

# The Troublesome Germs

*How does a bacterial infection start, spread and turn into sepsis?*



## Abstract

*This lesson teaches students how easily harmful germs can spread and introduces the subject of sepsis. Students also have the opportunity to see what bacteria actually look like, using microscopes or photographs.*

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## Grade Level

3-5

## Subject Area

Biology, Health, Literacy

## Time

40 minutes

## Setting

Classroom

## Skills

Analyze, identify, interpret, match, organize and record.

## Objectives

Students will learn about proper hygiene and demonstrate their attention to detail when looking at bacteria under a microscope or in photographs and illustrating parts of a story.

## Materials

Microscope and bacterial pathogen slides (or Smart Board and photos of germs), color pencils or paint, notebook, the story "Gerry and Gia: The Troublesome Germs," one printed crossword for each student

## Lesson Author

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## Standards Addressed

### Common Core Standards

- **SL.3.1** – Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 3 topics and texts, building on others' ideas and expressing their own clearly.
- **SL.4.1** – Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 4 topics and texts, building on others' ideas and expressing their own clearly.
- **SL.5.1** – Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly.

### National Health Education Standards

- **1.5.2** – Identify examples of emotional, intellectual, physical, and social health.



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- **9.12** – Describe strategies for prevention of disease.

## New York State Health Education Standards

- **ORH.E.4** – Individuals have routine medical and dental check-ups to assess physical development and sensory perception.
- **CM.E.1** – Uses qualities of active listening, following directions, and responding to others in health enhancing ways.
- **CM.E.2** – Identifies and applies effective verbal (assertiveness) and non-verbal communication skills to enhance health.
- **CM.E.3** – Demonstrates healthy ways to express needs, wants and feelings.
- **CM.E.4** – Describes characteristics of a responsible family member and friend.
- **CM.E.5** – Identifies barriers that interfere with effective healthy communication.
- **CM.E.6** – Demonstrates ways to communicate care, consideration, and respect of self and others.
- **CM.E.7** – Demonstrates effective refusal skills in health-related situations.
- **DM.E.1** – Identifies personal health decisions and influences.
- **DM.E.2** – Recognizes personal capabilities and limitations as they relate to possible healthy solutions.
- **DM.E.3** – Locates and uses information sources to enhance health.
- **DM.E.4** – Personalizes health risk of decisions to self and others.
- **DM.E.5** – Applies a decision making model to real-life health-related situations.
- **DM.E.6** – Questions perceptions of normative health-related behavior.
- **DM.E.7** – Describes how personal health decisions are connected to subsequent decisions.

## Making Connections

Showing students the importance of proper hygiene and how easily people can be exposed to can help minimize the spread of bacteria and their harmful effects, such as sepsis.

## Directions

1. Read the story “Gerry and Gia: The Troublesome Germs.”
2. Lead the class through the questions below the story.
3. Have students complete the vocabulary review crossword.
4. If you have microscopes and bacterial pathogen slides, have students examine germs (bacteria, fungi, protozoa and viruses) under the microscope. Alternatively, you can project PowerPoint slides or show pictures of what germs (bacteria, fungi, protozoa and viruses) look like.
5. Distribute paper and paint or colored pencils.
6. Ask students to illustrate one element of the story (you may choose to assign different moments). Students should try to show the journey of Gerry and Gia through a classroom like their own, with the additional challenge of trying to realistically picture germs. For this project, their images of germs should be unrealistically large enough to show them in motion.

## Gerry and Gia: The Troublesome Germs

Gerry and Gia were two troublesome germs—and they loved to get around. They enjoyed traveling all over town. Germs can be found in some of the strangest places. Today, Gerry and Gia live in noses! Gerry’s Uncle Louie likes living in lungs—and his Aunt Abby likes to live in cuts and scrapes—also called abrasions. Gia has twin sisters: Tammy lives in a tooth, and Ginger lives in the gums. She also has a cousin that lives in our digestive systems, and they call her Helpful Hannah!

You might be wondering, “Helpful? Why would anyone call germs helpful?” Well, some germs—especially some types of germs called bacteria—are helpful. But the ones that make you sneeze and cough and give you toothaches are truly troublesome!

One cold winter day, Gerry and Gia were living in the nose of Diego, whose son David attended Sneezievew Elementary School. Gerry and Gia had always wanted to visit the school. “Let’s do it today!” they cried. But they had to wait for Diego to sneeze before they could leave his nose. Suddenly, a sneeze began to build: “Ah... Ahh... Ahhhh... AAHHHHHH... CHOOOOO!!!!” As they expected, Diego didn’t cover his nose during the sneeze, and so, with great speed, Gerry and Gia, along with many of their germ friends, flew through the air and landed on David’s hand.

David took Gerry, Gia and the other bacteria onto his yellow school bus until they arrived at a big red, brick school building. They all made their way into Miss Carrie’s classroom. Gerry and Gia loved being in school! They saw colorful pictures and posters hung all around the bright room, and there was even a fish tank.

Before recess, David asked permission to go to the lavatory. When Miss Carrie handed David the bathroom pass, Gerry and Gia made their move! They moved from his hand onto the old wooden pass. They rode on the pass all the way down the hall and back—wheeeeeee! Gerry and Gia loved to travel! When David returned the pass to Miss Carrie, Gerry and Gia jumped from the pass to Miss Carrie's hand. But they weren't there for long. Miss Carrie began handing out the day's lesson on vicious viruses to the students in the first row. Gerry and Gia traveled to every student in the class, one at a time, surfing the pile of papers as if they were on a wave in the ocean—wheeeeeee!

The two germs loved roaming around the cheerfully decorated classroom, veering left and right to get a better view of some of the students' work, which was hanging up on display. As the students touched hands, then rubbed their faces and noses, the germs jumped from hands to faces and noses. When they got into someone's nose, the person sneezed—Ah... Ahh... Ahhhhh... AAHHHHHH... CHOOOOOO!!!!—and the germs were on their way again! Naomi was the last girl in the last row, and once Gerry and Gia landed on her hand, they had made it all around the room.

As her students began sneezing, one by one, Miss Carrie said in a loud voice, "I hope an infection is not going around!" Miss Carrie reached for the very large pump bottle of soap on her desk, ready to send everyone to wash their hands in the sink at the back of the classroom. "Oh no! Not hand soap! How does she know we're here?" Gia frantically whispered to Gerry. The two germs loved school very much, and they hated to leave, but that soap signaled that it was time to go.

Miss Carrie always shared her hand soap. She walked around the room, offering soap to students who were sneezing and coughing. Each one pumped out a bit of soap, rubbed it on his or her hands and waited at the sink to scrub under warm water.

Miss Carrie told the class that it was important to stop infections early, as they can become very serious and make us very sick. Very bad infections can turn into sepsis, which occurs when the body can't fight an infection that has entered the bloodstream. We can help prevent infections that lead to sepsis by always washing our hands, cleaning and bandaging our cuts and scrapes, and coughing and sneezing into our elbows, never our hands.

Miss Carrie also told the class that not all germs are harmful—in fact, most germs are good! Helpful Hannah, for example, lives in stomachs to help digestion.

Naomi was the last to wash her hands at the sink, and just like that, "Poof!" Gerry and Gia vanished. They had had a fun day at school, but they were troublesome germs—and they weren't going to cause any more mischief.

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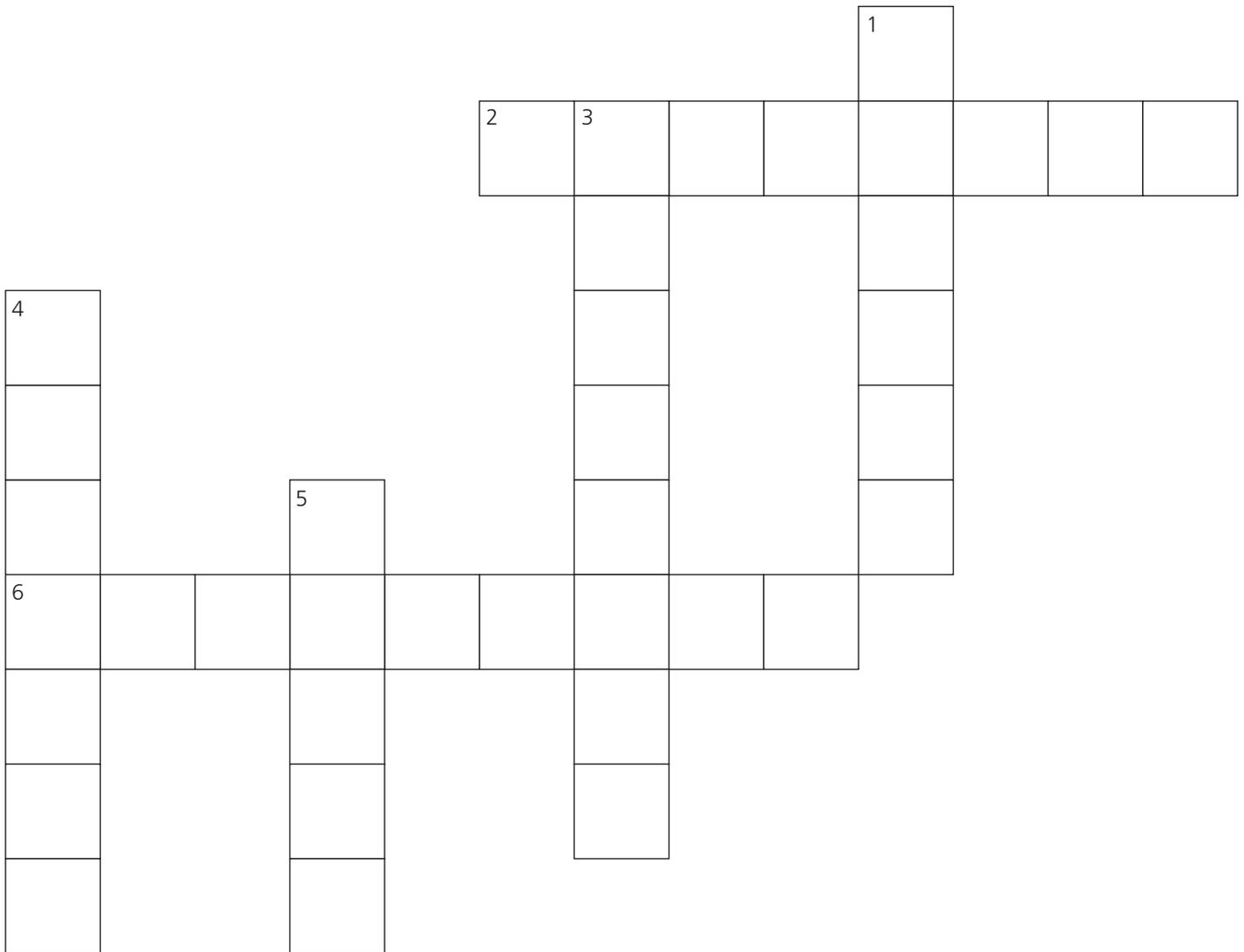
### Questions from the story

1. How did the germs spread in this story?
2. Where were the germs living at the beginning of the story?
3. How did the germs travel from person to person?
4. Why were the germs troublesome?
5. According to the story, do all germs make us sick?
6. What was one way that Miss Carrie tried to stop the spread of bacterial infection?
7. What is sepsis?

### Questions for discussion

1. Using the information from the reading, think of three ways that germs can spread in a classroom.
2. Using the information from the reading, think of three ways you might be able to stop the spread of bacteria that can lead to an infection such as sepsis.
3. Make a list of classroom rules that could be used to stop the spread of bacteria and prevent infections. Together, let's make one master list on the board and, as a class, agree on some classroom health and hygiene rules that can keep us healthier throughout the year.
4. Make a list of rules that you can practice in your home to stop the spread of bacteria and prevent infections.

## The Troublesome Germs - Review



### Clues

#### Across

2. A type of germ with one cell that can either help or harm the body.  
 6. The invasion of germs that are not normally present within the body can cause an \_\_\_\_\_.

#### Down

1. When an infection is severe and enters the bloodstream, and the body cannot fight it off, it is called \_\_\_\_\_.  
 3. When you scrape your arm or knee, you are most likely going to have an \_\_\_\_\_.  
 4. Keeping yourself and your surroundings clean is called practicing good \_\_\_\_\_.  
 5. Tiny invaders that can make our bodies sick.

## Crossword answer key

### Across

2. Bacteria
6. Infection

### Down

1. Sepsis
3. Abrasion
4. Hygiene
5. Germs