

Activity title: Pathogen Buster!

Objectives:

This activity shows children how antibodies fight pathogens inside the body, the concept of antibody specificity, and how vaccines work.

Set up:

- In a big bowl, make your own slime ([you can use our snot recipe for this!](#)) or [buy here](#).
- Mix small pieces of pasta, [pipe cleaners](#) and [pompoms](#) into the slime in a big bowl. These items represent different pathogens.
- Prepare different sized tweezers (try one [jumbo](#) and one [small](#)) and an empty plastic container.
- You'll need a timer too.

What to do:

Every organism, or living thing, is made up of structures called cells. The cell is the smallest unit with the basic properties of life. We are all made up of cells!

There are times that a pathogen gets into our body and attack our cells! Pathogens are germs, such as bacteria and viruses, that can kill our cells. When that happens, we become sick.

To fight those pathogens, our immune system produces antibodies, which stick to the intruders and help our body destroy them and make us feel better. However, these antibodies have to be familiar with the pathogens that enter our body and recognize them as intruders. To fight your enemy, you must know your enemy!

What if a new germ enters our body?

The slime is our cells and pathogens are the pieces of pasta, pipe cleaners, and pompoms. The tweezers act as antibodies which will remove the pathogens.

1. You will use the fine tweezers to remove the pasta shapes. Close your eyes and attempt to do the activity for 20 seconds. You can place the removed objects in the empty plastic container.

Was it difficult or easy? Were you able to remove the right object? Just like in real life, if the body has never seen the germ before, it takes some time to produce antibodies and remove the pathogen from our cells. Our body

also has to produce specific antibodies for each pathogen, which is called antibody specificity, so having the right tweezers is essential to the game!

2. Now try the game again, but this time no need to close your eyes and now use the jumbo tweezers. Do the activity again for 20 seconds.

Was it easier now that you are familiar with the pathogen that you were trying to remove?

This is how vaccination work. A vaccine contains a harmless killed or weakened form of a pathogen. When our immune system detects these, we produce the specific antibody to fight it off. But it's like a practice round, so that when we encounter the pathogen again, we have the correct antibodies and our immune system is ready to defeat it!

3. You can try removing different objects from the slime using the different sized tweezers.