



Classroom Teacher Preparation

Anatomy/Physiology 14: Eye Dissection

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

Description:

This lesson engages students by asking them to compare a camera with a mammalian eye. After reviewing lab safety and a brief introduction of the dissection procedure, students work in pairs to explore the anatomy of a preserved sheep eye. The lesson ends with a review of mammalian eye anatomy and the basic mechanics of vision.

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

4th-8th

- Dissect a sheep eye
- Explain the function of the major structures in the mammalian eye: cornea, lens, pupil, retina, iris, optic nerve, vitreous humor

Disciplinary Core Idea (DCI)

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

- (3rd-5th) Organisms have both internal and external macroscopic structures that allow for growth, survival, behavior, and reproduction.
- (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)

Constructing Explanations and Designing Solutions

- (3rd-5th) Identify the evidence that supports particular points in an explanation.
- (6th-8th) Construct an explanation using models or representations.

Crosscutting Concept (CCC)

Structure and Function

- (3rd-5th) Substructures have shapes and parts that serve functions
- (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 a general introduction to the anatomy of the eye and the physiology of vision. It is recommended that this lesson is paired with AP13: *Structure of the Human Eye*.

We have prepared a *Dissection Letter for Parents* that can be distributed upon request. Please let your instructor know if you are interested. **Note:** For students not wishing to participate in the dissection, there is a virtual online tour of the eye available (http://www.exploratorium.edu/learning_studio/cow_eye/index.html). Access to tablets or a computer with Internet access during class time would allow them to virtually review the material.



Room Set Up for Activities:

Students will work with a partner at their desks during the dissection. All materials, food, and drinks should be cleared from their work area before beginning the lesson. Desks should be cleaned following the dissection.

Safety:

Gloves are required. We use powder-free latex gloves by default, however a box of one-size-fits all polyethylene gloves will also be available when latex is in use, and substitute gloves of another material are available for the whole class upon special request. Please inform the instructor of a latex allergy before the lesson begins.

The dissection procedure requires the use of sharp scissors; therefore, goggles must be worn at all times during this activity. Hands should be washed immediately following the lesson.

Related Modules:

Anatomy/Physiology 13: Structure of the Human Eye - This lesson's multiple short activities will walk students through their eyes from front to back, experimenting with and experiencing how different parts of the eye affect image formation.

Anatomy/Physiology 15: Heart Dissection & Anatomy/Physiology 16: Heart Health – Students dissect a sheep heart (in the former) and in the latter station-based lesson, students gain an understanding of the cardiovascular system and an appreciation for the importance of physical activity for heart health.

Anatomy/Physiology 10: Frog Dissection - Students dissect a preserved frog in order to observe the external and internal structures of frog anatomy.

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 building a pinhole projector out of a Pringles can! You can prompt students: This simple camera has only a few of the camera/eye structures studied in the lesson. Which ones are missing?
http://www.exploratorium.edu/science_explorer/pringles_pinhole.html

You may also consider having students continue this experience by choosing a structure of the eye to research and report on, based on their questions!

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:

- WGBH video: <http://mass.pbslearningmedia.org/resource/idptv11.sci.life.stru.living.d4keye/eyes/>
- Cow Eye Dissection interactive (same as above):
http://www.exploratorium.edu/learning_studio/cow_eye/index.html