

Welcome to the Microban 24 24-Hour Science Experiment!

We know this school year is unlike any other, but the learning must go on!

Learning about science and bacteria can be really fun. Whether you're learning at home, attending school in person – or both – the Microban 24 24-Hour Science Experiment will help you learn about bacteria, and how they spread and grow.

Do you know what bacteria are? Bacteria are the smallest of all living organisms on Earth and can be found in the bread you eat, the soil that plants grow in, and even inside of your body. Bacteria can be good or bad. Good bacteria is helpful – they help us survive, digest food, absorb nutrients and more. Bad bacteria can be harmful, causing food to spoil, illnesses or diseases.

Bacteria actually spreads very easily and every time you touch a surface, your face and even your food, bacteria is traveling along with those touches.

With the Microban 24 24-Hour Science Experiment, you can do a hands-on experiment and play fun games to learn all about bacteria.

So let's get to it!



Welcome

24-Hour Science Experiment



Ages 13+

Extracting DNA from Microbes

In this experiment, you are going to extract DNA from microbes. What is a microbe? It is a microorganism – or a microscopic organism. These are very tiny organisms that can't be seen without a microscope. One example of a microbe is bacteria! There is good and bad bacteria, and it can live anywhere – like the soil, in water or even in your body.

Just like you, microbes and bacteria also are made up of DNA. In order for scientists like me to study microbes, bacteria or any other living organism, we need to be able to use the DNA. And we do this by extracting the DNA. In this experiment, we'll be looking at the DNA in microbes.

Supplies:

- Fruit – preferable strawberries or bananas
- Sealed sandwich baggies
- A coffee filter
- Salt
- Dish soap
- A clear jar
- Tooth picks
- Rubbing alcohol
- *Experiment in Progress* sign

Instructions:

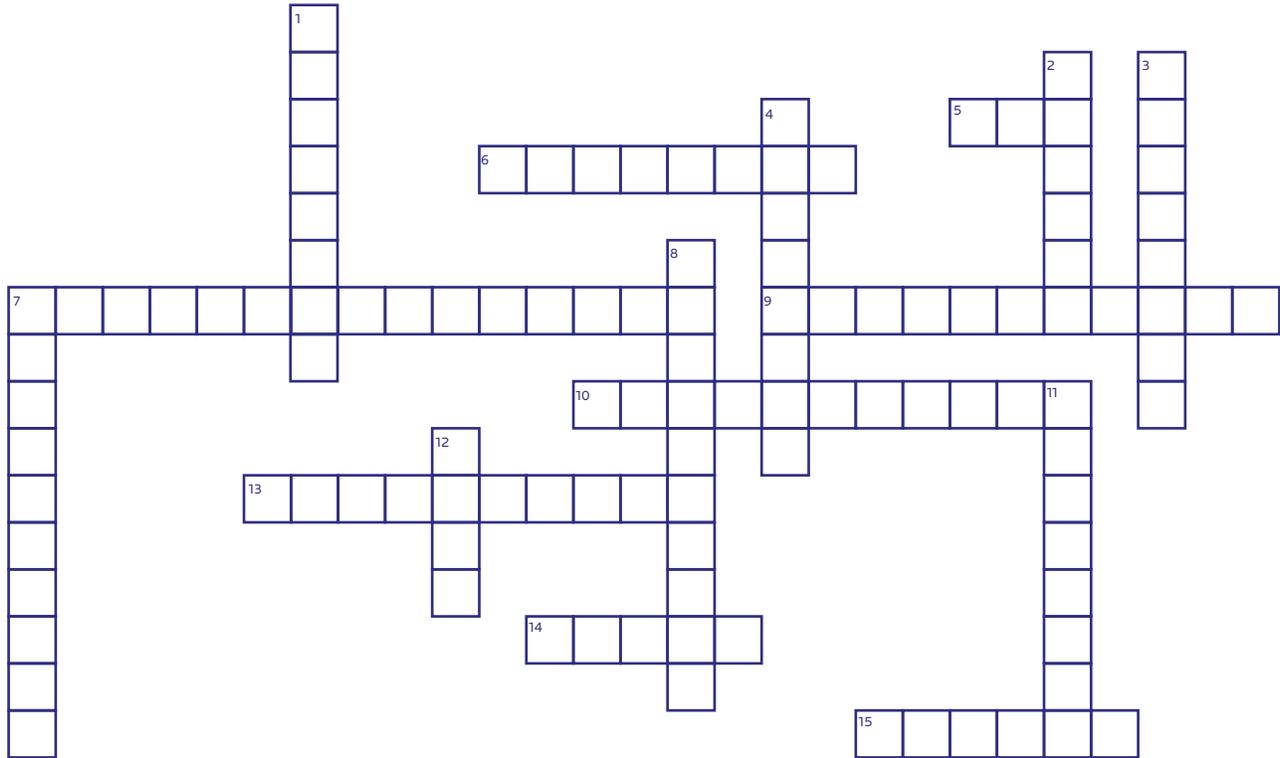
- 1) Gather your supplies and find a hard, flat surface to conduct your experiment. This can be a table or countertop.
- 2) Place the rubbing alcohol into your freezer so it gets really cold. If you're able to do this 30-60 minutes before you get started, the rubbing alcohol will be able to get even colder.
- 3) With the help of an adult, cut the banana or strawberries into small pieces and put them into a sealed sandwich baggie.
- 4) Turn on your sink faucet and get some warm water running. Once the water is warm, put enough warm water in the baggie to cover the fruit.
- 5) Add a teaspoon of salt and just a drop or two of dish soap to your mixture, and seal the baggie.
- 6) Once you've made sure the baggie is sealed tightly, mash up the fruit and water mixture. Make sure it's all mixed up!
- 7) Take your coffee filter and place it over the clear cup or jar. With the help of an adult, pour your mixture into the coffee filter so the liquid drains into the jar. There should be no chunks in the jar and you can throw the left over fruit in the trash can.
- 8) Slowly and with the help of an adult, add your ice-cold rubbing alcohol to the liquid and do not mix.
- 9) Watch! The microbe DNA should be moving into the alcohol. The DNA will look like a string of bubbles.
- 10) Take your toothpick and try to collect the DNA by swirling the toothpick around the string.



Experiment Overview

24-Hour Science Experiment





Down

1. What organism can live in soil, the ocean and inside the human gut?
2. What is a member of the group of eukaryotic organisms that includes microorganisms such as yeasts and molds?
3. What is organism that lives on or in a host organism and gets its food from or at the expense of its host?
4. What is a common way for germs to spread?
7. What is a scientific procedure undertaken to make a discovery, test a hypothesis, or demonstrate a known fact?
8. Because germs are microorganisms, what do you need to see them?
11. What does it mean to clean and disinfect?
12. What fungus can appear in shades of black, blue, red, and green?

Across

5. What is the common three letter name for the Influenza A H1N1 virus?
6. What's a common bacteria hot spot when entering or exiting a room?
7. What bacteria commonly lives in the intestines of humans and animals?
9. What is one of the best ways to protect yourself from getting sick?
10. What is the common name for SARS-CoV-2?
13. What is the most common viral infectious agent in humans and is the predominant cause of the common cold?
14. What Gram-positive, round-shaped bacterium that can cause skin infections?
15. What white fungus grows in moist areas?

Ages 13+

Instructions:

Print out the activity and with a pencil, fill in the word that fits each definition!



Science Word Puzzle

24-Hour Science Experiment



Answer key:

Down: 1 - Bacteria, 2 - Fungus, 3 - Parasite, 4 - Coughing, 7 - Experiment, 8 - Microscope, 11 - Sanitize, 12 - Mold
Across: 5 - Flu, 6 - Door knob, 7 - Escherichia coli, 9 - Handwashing, 10 - Coronavirus, 13 - Rhinovirus, 14 - Staph, 15 - Mildew

 Virus	<p>A tiny organism that multiplies within cells and causes disease such as chickenpox, measles, mumps, rubella, pertussis and hepatitis</p>	 Handwashing	<p>One of the best ways to protect yourself from getting sick</p>
 Bacteria	<p>Tiny one-celled organisms present throughout the environment that require a microscope to be seen</p>	 Sneezing	<p>A common way for germs to spread</p>
 Fungus	<p>An organism that includes microorganisms such as yeasts and molds</p>	 Microscope	<p>Needed to view microorganisms or germs</p>
 Protozoa	<p>A group of single-celled eukaryotes that feed on organic matter</p>	 Sanitize	<p>Lowers the number of germs on surfaces or objects to a safe level. This process works by either cleaning or disinfecting surfaces or objects to lower the risk of spreading infection</p>

Ages 13+

Supplies:

Scissors

Instructions:

Print out the activity and cut out each of the cards and using your science expertise, match the word to the definition!



Science Memory Game

24-Hour Science Experiment





**EXPERIMENT
IN PROGRESS**

