




A MICROSCOPIC TOPIC



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A silhouette of a horse standing in a field, set against a bright orange background that suggests a sunrise or sunset. The horse is facing right, and its form is dark against the glowing light.

*"I Pledge
My Head
to Clearer
Thinking..."*

The Oklahoma State University STEMist interns are not certified medical professionals. All information provided in these handouts are derived directly from the Centers for Disease Control and Prevention, are mandated and approved by Oklahoma State University to its employees and students, and/or is referenced directly from trusted sources.

Visit with a trusted parent or guardian for any further questions about COVID 19. Visit credible sources such as the Centers for Disease Control and Prevention for more information regarding the coronavirus pandemic.

A Microscopic Topic

OVERVIEW

What is smaller than a pinhead, comes in all shapes and sizes, and can make us really sick if we're not careful? That's right, **germs**. Did you know that right this minute there are currently more germs on you than there are people in the world? That sounds crazy, but right now there are 2 to 10 million bacteria on your fingertips alone. Some germs, like those that cause food poisoning, can make you sick and require a doctor's visit. But not all bacteria are bad. Today, we will cover both healthy germs, as well as those germs that make us sick. We will also learn why washing your hands is still the best defense against these little guys and how the CDC advises we wash up.

Bacteria are microscopic, single-celled organisms that thrive in diverse environments. These organisms can live in soil, the ocean and inside the human gut. However, germs are those microorganisms capable of producing disease. Humans' relationship with bacteria is complex. Sometimes bacteria lend us a helping hand, such as creating yogurt, or helping with our digestion. In other cases, bacteria are destructive, causing diseases like **pneumonia**. It is important we recognize some good bacteria vs. some pretty nasty germs.

One of the most well known types of good bacteria are probiotics. **Probiotics** are made of live bacteria and yeast. They help to regulate gut and respiratory health! Has someone ever told you to eat yogurt when you have a stomach ache? That is because yogurt is packed full of probiotics that help to rebalance our tummies' bacteria levels. **Lactobacillus** is one of the most common probiotics. It's the one you'll find in yogurt and other fermented foods. Different strains can help people who can't digest lactose, which is a sugar found in milk. Most importantly, probiotics help send food through your gut by affecting nerves that control gut movement. Researchers are still trying to figure out which are best for certain health problems.

Now germs, or "bad" bacteria, come in many different forms and are responsible for multiple illnesses. Fortunately for us, most bacterial infections can be treated with **antibiotics**, or specially formulated medicines that affect bacterial growth. **Streptococcus** is a common bacteria that causes strep throat, an illness that is characterized by a sore throat and fever. You should always contact your doctor or tell an adult if you develop symptoms of a bacterial infection, some common symptoms are: fever, muscle aches, being more tired than usual, coughing, sneezing, and/or congestion.

For more information on "bad" bacteria you can visit the [CDC Home Page](#).



ACTIVITY

MATERIALS NEEDED

Glitter

Various Surfaces

STEPS

Now that we understand germs and bacteria a little better, how can we prevent the spread of these little critters? According to the CDC, 80% of illness causing germs are spread by your hands.

Step 1: Dip your hand into a plate of glitter.

Step 2: Touch 4 different surfaces.

Ex: Door knob, table, pencil, cup

Step 3: Take note of how many "germs" or pieces of glitter are transferred to each surface.

Step 4: Clean up all the glitter.

Bacteria are everywhere and we can spread them without even knowing it! The best way to slow the spread of these illnesses causing germs is still to wash your hands with soap and water. So what's the best way to clean your hands? The CDC has this down to a science:

Get your hands wet, turn off the water, and apply soap.

Rub your hands together to lather up the soap. Clean every surface from between your fingers and under your nails to your palms and back of your hands.

Scrub for at least 20 seconds. If you need a way to time it, sing or hum "Happy Birthday" twice through.

Turn the water back on and rinse well.

Dry your hands with a clean towel and use the towel to turn off the water.

Now that we understand the differences between healthy and illness causing bacteria we can take the right steps to help prevent the spread of bacteria that makes us sick.



RESOURCES AND SUPPLEMENTARY MATERIALS



[Centers for Disease Control and Prevention](#)

[Children's Hospital of Wisconsin- What are Germs?](#)

[HiMama- Pepper Germs Experiment](#)

[Humans vs. Viruses Ted- Ed Youtube Video- How Does Your Immune System Work?](#)

[Humans vs. Viruses Ted- Ed Youtube Video- Learning From Smallpox](#)

[Live Science- What are Bacteria?](#)

[Real Science! Glitter Germs](#)

[Science Experiment: How Soap Fights Germs Youtube Video](#)

[Science for Kids- Make Germs Scatter Youtube Video](#)

[Tri Living Well- Gross! Hand Hygiene and Other Gerty Facts](#)

[We Are Teachers- 6 DIY At-Home Activities to Teach Kids about Germs](#)

