Activity 3: The Immunity Game: Germs vs. White Blood Cells

Objectives: Students will understand how immunity works by antibodies recognizing germs before they cause infection, and that the body gets sick if this recognition does not happen. In order to visualize this, they will play the antibodies and germs themselves.

Materials: Chalk (if playing on asphalt/concrete) or something else (tape, string) to mark off an area on the ground

Activity:
Have you ever heard of the immune system? It is a system in your body that fights against germs to keep you from getting sick. Your immune system is very important for staying healthy! Even though you get sick sometimes, your immune system fights away germs every single day that could have made you sick—so more often than not, your body is successful in protecting you.

So, your immune system works by using certain cells in your blood called white blood cells to destroy germs that get into your body. White blood cells learn to recognize germs, so even if a germ can make you sick once, it is hard for it to make you sick twice. The white blood cells do this by sticking a tiny marker onto the germs—the marker is called an antibody. Then, when your immune system recognizes a marked germ it destroys it so that it doesn’t invade your body and make you sick. When your body has learnt to recognize and destroy a germ, we say it has “built immunity” to it. When you are immune to a germ, it can’t make you sick!

Today we’re going to play a game to show just how the white blood cells of your immune system keep you healthy!

Game:
Mark off (beforehand) a large area of the yard or sidewalk that will be the “body.” Inside the large area, mark off a heart. Have two kids be the “white blood cells” and stand inside the body area, but outside the heart—this represents the white blood cells moving all around in the body, but not leaving it. They can’t go outside the large area, nor can they go inside the heart. Three kids outside the body are “germs” and will try to get into the body past the white blood cells and into the heart. Germs getting into the heart represents the germs’ success in making the body sick, but it is important to explain that any organ can get infected, not just the heart.

Have the white blood cells close their eyes and count to ten while the germs try to sneak up on the body. The white blood cells will have stickers that represent antibodies, and will try to tag the germs with them when the germs enter the body— but they cannot leave the outer bloodstream area of the body to tag germs.

If a germ gets into the body, past the white blood cells, and into the inner box (“organ”) without getting tagged, the body is “sick.” But, if the first two germs that try to get into
the body get tagged with antibodies before they make it to the box, the body has then built up immunity. Once the body is immune, the third germ cannot make the body sick, even if it gets in without getting tagged.

Play the game for a couple of rounds before moving on to a discussion.

Post-activity discussion questions:

- What happened to the body? Did it get sick at all, or were the white blood cells able to protect it well?
- Did the body ever become immune to the germ?
- If the body did become immune, how did it do so? Why did the white blood cells need to tag the germs before the body could become immune?