



Classroom Teacher Preparation

Anatomy/Physiology 6: Blood Typing

Please use the following to prepare for the next SfS lesson.

Description:

Students will learn what determines a person's blood type through a blood-typing activity using simulated blood. From the results, the class will discuss which blood types are compatible and what happens if you give incompatible blood to a patient during a blood transfusion. Longer classes will also examine human blood smears under the microscope and discuss the function of various blood components.

Lesson Objectives – SWBAT (“Students Will Be Able To...”):

6th-8th

- Describe the differences between various blood types
- Explain the importance of blood typing prior to blood transfusions

Disciplinary Core Idea (DCI)

LS1 From Molecules to Organisms: Structures and Processes – LS1.A Structure and Function

- (6th-8th) All living things are made up of cells. In organisms, cells work together to form tissues and organs that are specialized for particular body functions.

Science & Engineering Practice (SEP)

Analyzing and Interpreting Data

- (6th-8th) Analyze and interpret data to provide evidence for phenomena.

Crosscutting Concept (CCC)

Structure and Function

- (6th-8th) Complex and microscopic structures and systems can be visualized, modeled, and used to describe how their function depends on the shapes, composition, and relationships among its parts; therefore, complex natural and designed structures/systems can be analyzed to determine how they function

Preparation:

This lesson is designed to be an introduction to the topic. No prior knowledge is necessary.

Room Set Up for Activities:

Students will work in groups of 4 at their desks. Students will be responsible for collecting data and sharing their results with group members. Blood typing stations will be set up at different locations in the room to prevent cross-contamination of supplies. Access to a sink is helpful for cleaning up of materials between classes.

If your instructors plan to include the microscope activity: Please reserve 5-8 compound light microscopes (4/10/40X), if your school has them available. This will allow more students to participate at a time during the microscope activity. Our instructors have a few compound light microscopes, which means that students will have to take turns. Flat



tables with access to power outlets will be necessary for the microscope work. If using microscopes provided by the school, please set them up before class begins. If outlets in the classroom are not conveniently located, provide extension cords/power strips if possible.

Safety:

The simulated 'blood' used for the blood typing activity is non-biological and non-toxic. The human blood smear slides for the microscope activity have been commercially prepared and do not pose a health threat to students. Students should take care with the glass slides, as edges are sharp.

Related Modules:

This lesson may be taught as part of a sequence or group of related modules on either **Cells** or **Forensics**. Other modules in these sequences include:

Anatomy/Physiology 1: Cells & Organelles – Students make a cell model to learn about the functions and interactions of a cell's organelles.

Anatomy/Physiology 3: DNA Extraction – Students critically think about the process of DNA extraction using a model and then each student will get to extract DNA from a strawberry (or other plant).

Anatomy/Physiology 22: Fingerprinting - Students learn how fingerprints are formed, the forms friction ridges take and the prints they can leave behind, before investigating the various ways of studying fingerprints. Students will experiment with fingerprint dusting, lifting, inking, and will also practice analyzing prints.

For other module sequences and groups, look here: www.sciencefromscientists.org/sequences

Standards Covered:

Please click the following link to our website to review the standards covered by this lesson, listed by state: www.sciencefromscientists.org/standards/

Lessons are matched to both national NGSS and local state standards.

After Our Visit:

Extend this lesson by playing an online game in which students must correctly identify their "patients" blood types in order to save them.

Access this Extension activity by visiting the Classroom Post found on our website at sciencefromscientists.org/cohorts. Use the name of your school/cohort and password to log in.

To help Evaluate, check out our Open Response questions online at sciencefromscientists.org/open-response-questions. They are freely available for all of our lessons for current teachers. Use the password supplied by your instructor to log in.

Additional Resources:

- American Red Cross Website: <http://www.redcrossblood.org/learn-about-blood/blood-types>
- Blood Typing Game: <http://www.nobelprize.org/educational/medicine/bloodtypinggame/index.html>
- Blood Typing Game explained (2:52): <https://www.youtube.com/watch?v=3T558hMytIs>