

Topic: Autosomal Pedigrees Worksheet

Summary: Students will learn how to use autosomal pedigrees to trace a gene as it is passed down from generation to generation. Students will also learn about genetic disorders.

Goals & Objectives: Students will be able to trace a gene as it is passed down from generation to generation.

Standards: CA Biology 3c* *Students know* how to predict the probable mode of inheritance from a pedigree diagram showing phenotypes.

Time Length: 20 minutes

Prerequisite Knowledge: Students know how to complete a punnett square for dominant and recessive traits. Students know vocabulary words like homozygous, heterozygous, dominant, recessive, genotype and phenotype. Students know how to calculate ratios.

Materials:

- Textbook for reference
- Handouts and pencils

Procedures:

1. Students work on the handout by themselves.

Accommodations: Students with an IEP can take the handout home if they need extra time, and/or do the even numbered questions.

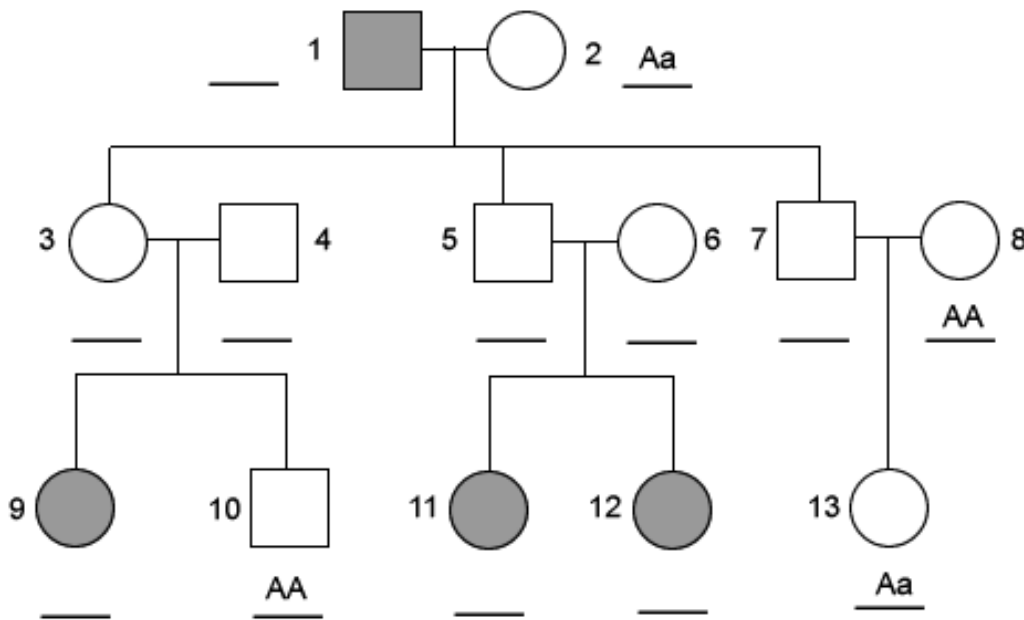
Evaluation:

This assignment is worth a total of 10 points.

Autosomal Pedigrees Worksheet

Background Information: Pedigrees are used to trace a gene as it is passed down from generation to generation. The squares represent a male and the circles represent a female. In the examples on this handout, the shaded circles and squares will represent having the disorder. Make sure to read each question to find out if a disorder is caused by dominant alleles or recessive alleles. A person can be a carrier of a trait, meaning they have heterozygous alleles.

1) Cystic fibrosis is an autosomal recessive disease where mucus develops in the lungs, liver, and the pancreas. Below is an autosomal pedigree tracing the passing of the cystic fibrosis gene through 3 generations. Write in the genotypes on the line next to / below each individual.



For all phenotype questions below, answers include: normal, carrier, cystic fibrosis.

2) What is the phenotype of individual 2? _____

3) What is the phenotype of individual 3? _____

4) What is the phenotype of individual 5? _____

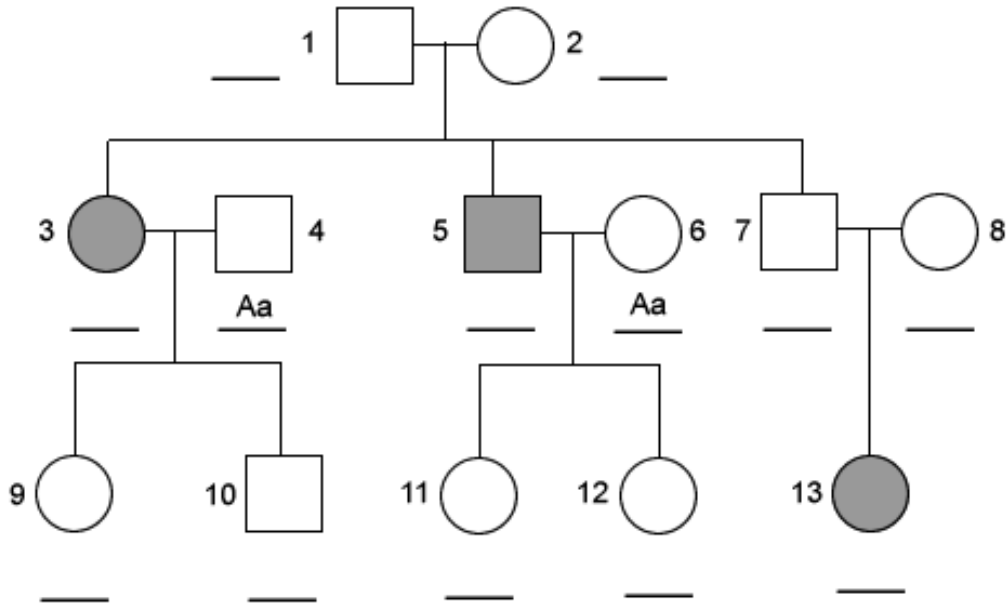
5) What is the phenotype of individual 7? _____

6) What is the phenotype of individual 10? _____

7) What is the phenotype of individual 11? _____

8) Why did individual 9, 11, and 12 get the disorder but their parents did not have the disorder?

9) Albinism (Albino) causes a deficiency of pigmentation in skin, hair, and eyes. Albinism is recessive and autosomal. When a single gene affects many traits, like albinism, it is called pleiotropy. Below is an autosomal pedigree tracing the passing of the albinism gene through 3 generations. Write in the genotypes on the line next to / below each individual.



10) Sickle-cell anemia is an autosomal recessive genetic disorder that causes red blood cells to change shape, which can cause the red blood cells to become stuck in blood vessels. Write in the genotypes on the line next to / below each individual.

