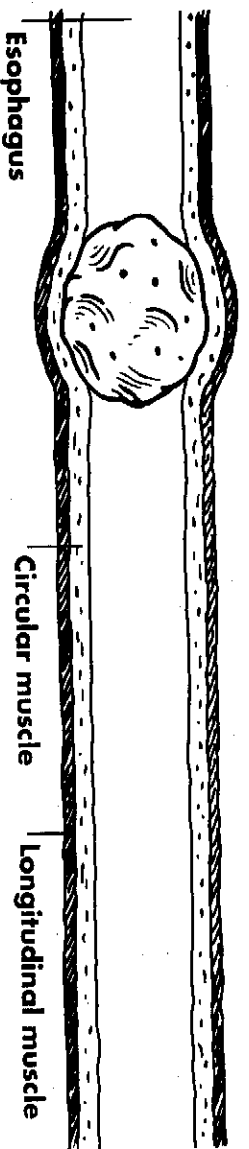
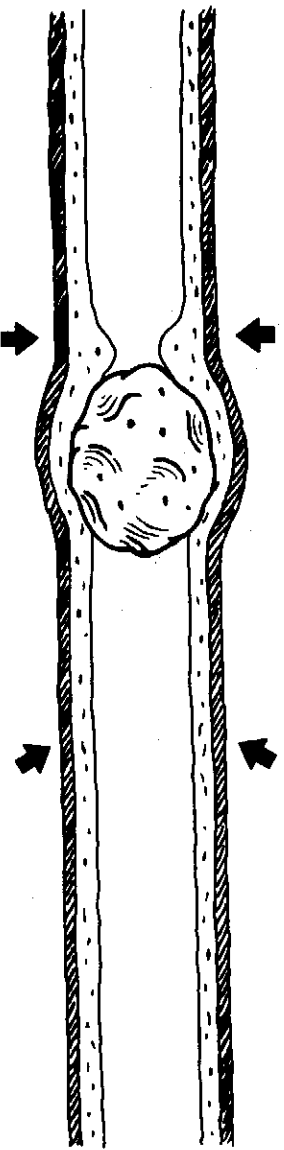


## How Peristalsis Works

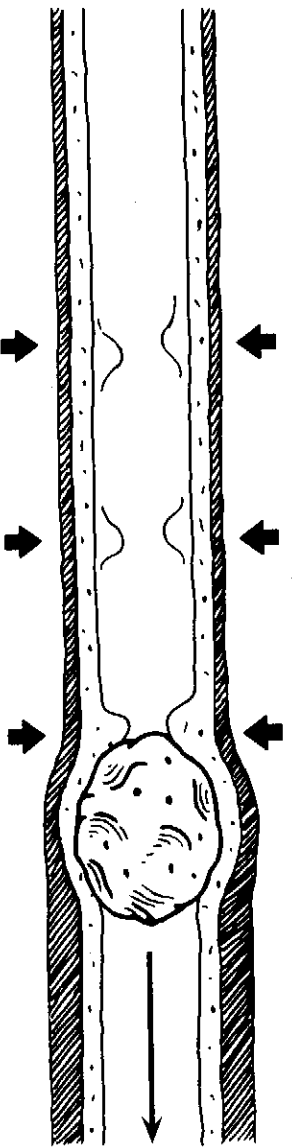
**A. Food moves from the mouth to the esophagus.**

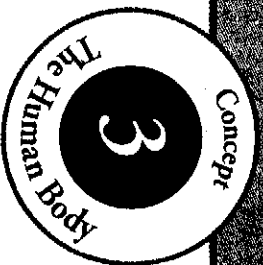


**B. Circular muscles contract behind the food mass, while longitudinal muscles contract ahead of the food mass.**



**C. Muscle contractions force the food mass forward.**





## Investigation 2

# Pushing the Food Along

### Materials

- student record sheet on page 23, reproduced for each student
- overhead transparency of *How Peristalsis Works* on page 18
- tubes, straws, pipes, and garden hoses of varying diameters
- stockings, socks, and pantyhose
- balls and other spheres of different sizes
- wires, twist-ties, rings, and other circular devices
- self-locking bags, pieces of cloth, buttons, and small paper clips
- petroleum jelly or other lubricant

### Steps to Follow

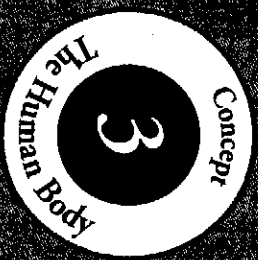
1. Ask students, "What makes food move from the top to the bottom of the esophagus?" Students will probably say that gravity makes the food fall down. Then ask, "When giraffes bend their long necks down to drink water from a stream, how does the water move **up** through their necks?"
2. Tell students that it is not gravity but a process called **peristalsis** that moves food through the digestive tract. Explain that peristalsis is a combination of two types of muscle action. Lengthwise muscles push the food through the digestive system while circular muscles tighten and release the digestive tubes. Show students the *How Peristalsis Works* transparency.
3. Place students into small groups. Tell them that each group should make a model to show how peristalsis works using any of the available materials. They can squeeze a tennis ball through a stocking, holding their fingers in a ring-like shape to simulate the circular muscles and pushing to simulate the lengthwise muscles. They can lubricate a metal sphere, push it through a tube, and wrap a wire around the tube for the circular motion.
4. Tell the groups to decide how they want to make their models. Talk about brainstorming. Explain that in brainstorming no ideas are ridiculed. All ideas are recognized and recorded.
5. Have groups share their models with the class, explaining how their model simulates peristalsis with its two types of muscle action.

### Follow-Up

Challenge students to swallow a mouthful of water while standing on their heads. Have them explain how water can "fall up" to their stomachs.

Name \_\_\_\_\_

# Pushing the Food Along



## Procedure and Observation

1. What materials would you use for a model of how peristalsis works? Brainstorm with your group to get ideas. Listen respectfully. Write some suggestions below.

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2. As a group, decide what materials you wish to use and how you will construct your peristalsis model. Gather the materials and build the model. Then discuss how you will present it to the class.

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3. Describe your model below. Draw and label your model on the other side of this paper.

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4. Compare your model with the actual peristalsis process. Discuss differences and likenesses.

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5. Observe the other models. Which one(s) showed peristalsis most accurately? Explain why.

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