protein	Homozygous	organism that has 2 identical alleles for a gene
Genotype	complete genetic make-up of an organism	Example of Homozygous Dominant and Recessive	BB & bb
Phenotype	the physical expression of a genotype	Example of Heterozygous	Bb

Law of Dominance	when two alleles differ, one can control the trait (Dominant) and the other one can be hidden (Recessive)	Law of Segregation	each pair of alleles separated during meiosis (gamete formation)
Law of Independent Assortment	pairs of genes segregate into gametes randomly and independently	Incomplete Dominance	an intermediate trait appears in the offspring
Co-dominance	both traits appear in the offspring	Polygenic Traits	traits controlled by several genes often on multiple chromosomes

Station 2: Monohybrid Cross Station

Your biology teacher is creating a new flower garden at your school. He/she wants the garden to have a mixture of red and white flowers. The garden is started with one homozygous dominant red flower and one homozygous recessive white flower. Answer the following questions.

1. What are the genotypes of the parents?
2. What are the genotypes of the offspring?
3. What are the phenotypes of the offspring?
4. What is the genotypic ratio of the offspring?
5. What is the phenotypic ratio of the offspring?



6. Cross two of the F1 generation and record the genotypic and phenotypic ratio of the F2 generation.

Station 3: Dihybrid Cross

Victoria and David Beckham are thinking about having one more child. Before they make a decision the couple would like to know the possibility of their child will have hazel eyes like David and a widows-peak like Victoria. David is homozygous recessive for hazel eyes and straight hair line. Victoria is heterozygous for dark brown eyes and widows-peak. What percent of the offspring will have hazel eyes and a widows-peak?

1. What is David Beckham's genotype?
2. What is Victoria Beckham's genotype?
3. What are David Beckham's gamete combinations?
4. What are Victoria Beckham's gamete combinations?
5. What percentage of the offspring will have hazel eyes and a widows-peak?
6. What percentage of the offspring will have dark brown eyes and a widows-peak?
7. What percentage of the offspring will have hazel eyes and a straight hairline?
8. What percentage of the offspring will have dark brown eyes and a straight hairline?



Station 4: Incomplete Dominance

Your teacher has successfully started a garden of red and white flowers but feels as if there needs to be more of a color variety. He/she would like to have a section of pink flowers as well. As you know incomplete dominance can occur and give you an intermediate trait. If your teacher crosses a homozygous red and white flower, what percentage of the offspring will be red, pink and white?

1. What are the genotypes of the parents?
2. What are the genotypes of the offspring?
3. What are the phenotypes of the offspring?
4. What percentage of the offspring are red?
5. What percentage of the offspring are pink?
6. What percentage of the offspring are white?
7. Cross two of the offspring and record the percentage of red, pink and white flowers.



Station 5: Co-Dominance

Prince Harry and Meghan Markle are in love with cats. They would really like to have a cat that is brown and black. They have recruited the help of you and your classmates. If two cats are crossed and they both black and brown what is the phenotypic ratio of this cross?

1. What are the genotypes of the parents?
2. What are the genotypes of the offspring?
3. What are the phenotypes of the offspring?
4. What percentage of the offspring will be black?
5. What percentage of the offspring will be brown?
6. What percentage of the offspring will be black and brown?



Station 6: Multiple Alleles

Kylie Jenner and Travis Scott have fallen head-over-heels for baby Stormi. They are looking forward to having another baby but are skeptic to know what type of blood their second baby could have. Kylie is heterozygous type A and Travis is heterozygous type B. Answer the following questions.

1. What are Kylie and Travis genotypes?
2. What are the genotypes of the offspring?
3. What is the genotypic ratio of the offspring?
4. What is the phenotypic ratio of the offspring?

