



All About Allergies

Objectives:

Students will be able to:

- describe the scientific process that yields an allergic reaction.
- discover what is fact and myth regarding peanut allergies.
- identify steps to take if a friend has a food allergy.

National Learning Standards:

Next Generation Science Standards

- 5-PS1-1: Develop a model to describe that matter is made of particles too small to be seen.
- 4-LS1-2: Use a model to describe that animals receive different types of information through their senses, process information in their brain, and respond to the information in different ways.

Activity Description: Students will engage in a hands-on activity, similar to a relay race, where select students act as the body's immune system and other students act as ingested food. Students will "travel" inside the body of a large, imaginary person to experience the reaction first-hand.

- When food ingested triggers an allergic reaction, the body (group of students) will begin a relay race releasing histamine and other chemicals (additional group of students) who race to stick signs on a drawn outline of a human indicating ways a reaction can manifest itself (respiratory issues, gastrointestinal issues, etc.).

Materials

- Large poster paper or white board
- Index cards (9)
- Markers (1 set)
- Blue painters tape (1 roll)
- Paper grocery sack (1)
- Cotton balls (1 bag)

Activity Steps

Activity Prep:

- Draw an outline of a human body on a large poster paper or white board.
- Prepare a set of Allergic Reaction index cards by writing the following symptoms, one on each card: itchy mouth, hives, swelling, wheezing, trouble breathing, stomach pain, diarrhea, vomiting, dizziness.
- Roll nine pieces of blue painter's tape in preparation for use with index cards.

Step 1: Ask students to share common allergies they have heard of. List allergies on the board. Ask if any students in the class have specific allergies. Share that food allergies affect 1 in 13 children. That is about two students in every class!⁶

Step 2: Ask students what happens when someone has an allergic reaction. Capture brainstormed notes on the board. Share with students that different allergies cause different reactions, but today students will get a chance to learn generally how allergies work!

Step 3: Explain that we often notice an allergic reaction by the visible symptoms. Refer to the list generated by students to validate correct signs of allergic reaction. Hold up each Allergy Reaction index card created before the class to fill in additional information as needed.⁷

- If students see any of these signs in themselves, or a friend, they should seek help immediately! For serious reactions, including trouble breathing, call 9-1-1.

Step 4: Divide students into two groups. Send each group to opposite sides of the room. Give one group a bag of cotton balls. Give the second group the stack of Allergic Reaction cards. Place the grocery sack, open, in the center of the room.

It's A Fact!

Peanut allergies affect just 0.6 percent of the U.S. population.⁹ For more information on food allergies, including peanut allergies, visit www.peanutallergyfacts.org.

Science: All About Allergies (con't)

Step 5: Provide directions for relay race: Students are virtually traveling inside the body to see the microscopic reaction of how the body engages an allergic reaction.

- a) The cotton balls represent food. One at a time, students on the cotton ball side will run a cotton ball to the paper sack. The paper sack represents the human's digestive system.
- b) The other side of the room represents the body's immune system. As soon as a cotton ball is dropped in the sack representing food being ingested, the immune system team will act out the process of releasing histamines and other chemicals by sending one person with an Allergic Reaction index card to race to the outline of a person on the board and tape his/her card to the outline.
- c) The class will compete as one team, racing for the fastest time.

Step 6: Refer to the posted human body outline with allergic reaction cards. Share with students that epinephrine is a hormone also known as adrenaline. It can be given to a person having an allergic reaction to stimulate blood flow in the body and lessen the symptoms of the allergic reaction.⁸

Extension Opportunity: Invite a school nurse to visit the classroom to share more about allergies and what to do if you notice an allergic reaction.

Processing Questions:

1. What system in the body causes an allergic reaction? Hypothesize why the body releases these histamines and chemicals.
 - a. Listen for students to share that the immune system in the body mistakenly believes the food is harmful.
2. If you see signs of an allergic reaction in a friend or family member, what may have happened in the past few minutes to two hours? What should you do?
 - a. Listen for students to share that the person may have ingested something that caused the immune system to release histamines or other chemicals, which trigger visible reactions. Students should call 911 and seek out an adult for help.