LESSON 6 How is Sex Inherited? ==========

Objectives

When students have completed this lesson, they will be able to:

- explain how sex is inherited through the X and Y chromosomes;
- distinguish between the origin of fraternal and identical twins.

Exploring Science / Historical Steps

Of course, gender-related discussions can be controversial in many communities, but this lesson offers a good opportunity to encourage empathy and to display support for adolescents who may be struggling with gender identity issues - while reinforcing the important role of bias (first mentioned in Unit 1, Lesson 3 ("Ready for More Scientific Thinking?").

In regards to the inference question, suggest to students that they review Unit 6, Lesson 4 ("What are the Jobs of Your Brain?"), especially the map of the brain.

Heredity and Sex

The large illustration at the top of the second page continues to use the standard **X** shape of chromosomes. You might want to remind students why this is so. (Review the comments in this guide for Unit 9, Lesson 1).

Ensure that students are clear that it takes all of the 23 chromosomes from the mother's egg (shown at the top of the diagram) and all of the chromosomes from the father's sperm (shown at the bottom of the diagram) to create the body cells of the individual. In other words, the body cells of the person will have a *pair* of each of the 23 chromosomes.

A key message of the lesson is the 50 - 50 chance of having an offspring of each gender - every time fertilization occurs. The Punnett square should help make this point obvious to students.

As students read about the two kinds of twins, you might have them label the illustrations, with the letter **X** for each egg cell shown, and the letter **X** for each sperm cell that produces a female child and the letter **Y** for each sperm that produces a male child. Finally, they could label each child **XX** or **XY**, according to whether it is male or female.

To Do Yourself

In this activity, unlike the "To Do Yourself" of Lesson 4 ("What Are Dominant and Recessive Genes?"), the results will always be the same - 5 draws will produce 1 red and 1 white bean, and the other 5 draws will produce 2 red beans.

Questions

Please see below.

Review

Please note: I have not made the answers available online, on the small chance that a student might discover them. Of course, the answers to these questions will be included in the version of the Teacher's Guide provided to teachers who purchase the text.