



Classroom Teacher Preparation

Anatomy/Physiology 17: Model Lung

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

Description:

Students are introduced to the structure and function of human lungs through the use of models. Students are provided with a variety of building materials to construct a model lung and diaphragm to examine how the lung and diaphragm work together to achieve breathing.

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

3rd-8th

- Model how the lungs and diaphragm work together during breathing

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)

Developing and Using Models

- (3rd-5th) Collaboratively develop and/or revise a model based on evidence that shows the relationships among variables for frequent and regular occurring events.
- (6th-8th) Develop a model to describe unobservable mechanisms.

Crosscutting Concept (CCC)

Structure and Function

- (3rd-5th) Substructures have shapes and parts that serve functions
- (6th-8th) Structures can be designed to serve particular functions by taking into account properties of different materials, and how materials can be shaped and used.

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 small groups of 2-3 students. There are enough supplies for 10 groups.

Safety:

Students will be working with latex balloons. This lesson should not be selected if there is a latex allergy in the class or a



latex restriction at the school.

Related Modules:

This lesson may be taught as part of a sequence or group of related modules on **Human Anatomy**. Modules 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 10: Frog Dissection – Students dissect a preserved frog in order to observe the external and internal structures of frog anatomy.

Anatomy/Physiology 14: Eye Dissection – Students explore the anatomy of a preserved sheep eye with a review of mammalian eye anatomy and the basic mechanics of vision.

Anatomy/Physiology 18: The Mammalian Brain – Students examine preserved sheep brains to learn about the different structures of the brain, including cerebrum, cerebellum, and brainstem.

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 running an experiment to measure lung capacity with a balloon. :

https://www.sciencebuddies.org/science-fair-projects/project-ideas/HumBio_p009/human-biology-health/does-exercise-increase-vital-capacity

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:

- TED-Ed What do the lungs do? (3:21): https://www.youtube.com/watch?v=8NUxvJS-_0k
- Respiratory System - The Dr. Binocs Show (3:52): <https://www.youtube.com/watch?v=mOKmjYwfDGU>
- Respiratory System Song (2:52): <https://www.youtube.com/watch?v=LWWzXYWvn84>
- Crash Course A&P - The Respiratory System (9:21): <https://www.youtube.com/watch?v=bHZsvBdUC2I>