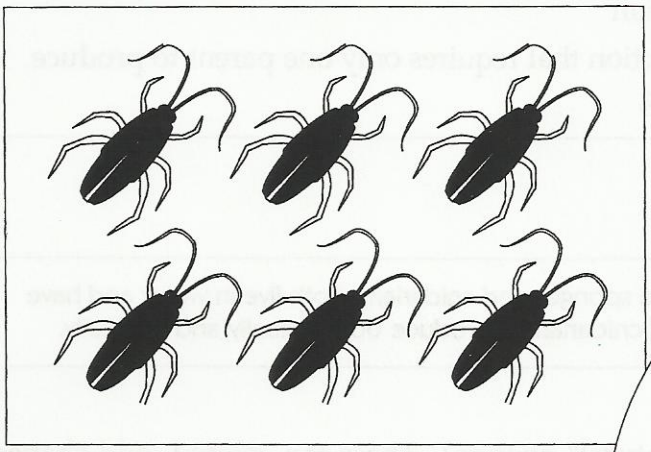
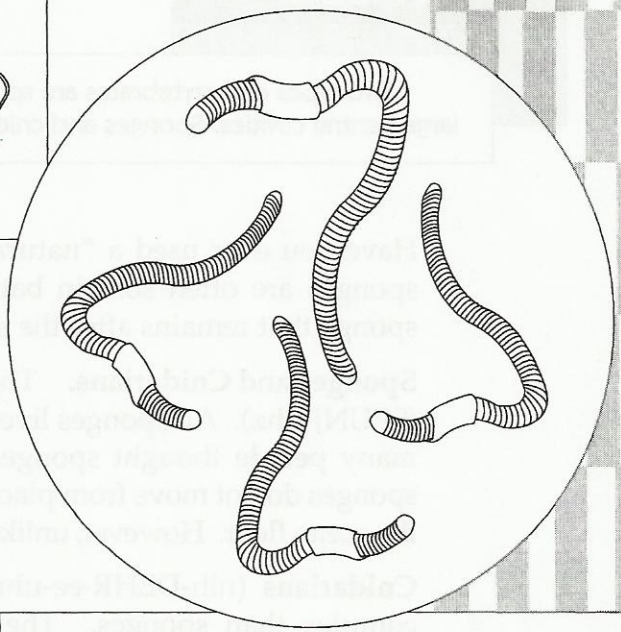
Invertebrates

UNIT 6

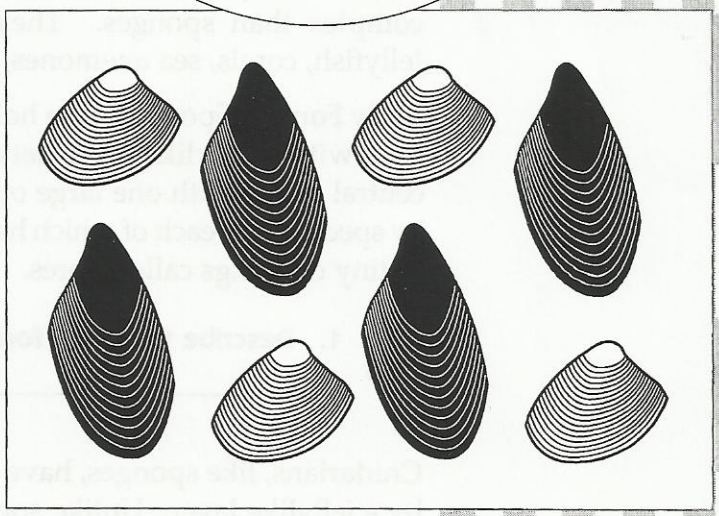




Can you guess which animals lived thousands of years ago and are still around today? If you guessed roaches, you're right! In ancient Egypt, animals very similar to roaches, called scarabs, were used as charms. Golden scarabs studded with jewels were buried along with Egyptian royalty.

Today nobody wants these pests around, but roaches show up anyway. Roaches are so common because they eat many different kinds of food and can live almost anywhere. They also have relatives that live in the few places that roaches don't.

Roaches and their many relatives make up the largest group of animals—the arthropods. These armored animals belong to a larger group of animals called invertebrates. Invertebrates are animals without backbones. Other animals, including humans, have backbones. Animals with backbones are called vertebrates.



Lesson 25 Sponges and Cnidarians

Key Words

sponges: simple invertebrates that live on the ocean floor

cnidarians: simple invertebrates that have a mouth and a large central cavity

tentacles: long flexible appendages that surround the mouth of a cnidarian

asexual reproduction: reproduction that requires only one parent to produce offspring

KEY IDEAS

Two types of invertebrates are sponges and cnidarians. Both live in water and have large central cavities. Sponges and cnidarians reproduce both sexually and asexually.

Have you ever used a "natural" sponge? These tan-colored, odd-shaped sponges are often sold in bath shops. A natural sponge is the part of a sponge that remains after the sponge has died.

Sponges and Cnidarians. The simplest kinds of invertebrates are **sponges** (SPUNJ-uhz). All sponges live in water; most live in the ocean. In the past, many people thought sponges were plants. Unlike most animals, adult sponges do not move from place to place. Sponges grow attached to rocks on the ocean floor. However, unlike plants, sponges cannot make their own food.

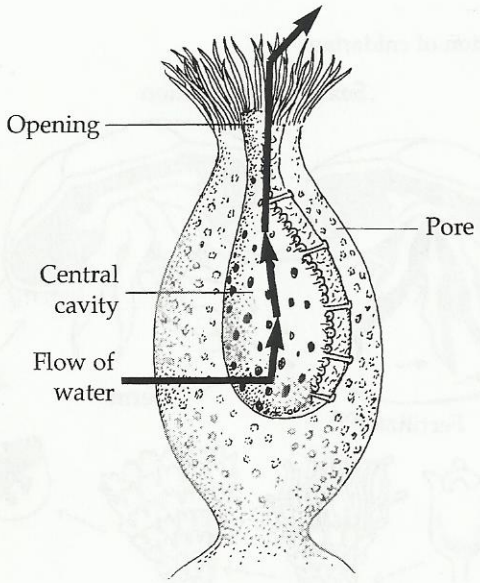
Cnidarians (nih-DEHR-ee-uhnz) are simple invertebrates that are more complex than sponges. They live in both salt water and fresh water. Jellyfish, corals, sea anemones, and hydras are types of cnidarians.

Body Form. Sponges have hollow, saclike bodies made up of two layers of cells with a jellylike layer between them. See Fig. 25-1. The body has a central cavity with one large opening at the top. The central cavity is lined by special cells, each of which has a flagellum. The body walls have hundreds of tiny openings called pores.

1. **Describe the body form of a sponge.** _____

Cnidarians, like sponges, have bodies made up of two cell layers separated by a jellylike layer. Unlike sponges, cnidarians have three types of tissues

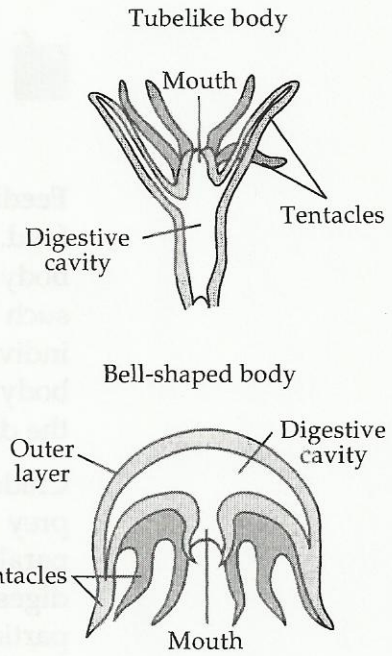
Fig. 25-1 Sponge



located in three different layers—an inner layer, a middle layer, and an outer layer. Like sponges, cnidarians have a large central cavity. However, in cnidarians, this cavity is a digestive cavity. The cavity has one opening—a mouth surrounded by tentacles. These **tentacles** (TEHN-tuh-kuhlz) are long flexible appendages that contain special stinging cells.

Cnidarians have one of two main body shapes, as shown in Fig. 25-2. Some cnidarians have tubelike bodies and do not move from place to place. Others have bell-shaped bodies and can move from place to place.

Fig. 25-2 Cnidarians



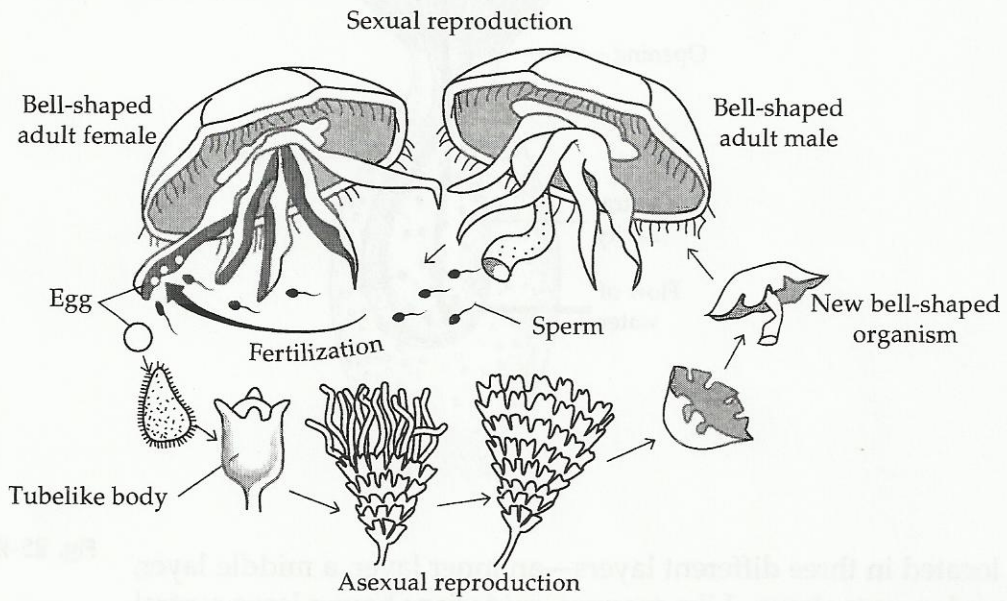
Reproduction. Sponges and cnidarians can both reproduce by either sexual or asexual reproduction. **Asexual reproduction** (ay-SEHK-shoo-uhl ree-pruh-DUK-shuhn) is a type of reproduction that requires only one parent to produce offspring.

When sexual reproduction occurs in sponges, a single sponge produces both male and female sex cells. Sperm cells float from one sponge to another. When they reach another sponge, the sperm cells join with egg cells to form new sponges.

Sometimes sponges reproduce asexually by fragmenting. In this process, a piece of a sponge breaks off and eventually grows into a new sponge. Sponges also reproduce asexually by budding. In this process, a group of cells, called a bud, forms on the outer wall of a sponge's body. The bud grows larger and eventually breaks off from the parent to form a new sponge.

Cnidarians also reproduce sexually and asexually. An adult bell-shaped female produces egg cells. An adult bell-shaped male produces sperm. The sperm swim to and join with the egg to form a new tube-shaped organism that attaches itself to the ocean bottom. During asexual reproduction, this tube-shaped cnidarian produces many small bell-shaped offspring. These offspring eventually break apart and grow into male or female adults. The sexual and asexual life cycle of a cnidarian is shown in Fig. 25-3.

Fig. 25-3 Reproduction of cnidarians



✓ **2. What is asexual reproduction?** _____

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Feeding. Sponges cannot move from one place to another to get their food. Instead, they are filter feeders. Water flows into the sponge's main body cavity through pores in the body wall. Flagella filter tiny food particles, such as bacteria and protists, from the water. The food is digested in the individual cells of the sponge's body. Any undigested food exits the sponge's body through the opening of the central cavity. Look back at Fig. 25-1 to see the direction in which water flows through a sponge.

Cnidarians feed in a much different way than sponges do. Tentacles surround prey such as small shrimp. The stinging cells in the tentacles sting and paralyze the prey. The tentacles direct the food through the mouth into the digestive cavity. There, special chemicals begin to digest the food. The partially digested food then enters the cells where digestion is completed. Undigested food leaves the body of the cnidarian through its mouth.

✓ **3. How do sponges feed?** _____

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TAKE ANOTHER LOOK

Fig. 25-4 lists some traits of sponges and cnidarians.

Fig. 25-4

Traits of Sponges	Traits of Cnidarians
Reproduce sexually and asexually	Reproduce sexually and asexually
Adults cannot move from place to place	Some types can move, others cannot
Filter feed	Feed by catching prey

Check Your Understanding

Write a sentence explaining the connection between each pair of words.

4. sponge, cnidarian _____

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5. tentacles, mouth _____

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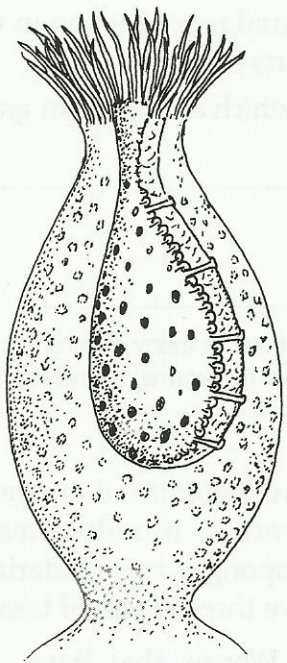
6. Draw arrows on Fig. 25-5 to show the direction water flows through a sponge.

Fig. 25-5



What Do You Know?

7. Describe two ways sponges reproduce asexually. _____

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8. Describe how cnidarians feed. _____

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9. What do you think might be some drawbacks of humans using natural sponges instead of artificial sponges? _____

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