

Alien Invaders

Right now, you have trillions of tiny creatures, or microorganisms (my-croh-ORG-in-isms) living inside you. And there are trillions more all around you.

Most of these microorganisms don't hurt us at all. In fact, some of them help us digest our food, make vitamins, and do other important things.

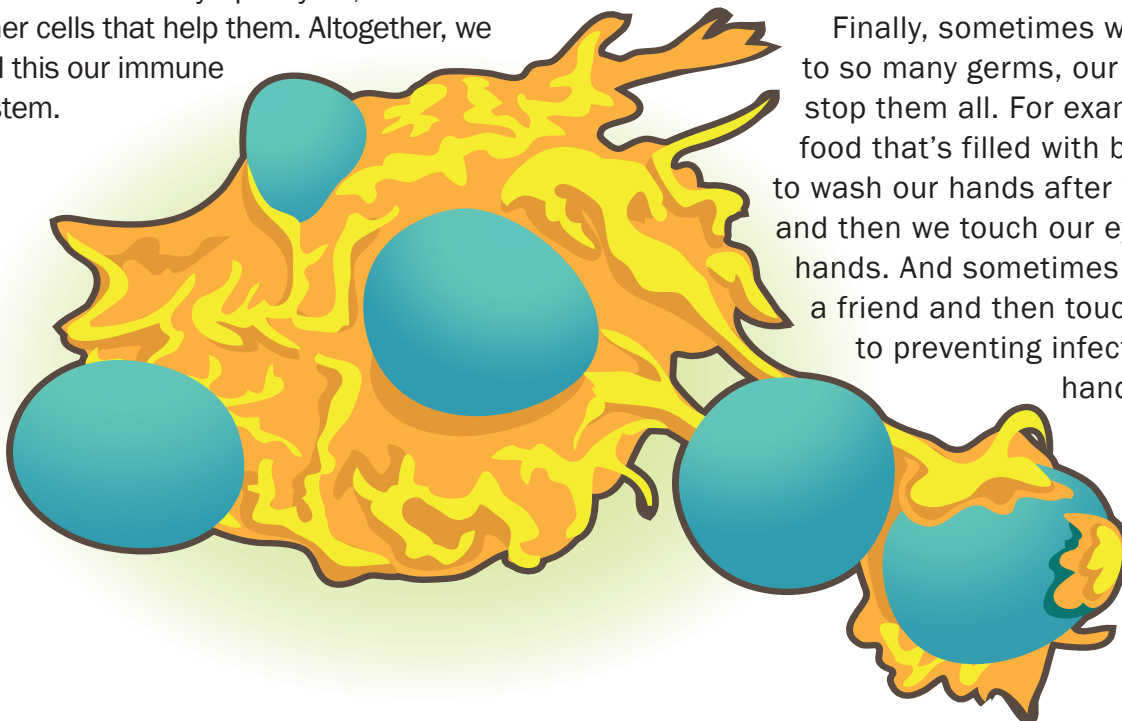
But others can make us sick. The common term for these microbes is "germs." They can be bacteria, or viruses (which are much smaller than bacteria), or fungi or other creatures. Germs are responsible for colds, the flu, food poisoning, measles, malaria and many other diseases. Even tooth decay is caused by germs that live on our teeth! When germs get into our bodies and attack our cells, we call it an infection.

The Blood Police

Germs travel through our body in our blood vessels. Luckily, we have special blood cells called lymphocytes (LIMF-oh-sites) that try to stop the germs.

Lymphocytes are shaped like blobs and are pale colored. They are also called white blood cells – as opposed to red blood cells, that carry oxygen and give blood its color.

The lymphocytes' job is to attack and kill germs as soon as they get into our blood stream. There are many different kinds of lymphocytes, and there are other cells that help them. Altogether, we call this our immune system.



Round lymphocytes and a large macrophage (another germ-fighting cell).

What Goes Wrong?

Unfortunately, our immune system can't stop every germ. Some germs hide really well. Some of them can disguise themselves so our immune system can't recognize them. Sometimes they hide inside our own cells!

Other times, our immune system gets weak because we don't get enough sleep, we don't eat healthy foods, we work too hard, or we just get stressed out. These kinds of stress can reduce the number of lymphocytes in our blood. Germs can then attack and there aren't enough lymphocytes to stop them.

Finally, sometimes we expose ourselves to so many germs, our immune system can't stop them all. For example, we might eat old food that's filled with bacteria. Or we forget to wash our hands after we use the bathroom, and then we touch our eyes or mouth with our hands. And sometimes we shake hands with a friend and then touch our face. One key to preventing infections is to wash your hands often, with soap.

Activity Instructions



Before You Start

Your immune system is playing a constant game of tag with germs that are trying to invade your body. When the germs win, you get sick. How many illnesses can you think of that are caused by germs?

What You'll Need

- Green flag belts
- Red flag belts
- White wrist bands

Getting Ready

Warm up your muscles with your teacher or other adult leader

Up to 20 players will be cells in the body that are being threatened by germs. They wear the green flag belts

Up to eight players will be germs. They wear the red flag belts.

Up to eight players will be lymphocytes. They wear the white wrist bands.

How To Play

In this game, the germs will attempt to get the green cells by removing their flags. The lymphocytes will try to protect the cells by removing the germs' flags.

The green cells try to run away from the germs. They can't remove the germs' flags—only the lymphocytes can do that.

When either a green cell or a germ loses their flags, they are out. Either they leave the field of play and wait for the round to be over, or they can fall down dramatically (teacher's choice). **IF YOU LOSE YOUR FLAGS, YOU CAN NOT KEEP RUNNING!!**

Your teacher will let you know what part of the room or field is "in bounds." Any player who puts even one foot out of bounds is out of the game for that round.

A round is over when either all the germs are out or all the green cells are out.

Try playing the first round with the same number of germs as lymphocytes.

Try playing the second round with twice as many lymphocytes as germs. This is what happens when your immune system is healthy and you wash your hands often.

Try playing the third round with twice as many germs as lymphocytes. This is what happens if your immune system is not healthy, or you forget to wash your hands.



What did you learn?

When was the last time you got sick from an infection?
Do you know how it happened?

What sort of germ caused it?
What could you do to avoid getting sick in the future?