



Activity 1: Diary of a Disease

In this activity, students will take on the role of an infectious disease or an infectious agent. The student will then research his/her assigned disease in the library, on the web, or even by interviewing a health professional, and then create a story from the disease or pathogen's point of view.

Background

The world of infectious disease is complex and confusing. It covers many areas of science as well as medicine. To add to the problem, these diseases affect everyone, everywhere, every day. According to the World Health Organization, every hour, 1,500 people die from an infectious disease worldwide. Many of the victims are under the age of five years old.

Luckily, there are teams of physicians, scientists, epidemiologists, and other health care workers who treat, research, and track diseases daily. But despite our ability to combat these diseases, one thing still remains, the infectious agents who cause these diseases are very good at what they do.

Viruses, like prions, are not living things, yet they can cause the deadliest infectious diseases. In fact, it only takes one complete virus particle to cause the viral disease hepatitis B. On the other hand, bacterial infections have been something modern medicine has been able to fight with antibiotics, but even then, bacteria continually change and mutate to resist even the most potent of drugs. These pathogens are smart, and we must learn all their tricks if we want to win the war against them.

In this activity, students will delve into the world of infectious agents and see what life is like through the eyes of a pathogen. Maybe by “humanizing” these diseases, we’ll get a better understanding of how and why they are so dangerous.

This activity is has been modeled after the stories found on the web site:

<http://schools.ci.burbank.ca.us/~luther/science/disease/>

Diary of a Disease

Learning Objectives

The student will:

1. perform research on an infectious disease.
2. create a story about a specific infectious disease.

Materials

1. computer with Internet access for research purposes
2. *Diary of a Disease Student Activity Sheet*

Procedure

1. At the beginning of class, hand out the *Disease Diary Student Activity Sheet*.
2. Tell the students that they are going to research an infectious disease and document the facts that they think would accurately describe the “life” of the disease.
3. The students can work in groups or alone to help each other discuss the information that they believe is important.
4. Inform students that they will use these facts to create a story from the disease’s perspective. Examples of stories can be found on the web site <http://schools.ci.burbank.ca.us/~luther/science/disease/>
5. Assign each student or student group an infectious disease. Suggested research topics are:
 - A. Examples of infectious diseases that affect the gut: *Escherischia coli* 0157 infection, hookworm infection, salmonellosis (samonella), cholera, and shigellosis
 - B. Examples of infectious diseases that affect the central nervous system: botulism, meningococcal disease (meningitis), and rabies
 - C. Examples of infectious diseases that affect the respiratory system: influenza, strep throat, and tuberculosis
 - D. Examples of infectious diseases that affect more than one system: anthrax, chickenpox, legionellosis (Legionnaire’s Disease), Lyme disease, measles, and mononucleosis

Have each student present a finished story to the class.

Example

See the example of a story on the second page of the *Student Activity Sheet*. This story and the activity as a whole have been modeled after the stories found on the web site of a school in Burbank, California. Take a look at their projects:

<http://schools.ci.burbank.ca.us/~luther/science/disease/>

Extension Activities

- *Language Arts*: Interview a scientist or physician about their job, their role in fighting infectious disease, or a specific disease.
- *Social Studies*: Create a timeline of the history of a specific infectious disease. Include information on where the disease originated, scientists who studied the disease and their findings, and where the disease occurs today.
- *Social Studies*: Draw a map with the locations and dates of an infectious disease outbreak.
- *Language Arts*: Write a poem about an infectious disease and its consequences.
- *Mathematics*: Calculate the percent of infected population of different infectious diseases.

Standards

National Science Education Standards, Grades 5-8

- Science Content Standard C: All students should develop understanding of structure and function in living systems.
- Science Content Standard F: All students should develop understanding of personal and community health.

Books

- DeSalle R. (Ed.). 1998. Epidemic!: The World of Infectious Disease. New York: New Press.
- Farrell, J. 1998. Invisible Enemies: Stories of Infectious Disease. New York: Farrar, Straus, and Giroux.

Web Sites

Starred sites are written more towards students.

- Center for Disease Control
<http://www.cdc.gov/>
- World Health Organization
<http://www.who.int/>
- The Plumber: Plagues and Epidemics*
<http://www.theplumber.com/plague.html>
- History of Diseases: *Karolinska Institute*
<http://www.mic.ki.se/HistDis.html>



Diary of a Disease

Nobody wants an infectious disease. They can be painful, dangerous, and even deadly. But how do infectious diseases feel about us? Learn more about an infectious disease by researching the disease and then writing a story from the disease's point of view.

Do the Research

Gather information on the infectious disease assigned to you. You can search for information from the library and/or using Internet sites and classroom reference materials. Record the name of the source of the information. Interesting facts you may explore are:

- infectious agent that causes the disease
- method of spread (water, food, insect, or person)
- risk of infection
- symptoms
- body's defenses to fight the disease
- method of diagnosis
- treatment
- prevention
- who discovered it

Write the Story

Write a story from a disease's point of view. Here are some suggestions about how to begin

1. Write a diary entry of an infectious agent entering its host.
2. Write a story about how the disease progresses once inside the host.
3. Write a story about how the body fights the infectious agent when it enters the body.
4. Write a news article of how an infectious agent successfully infected many people.

Use your imagination! Be creative! Add drawings or pictures!

Don't know where to begin? Check out the sample story "The Adventures of Bert the Bacterium" on the next page!

Sample story

The Adventures of Bert the Bacterium

By Rebecca Tuuri

Hi my name is Bert, short for *Borrelia burgdorferi*. It's a family name. I was born after my parents had a long argument. I think it was somewhere around 14 hours! Then they split up. Oh well, they sure did produce one handsome bacterium! The lady bacteria love my spiral shaped physique and especially my eight flagella. Of course, my shape and size not only make me handsome, but make me good at infecting different animals.

I was born inside the gut of a tick. When I was a teenager, I stayed inside and got strong. One day, I was hanging out when I got the call from the command center saying that the tick that I was traveling in had bitten a little boy named Jimmy. Here was my chance! I wiggled as fast as I could towards the tick's mouth. I wiggled for close to 37 hours (It's a long way from the stomach to the mouth!). I was almost there, faster and faster I swam towards the tick's mouth. Closer, closer . . . WHEW! I was through. Right behind me, I heard the cry of the tick, my first host, scream as my Jimmy picked him off with tweezers, but left behind his mouth, still sucking to the skin. I just made it through.

And now I am just waiting for a few days while I get big and strong. After about seven days, I should be able to make a rash on Jimmy's skin. I hope that I can be as great of a rash artist as my Aunt Martha. She used to make the most amazing red radial patterns on her victim's skin.

Wait, one of my buddies from a neighboring blood vessel just came by yelling something...Oh no! The human took the dreaded antibiotics doxycycline and amoxicillin. The medicine is marching quickly towards our blood vessel. It has already killed hundreds of my next door bacteria neighbors.

Here they come, there are so many . . . Jimmy must have taken the medicine for two weeks already, there are so many here. Closer, closer. AAAACK! The pain has gotten to me - it won't be long now. I wish I could have lived to see the rash that I was preparing to make on the skin. It would have been so beautiful. But it's too late.

This story has been modeled after the stories found on the web site:

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Please see that web site for other samples stories.