826 DIGITAL

STEM@Home: Session 1 (Tracing Traits)

All humans (including heroes) are unique, but they share many **traits** with their parents and siblings. Traits are observable characteristics that are passed down from parents to a child. What traits do you share with your relatives?

Trait Inventory

Interview your relatives to track who inherited which traits. If you want to interview even more relatives—great!—track their traits on a separate piece of paper.*

	Me		Relative _____		Relative _____	
Can roll tongue?	Yes	No	Yes	No	Yes	No
Has dimples?	Yes	No	Yes	No	Yes	No
Is right-handed?	Yes	No	Yes	No	Yes	No
Has freckles?	Yes	No	Yes	No	Yes	No
Has naturally curly hair?	Yes	No	Yes	No	Yes	No
Has allergies	Yes	No	Yes	No	Yes	No
Can see the colors red and green (is not color blind?)	Yes	No	Yes	No	Yes	No

STEM@Home: Session 1 (Continued)

Traits are passed down from parent to child in DNA (deoxyribonucleic acid). DNA is like a cookbook—every cell of a human includes all the recipes needed to make a human. Small differences in the DNA of individuals (for example, between you and a classmate) make us unique and account for our individual traits (hair color, eye color, whether or not we can roll our tongue, and so on).

Fun DNA Facts**

- DNA is chemically the same, whether it comes from a fish, a flower, a bacterium, a human, or a hero. If you were to isolate DNA from any of these life forms (like you did for your strawberry today), it would all look the same in your test tube—just like if you look at two books from very far away, you cannot tell that there are any differences in the books. You would have to get close enough to read the books to see the differences between them. Similarly, you would have to get a close-up of the DNA to be able to "read" the differences between fish and flower DNA.
- Humans and chimpanzees share 98 percent of their DNA (and humans share 7 percent of their DNA with bacteria!).
- Each human cell contains about 3.5 billion base pairs of DNA.
- If you were to unwind the DNA in just one of your cells, it would be approximately six feet long.
- If you unraveled all of your DNA from all of your cells and laid out the DNA end to end, the strand would stretch from Earth to the sun hundreds of times (the sun is approximately ninety-eight million miles away from Earth).
- You could fit twenty-five thousand strands of DNA side by side in the width of a single adult hair.

*Adapted from http://teach.genetics.utah.edu/content/begin/traits/traitsinventory.pdf
**Facts are adapted from "Genes in Common," http://genetics.thetech.org/online-exhibits/genes-common; "Amazing DNA Facts," http://sciencecentres.org.uk/projects/handsondna/4.8%20-%20Amazing%20facts%20and%20quiz%20questions.pdf; EmilyC, "Genetic Similarities of Mice and Men," http://blog.23andme.com/23andme-and-you/genetics-101/genetic-similarities-of-mice-and-men/.