ACTIVITY 2: LEARN ABOUT THE GENETICS OF SICKLE CELL ANEMIA

Directions: Listen as your teacher reads the text. Work individually or with a partner to answer the questions. Then, debrief as a class.

Sickle cell anemia is an autosomal **trait** that shows **codominance**.

- The **allele** for normal red blood cells is A.
- The **allele** for sickled red blood cells is S.

The table below shows the **phenotypes** and **genotypes**.

Genotype	*Phenotype*	
AA	**Normal blood:** • Round red blood cells	
SS	**Sickle cell <u>anemia</u> (SCA):** • Sickled red blood cells • Sickled blood cells can pile up in the body, be very painful, and make the person sick	
AS	**Sickle cell <u>trait</u> (SCT):** • Some normal (round) red blood cells • Some sickled red blood cells • A person with SCT usually does not feel any painful *symptoms* *(body changes).* ○ A person with SCT can have *aches* *(pain)* and feel tired when they are playing sports or if they are *dehydrated* *(have not had enough water to drink).*	

REMINDER: An autosomal trait is decided by a gene on any chromosome that is not a sex chromosome.

REMINDER: Codominant means that a *heterozygous organism* *(having two different alleles)* shows both traits at the same time.

Both alleles are written using an uppercase letter.

→ ***trait:*** *a feature or characteristic of an organism*

→ ***alleles:*** *different versions of a certain gene*

→ ***phenotype:*** *an expressed trait (shown characteristic)*

→ ***genotype:*** *the combination of alleles for a certain trait; for example AA*

1. What is the genotype of a person with sickle cell <u>anemia</u>?

☐ AA ☐ SS ☐ AS

2. What is the genotype of a person that has <u>normal</u> red blood cells?

☐ AA ☐ SS ☐ AS

3. What is the phenotype of a person with the genotype AS?

☐ normal red blood cells ☐ sickle cell anemia (sickled red blood cells) ☐ sickle cell trait (some normal and some sickled red blood cells)

4. When might a person with <u>sickle cell trait</u> feel tired and have aches (pain)?

A person with sickle cell trait might feel symptoms when...