

## DON'T BE A PEST!

**Master Teacher:** Roni Wymore

**Grade Level:** 7-8

**Time Allotment:** 2 - 50 minute periods

**Overview:** In 1346, a disease spread throughout Europe with such veracity, leaving few people untouched. In less than four years, this pestilence left about 20 million people dead. The "Black Death," as it has been called, was seen as the end of the world. Panic swept throughout the country, as people did not understand the cause. Medical treatment of stricken patients bordered on barbaric.

Through the activities in this lesson, students will understand the emotions of Europeans living at this time and the horrible amount of suffering endured by them and how easily contagious disease can be spread among unsuspecting individuals.

**Subject Matter:** Science

**Learning Objectives:**

Students will be able to:

7.1(A) demonstrate safe practices during lab investigations

7.2(A, B, C, D, E) use scientific inquiry methods during field/lab investigations

**Media Components:** *Newscast from the Past, September 19, 1356*

**Materials:**

For introductory activity per group:

1 sheet paper for group

Each student needs one pen/pencil

For introductory activity per student:

1 sheet paper

Pen/pencil

For introductory activity teacher:

Overhead projector

Vis-a-vis

Transparency of "Introductory: Activity Sheet #1"

For post-viewing activity per student:

Beaker or other container with about 250 ml of distilled water

Pipette

Food coloring, 1-2 drops per container

Lemon juice, 2-4 drops in 1 or 2 pre-selected containers

Blue litmus paper

**Prep for Teachers:** Cue tape to visual of a sign that reads, "Stadbrook & Sons," and the announcer is saying, "Stadbrook and sons, weaponers of the king." Prepare all needed materials for the culminating activity.

### **Introductory Activity:**

The following activity will prepare the students to understand that contagious bacterial and viral diseases can be spread easily and by different means.

Step 1: Have the students brainstorm and compose a list of contagious diseases in cooperative groups of 4 using a Round Table. (One sheet of paper, each student has their own pen/pencil. Starting with one student, they will write one answer and then pass the sheet to the person on their left. Passing the paper continues around the table for a given amount of time set by teacher.)

Step 2: Have each individual student draw a T-chart on one clean sheet of paper. Make the heading on the right "VIRUS" and the heading on the left "BACTERIA."

Step 3: Ask students to name diseases they wrote during the Round Table activity. Many students may call out cancer, or other such diseases. Explain that although these are diseases, they are not contagious.

Step 4: Classify their responses by listing them in the columns on "Introductory: Activity Sheet #1" transparency using the overhead projector.

Step 5: Suggest other diseases they have not mentioned. Classify those as well and ask that they include them on their T-charts.

### **Learning Activities:**

Step 1: Explain to students that they will be viewing a segment of video of the "Black Death" era as it may have been seen if presented on a television newscast. **Cue** tape to visual of a sign that reads, "Stadbrook & Sons," and the announcer is saying, "Stadbrook and sons, weaponers of the king."

Step 2: In order to give students a **Focus For Media Interaction**: tell them to listen for answers to the following questions: "How is the plague believed to have arrived in Europe" (brought to Europe by Venetian sailors) and "How many people have died of the plague." (1/3 of Europe) **Start** tape and **stop** just after visual of anchorman sitting at the news desk and he has said, "For a special on the plague death toll, here is Marco of Padua in Tortona." **Ask** for student responses to the previous questions.

Step 3: Give students handout, "Activity Sheet #2, Bacterial Number Crunchers."

Step 4: For the next segment of video, **tell** students to listen for the Europeans belief about the plague. (It is the end of the world) **Resume** tape and **stop** just after visual of Brother Francisco and he has said, "The world we know has vanished." **Ask** for student responses to the previous question.

Step 5: For the final viewing segment **tell** students to raise their hands when they can name one way doctors treated people stricken with the plague. (enemas, slicing off boils, bland diet, sending patients to a public latrine so the smell would ward off the disease) **Resume** tape and **stop** just after visual of the doctor and he has said, "Can you imagine what that's like for a doctor?" **Ask** for student responses.

### **Culminating Activity:**

Step 1: provide for each student:

Beaker or other container with about 250 ml of distilled water

Pipette

Food coloring, 1-2 drops per container

Blue litmus paper

Teacher:

Prior to distribution teacher will place lemon juice, 2-4 drops, in 1 or 2 pre-selected beakers (note: remember which student(s) have received the

"bug.") Explain to students that bacteria or viruses cause many contagious diseases.

Step 2: Remind students of lab safety by repeating that there should be no running or smelling of the liquid in their container. Students will walk around the room and simulate how a disease could be spread unknowingly by casual contact. Ask, "How can some diseases, cold or pneumonia or even HIV, be spread from one person to another?" Possible answers: sneezing, coughing, unprotected sex, ...

Step 3: Students should form a hypothesis about whether they believe they will catch the disease.

Step 4: Each student will walk to another student, draw a pipette full of their own colored liquid, and while holding pipette over the other student's beaker, will release the liquid from their pipette. Note: Students should avoid touching the other student's beakers to prevent contamination. Pre-selected student(s) will have in their beaker a couple of drops of lemon juice. This acid simulates the "bug." You can have students repeat the transfer of liquids 5 times.

Step 5: After all transfers have been completed, hand each student a strip of blue litmus paper. Explain that if their strip turns any shade of pink, they have contracted a mysterious illness.

Step 6: Students must organize in a data table (Excel can be used to make table) the following information: student's name, whether that student contracted the disease or not and from what students they received a transfer of liquids, in order.

Step 7: Students must analyze the data and form a conclusion, "Which student do you think was the source of the disease?"

Step 8: Reveal to all students the student(s) who was/were carrying the "bug."

### **Cross Curricular Extensions:**

#### **ART**

Have students research how the "Black Death" changed art during the 14th century.

Find pictures of examples of "Danse Macbre."

## GEOGRAPHY

On a map, plot the course of countries ravaged by the "Black Death."

## LANGUAGE ARTS

Write a eulogy or elegy in memory of a victim of the "Black Death."

## HISTORY

Read of the lives and work of: Louis Pasteur, Robert Koch, and Joseph Lister.

### **Community Connections:**

- Contact someone with the local Department of Health to speak to classes about disease prevention.
- Students can conduct a poll of local pediatricians/physicians about how often they ask their patients if their immunizations are up to date.

### **Resources:**

Boise State University

<http://history.idbsu.edu/westciv/plague/19.htm>

The Black Death and art.

American University, Washington, D.C.

<http://www.american.edu/projects/mandala/TED/BUBONIC.HTM>

The role of trade in transmitting the Black Death.

Don't Be A Pest!  
Activity Sheet #1

# Disease

**Viral**

**Bacterial**

Don't Be a Pest!  
Activity Sheet #2

**BACTERIAL NUMBER CRUNCHERS**

Bacteria can reproduce every 20 minutes. Perform the following math problems. Show all work and circle your final answers.

A. If one bacterium was placed in a container, how many bacteria will there be in one hour?	B. How many bacteria will there be in 24 hours?
C. How many bacteria will there be in one week?	D. How many bacteria will there be in one year?