



Classroom Teacher Preparation

Anatomy/Physiology 2: Microscope Mystery

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

Description:

In this lesson, students learn to use basic microscopes to visualize various plant and animal tissue samples. Groups of students will work to identify mystery tissue samples that they image on their microscopes. Student groups will then present and compare their findings with other groups. Longer classes will also make a phylogenetic tree containing all the organisms identified.

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

6th-8th

- Use a microscope to image fixed slides of various organisms and tissues
- Identify organisms based on microscopic images

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.

LS4 Biological Evolution: Unity and Diversity – LS4.A Evidence of common ancestry and diversity

- (6th-8th) The fossil record documents the existence, diversity, extinction, and change of many life forms and their environments through Earth’s history. The fossil record and comparisons of anatomical similarities between organisms enables the inference of lines of evolutionary descent.

Science & Engineering Practice (SEP)

Engaging in Argument from Evidence

- (6th-8th) Construct, use, and/or present an oral and written argument supported by empirical evidence and scientific reasoning to support or refute an explanation.

Crosscutting Concept (CCC)

Patterns

- (6th-8th) Macroscopic patterns are related to the nature of microscopic and atomic-level structure.

Preparation:

Some knowledge of types of cells and their structures is helpful (animal vs. plant cells), but not required. This lesson serves as an introduction for using a microscope, no prior microscopy knowledge is necessary.



Room Set Up for Activities:

Students will work in small groups and move between microscopes that are set up around the classroom. Space is needed to set up 10 small microscopes in the classroom with enough room for student groups to gather at each microscope.

Safety:

There are no safety concerns for this lesson.

Related Modules:

This lesson may be taught as part of a sequence or group of related modules on **Cell Structure and Function**. Modules include:

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

Anatomy/Physiology 19: Neurons – Students explore the structure and function of neurons through the construction of models. Students will model nerve impulses and discuss how neurons send signals between the sensory and motor systems.

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 making a microscope with a cell phone at at <https://www.youtube.com/watch?v=UOHxNbxm-m4> or <https://www.youtube.com/watch?v=1hN4RI4QTJ8>.

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:

- A magnified view of pond life - <https://owlcation.com/stem/Microscopes-For-Children-Exploring-the-Microscopic-World>
- Parts of a microscope (2:56) - <https://www.youtube.com/watch?v=1k659rtLrhk>
- Cheek cells under a microscope (1:54) - <https://www.youtube.com/watch?v=jTSC4ntCPY4>