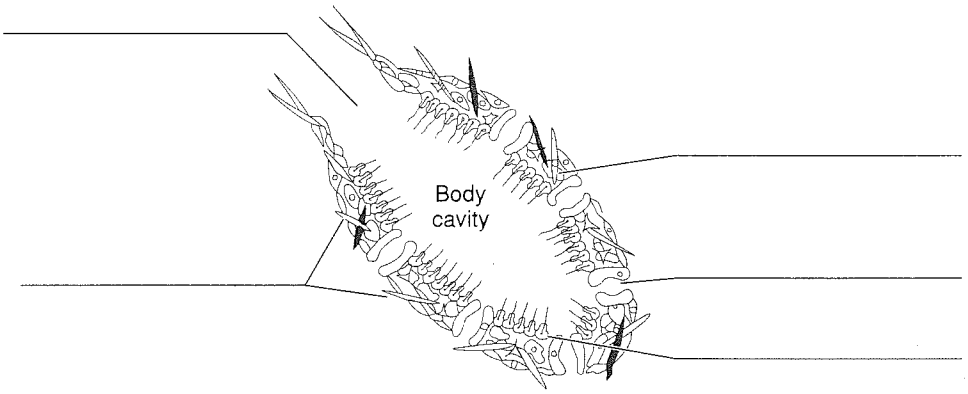
Name _____ Class _____ Date _____

Investigating Sponges

Sponges are among the most ancient animals alive today. They are heterotrophic and multicellular but very simple aquatic animals. Sponges lack specialized tissues or organ systems. In this activity you will relate the form of a sponge to some of its functions.

Figure 1 shows a cross section of a simple sponge. Fill in the diagram with the labels listed in question 1.

Figure 1



1. Describe the function of each of the following structures.

Osculum: _____

_____

Pore: _____

_____

Spicule: _____

_____

Amebocyte: _____

_____

Collar cell: _____

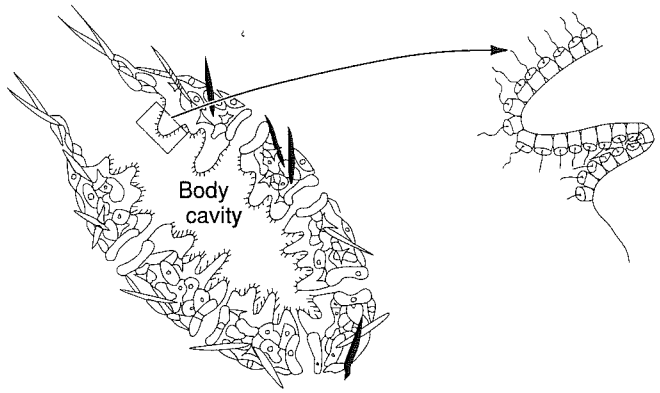
_____

2. Trace the path of a drop of red dye that is placed in the water near the base of a healthy sponge. Assume that sponge cells do not pick up this dye.

3. Trace the path of a microscopic particle of food that is placed in the water at the base of a sponge.

4. Complex sponges have folds in their body walls. Figure 2 shows a cross section of a complex sponge. Which sponge can move water through its body faster: the simple sponge or the complex sponge? Explain your answer.

Figure 2



5. Colchicine is a chemical that stops the action of flagella. What would happen to these sponges if colchicine was present in the water in which they lived?

6. What would happen to a sponge living in a limited supply of stagnant water?

Investigating Bilharzia—A Major Health Problem

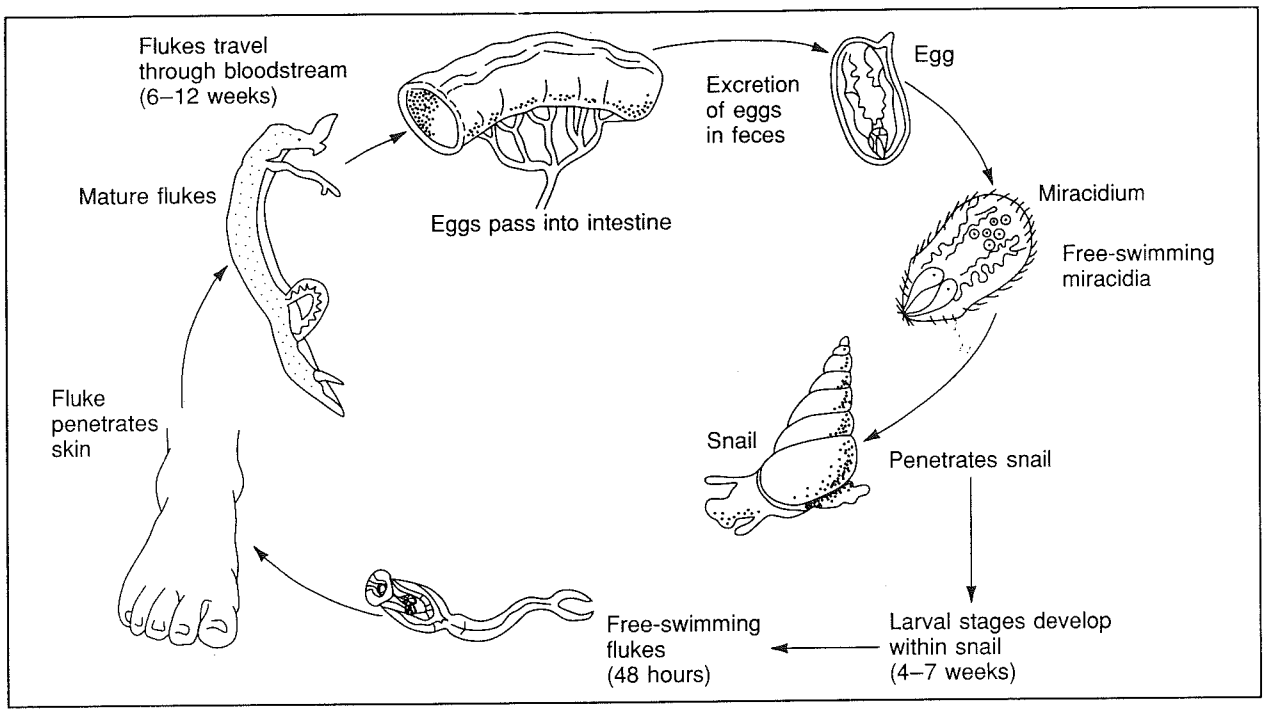
Most diseases that are caused by parasites have become less severe health problems during the last fifty years. The disease bilharzia, caused by blood flukes, has shown every sign of going against this trend. The World Health Organization has designated bilharzia as one of the world's major health problems. Because the species lives only in the tropics, however, most people in the United States know nothing about it. In this activity, you will relate the life cycle of the blood fluke that causes bilharzia to the effectiveness of control measures.

When blood flukes first infect a human host, the victim feels very weak. In later stages of the disease, the victim suffers from severe anemia and weight loss. The liver becomes inflamed and causes the abdomen to swell. Left untreated, bilharzia can lead to death.

In order to develop successful control programs, it is necessary to learn as much as possible about the blood fluke, including the stages of its life cycle. As you read the following statements, follow the stages of the life cycle shown in Figure 1 on the following page.

1. Eggs pass out of the human host in feces.
2. If the eggs reach water, they hatch into free-swimming miracidia. This is the first larval stage of the blood fluke. The miracidia have less than 24 hours to find a suitable snail host.
3. Once the larvae find a snail of the correct species, they burrow inside it and digest its tissues.
4. Inside the snail host, the flukes reproduce asexually. The resulting new worms, the final larval stage, break out of the snail and swim around in the water.
5. These free-swimming worms have 48 hours of life in which to find a human host.
6. The larval worms can penetrate any exposed human skin and eat their way to the blood vessels.
7. When they reach a vein, they swim with the flow of the blood stream to the heart and lungs and eventually to the liver. During this time they gradually change into their adult reproductive forms. After spending 3 weeks in the liver, they swim to the veins that surround the large intestine. Here they lay the eggs that eventually enter the large intestine.

Figure 1



Effective control measures would have to disrupt the life cycle of the blood fluke at any point. On the lines provided, explain how each control measure would be effective.

1. Drying out the irrigation ditches completely when the growing season is over _____

2. Filling in water canals that run through villages and replacing them with underground pipes _____

3. Digging wells to provide a supply of safe water for drinking and washing _____

4. Treating people who have been infected _____

5. Improving sanitation in villages by building sanitation facilities _____

6. Using chemicals that kill snails in infected canals and ditches _____

7. Encouraging people to raise ducks that feed on snails in areas that are infected _____

8. Equipping farmers who work in infected areas with boots _____

Name _____ Class _____ Date _____

CHAPTER 26

VOCABULARY REVIEW

Sponges, Cnidarians, and Unsegmented Worms

Word Scramble

Fill in the blanks in the paragraphs below with the correct words by unscrambling the letters to the left of the blanks.

Two major divisions of the animal kingdom are the STRERVETBAE _____, those animals with backbones, and the ETRNTAERSVIEB _____, those animals without backbones. Animals have evolved a variety of ways to obtain energy and nutrients. Most aquatic animals, which are called FRTEIL EEDRESF _____, strain food from the water around them. DSTRIETU SDEFERE _____ are those animals that feed on decaying plants and animals. RIVESOREBH _____ eat plants and VREAROINCS _____ eat animals. TSAARPSEI _____ live and feed off other living organisms.

SSEONGP _____ are an example of filter feeders. A steady current of water, powered by the flagella of RLLAOC SLELC _____, moves through the pores. Waste products are carried away as the water exits the body through the UCMLSUO _____. AAIIRDCNSN _____ are examples of carnivores. They take in food through the mouth and move it into the SVUARLRGTASACO VYTAIC _____, where digestion occurs. Waste is removed through the mouth.

Worms can be carnivores, detritius feeders, or parasites. Digestion among these organisms is internal. The SRTWLAFMO _____ have a one-way digestive tract with an opening called the YHXRANP _____. The DSRROOUMWN _____, or nematodes, have a two-way digestive tract. Food enters through the mouth and undigestible food exits through the USAN _____. MWASEPTRO _____ do not have any digestive tract at all.