Each activity was designed to be implemented in learning centers, with students rotating in groups of 4-6. However, the number of students in a group can be adjusted for bigger or smaller classrooms. Each activity has been designed to be taught in conjunction with other lessons in a unit or as a stand-alone activity. The activities were designed for fourth grade; but they are suitable and adaptable for students in third through eighth grades.

The Immunology Activities accompany the movie “Our Cells, Our Selves” to support the integration of the movie into classroom curriculums:

◊ Activity 1 offers a hands-on exploration of metabolism.
◊ Activity 2 is a webquest; an online exploration of the background of the immune system using a “police force” analogy.
◊ Activity 3 is another hands-on activity that explores how shape-matching is the basis of all processes of the immune system.
◊ Activity 4 is a board game that allows students to use their newfound knowledge to “fight” 10 common diseases.

The immune system is truly a unique aspect of our bodies! It is made up of many different organs and cells that work together around the clock - patrolling our whole body, sharing information and making decisions!

ACTIVITY 1: Energize!

Activity Summary
Students will become familiar with the concept of metabolism and its relationship to the energy we get from food. They will grow yeast cultures in pop bottles with varying amounts of sugar. As the yeast metabolize the sugar for energy, they release carbon dioxide (CO₂) into balloons attached to the neck of the bottle. This will allow students to visually compare the relationship between food energy and metabolism. Students will also be introduced to the various kinds of common sugars and the importance of eating healthily.

Time 20-30 minutes

Materials yeast culture, pop bottle, balloon, measuring tape
ACTIVITY 2: Sergeant Cell’s Immune System Defense Team Webquest

Activity Summary
Working individually or in groups of two at a computer station, students will research the major cell types and molecules important to the immune system. Comparing immune cells with a police team, the webquest activity guides students to research the immune system online. Students use their research to help fill “jobs” on the Immune System Defense Team. At the end of their research, students will create “Business Cards” for the molecule or cell of their choice that describes their main function or functions and their ideal “job” on the Defense Team.

ACTIVITY 3: A Perfect Fit!

Activity Summary
Students will explore the role of shape-matching in the immune system using salt dough clay. Working with a partner, they will mold clay “receptors” to fit unique objects. Students will be challenged to understand how our bodies use specific shapes to recognize foreign particles and the difference between a “good fit” and a “bad fit”.
Time 30-40 min

ACTIVITY 4 - “You make me sick!”

Activity Summary
In this immunology board game, students will gain understanding about the immune system and common diseases. Students travel through the body (the board) and are exposed to 10 common germs, which they must fight using their knowledge and their white blood cells. Some squares on the board allow students to learn healthy behaviors that earn them extra white blood cells and risky behaviors that harm their immune system and “cost” white blood cells.
Time 30-40 min

Health and Disease cards carry questions which earn or cost players white blood cells!

This game will introduce students to the following concepts:

◊ the differences between bacteria and viruses
◊ the immune system learns and remembers
◊ healthy behaviors promote a stronger immune system
◊ the basic means of transmission and prevention of disease
◊ some key players of the immune system, such as macrophages, T cells and B cells
◊ the importance of vaccines and antibiotics

Cartoons of the germs that cause pink eye, the common cold and strep throat, which students will meet in “You make me sick!”