



Classroom Teacher Preparation

Anatomy/Physiology 7: Spread of Infectious Disease

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

Description:

This lesson introduces students to the exponential spread of infectious disease. Students will model a disease outbreak through an activity where they spread an “infection” through the class by sharing contents of a cup with one another. The focus of the lesson is on extracting meaningful information from the data patterns formed by disease outbreaks, and on understanding the difference between linear and exponential growth. If time allows, older classes may discuss the concept of herd immunity.

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

3rd -8th

- Graph the spread of disease using class data
- Explain how disease spreads (exponentially) and why

Disciplinary Core Idea (DCI)

LS2 Ecosystems: Interactions, Energy, and Dynamics – LS2.A Interdependent relationships in ecosystems

- (6th-8th) Organisms and populations are dependent on their environmental interactions both with other living things and with nonliving factors, any of which can limit their growth. Competitive, predatory, and mutually beneficial interactions vary across ecosystems but the patterns are shared.

Science & Engineering Practice (SEP)

Using Mathematical and Computational Thinking

- (3rd-5th) Organize simple data sets to reveal patterns that suggest relationships.
- (6th-8th) Use mathematical representations to describe and/or support scientific conclusions and design solutions.

Crosscutting Concept (CCC)

Patterns

- (3rd-5th) Similarities and differences in patterns can be used to sort, classify, communicate and analyze simple rates of change for natural phenomena and designed products.
- (3rd-5th) Patterns can be used as evidence to support an explanation.
- (6th-8th) Patterns in rates of change and other numerical relationships can provide information about natural and human designed systems.
- (6th-8th) Graphs, charts, and images can be used to identify patterns in data.

Preparation:

No specific preparation is required.



Room Set Up for Activities:

The activity will involve students moving around the classroom. Desks or tables should be arranged in a way that would allow students to move freely around the room. Alternatively, another room could be used. The lesson also requires large volumes of water, so access to a sink is necessary.

Safety:

There are no safety concerns with this lesson.

Related Modules:

This lesson may be taught as part of a sequence or group of related modules on **Public Health**. Modules include:

Chemistry 7: Nutrient ID - Students learn that organic compounds, such as sugars, starches, and proteins, can be identified with the use of chemical indicators. Using these chemical indicators, students test a variety of food samples for the presence of proteins, and simple and complex carbohydrates.

Life Science 18: A Vitamin C Experiment - Students learn about the relationship between nutrition and fresh/processed foods, then verify this information by measuring the concentration of vitamin C in different forms of orange juice.

Anatomy/Physiology 16: Heart Health - This station-based lesson allows students gain an understanding of the cardiovascular system and an appreciation for the importance of physical activity for heart health.

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 conducting an experiment to determine the best method for removing germs.

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:

- Solve the Outbreak: a free app and web game created by the CDC: <http://www.cdc.gov/mobile/applications/sto/web-app.html>
- Information about a Career as an Infectious Disease Epidemiologist: http://kidsahead.com/subjects/17-medicalinnovations/cool_jobs/187