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STUDY GUIDE — CHAPTER 26 *Sponges, Cnidarians, and Unsegmented Worms*

Section 26–1 Introduction to the Animal Kingdom

(pages 555–560)

SECTION REVIEW

With this section you began your study of the animal kingdom. You learned that animals can be classified as vertebrates or invertebrates, depending on whether or not they have a backbone. You also learned that all animals share certain basic characteristics that distinguish them from other organisms

You discovered that an important characteristic of animals is cell specialization and division of labor It is this division of labor that enables an animal to perform the basic functions that are essential to its survival These functions include feeding, respiration, internal transport, elimination of waste products, response to environmental conditions, movement, and reproduction

In the last part of this section you learned about trends in animal evolution. You discovered that some of the simplest animals exhibit radial symmetry, whereas most complex animals have bilateral symmetry You also learned that more complex animals are characterized by a concentration of sense organs and nerve cells in their head region.

Formulating a Definition: Building Vocabulary Skills

Use the five terms listed below to write your own definition of the word *animal* You may use one sentence or several sentences. (Do *not* copy the definition of an animal from your textbook!)

eukaryotic	multicellular	cell walls
heterotroph	cells	

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Relating Concepts: Understanding the Main Ideas

The seven essential life functions of an animal are listed below. Each of the statements that follow refers to one of these functions In the blank before each statement, write the life function to which the statement refers. You may use some functions more than once

feeding	respiration	internal transport
excretion	response	reproduction
	movement	

_____ **1.** A pumping organ called a heart forces a fluid called blood through a series of blood vessels.

_____ **2.** In some species, eggs hatch into larvae, which later undergo a process called metamorphosis.

_____ **3.** Sense organs, such as eyes and ears, gather information from the environment

_____ **4.** Some animals are carnivores, whereas others are herbivores.

_____ **5.** Harmful wastes from cellular metabolism must be eliminated.

_____ **6.** The combination of an animal's muscles and skeleton is called its musculoskeletal system.

_____ **7.** Some species of animals bear their young alive, whereas others lay eggs.

_____ **8.** The cells of an animal must consume oxygen and give off carbon dioxide.

Concept Mapping

The construction of and theory behind concept mapping are discussed on pages vii–ix in the front of this Study Guide Read those pages carefully. Then consider the concepts presented in Section 26–1 and how you would organize them into a concept map Now look at the concept map for Chapter 26 on page 258. Notice that the concept map has been started for you. Add the key facts and concepts you feel are important for Section 26–1 When you have finished the chapter, you will have a completed concept map

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Section 26–2 Sponges

(pages 560–563)

SECTION REVIEW

In this section you learned about the characteristics of sponges, which belong to the phylum Porifera. You discovered that these animals are among the most ancient on Earth and that they inhabit almost all areas of the sea.

Sponges are so different from other animals that they were once thought to be plants. They barely move, and they have no specialized tissues or organ systems and nothing that resembles a mouth or a gut. Most biologists believe that sponges evolved from single-celled ancestors separately from other multicellular animals.

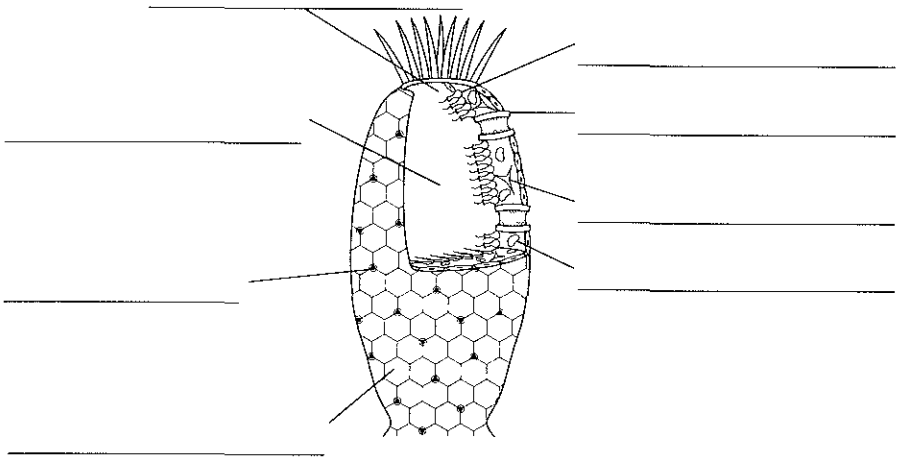
Sponges are filter feeders that sift microscopic particles of food from water. The body of a sponge is designed so that water flowing through a central cavity serves as the respiratory, excretory, and internal transport systems.

Applying Definitions: Building Vocabulary Skills

A. Use the terms in the accompanying list to label the diagram.

B. In the space provided, write the term that best matches each of the following definitions.

amebocyte
central cavity
collar cell
epidermal cell
osculum
pore
pore cell
spicule



_____ **1.** The area enclosed by the body wall of the sponge

_____ **2.** A special kind of cell that builds spicules

_____ **3.** Cells that have flagella and trap food particles

_____ **4.** One of thousands of openings in the body wall

_____ **5.** Large hole where water leaves the sponge

_____ **6.** One of many structures that form the skeleton of the sponge

_____ **7.** Specialized cell through which water enters the sponge

_____ **8.** Cell on the outer surface of the sponge

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Form and Function: Understanding the Main Ideas

Explain in one or two sentences how sponges carry out each of the following life functions.

1. Feeding. _____

2. Internal transport: _____

3. Excretion. _____

4. Respiration _____

5. Reproduction _____

Concept Mapping

The construction of and theory behind concept mapping are discussed on pages vii–ix in the front of this Study Guide Read those pages carefully. Then consider the concepts presented in Section 26–2 and how you would organize them into a concept map. Now look at the concept map for Chapter 26 on page 258 *Notice that the concept map has been started for you. Add the key* facts and concepts you feel are important for Section 26–2 When you have finished the chapter, you will have a completed concept map.

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Section 26–3 Cnidarians

(pages 564–569)

SECTION REVIEW

In this section you were introduced to the phylum Cnidaria. You discovered that cnidarians are soft-bodied animals with stinging tentacles arranged in circles around their mouths. Some familiar cnidarians include jellyfish, corals, and hydras.

You learned that all cnidarians exhibit radial symmetry and have specialized cells and tissues. You also learned that a typical cnidarian has an internal space called a gastrovascular cavity, in which digestion takes place.

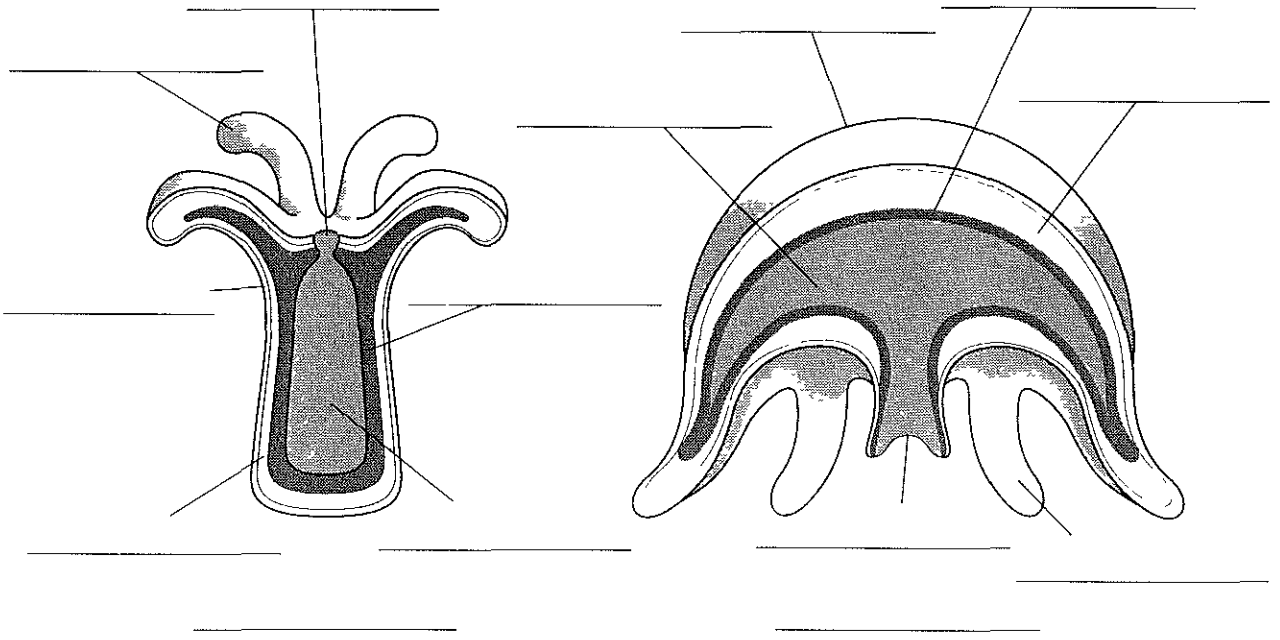
You discovered that almost all cnidarians capture and eat small animals by using stinging structures called nematocysts, which are located on their tentacles. You also learned that cnidarians lack a centralized nervous system and muscle cells. There are, however, specialized epidermal cells that serve the same function as muscle cells.

In the last part of this section, you read about the three classes of cnidarians. You also learned how cnidarians fit into the world.

Applying Definitions: Building Vocabulary Skills

Most cnidarians have life cycles that involve two different body forms. Label each diagram below with the name of the correct body form. Then label both diagrams to show the following parts.

epidermis	gastroderm	gastrovascular cavity
mesoglea	mouth	tentacle



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Interpreting Diagrams: Exploring the Main Ideas

Use the accompanying diagrams to answer the questions that follow

1. Where on the body of a cnidarian are these structures located? _____

2. What occupies the region labeled A on the diagram? _____

3. What is the structure labeled B?

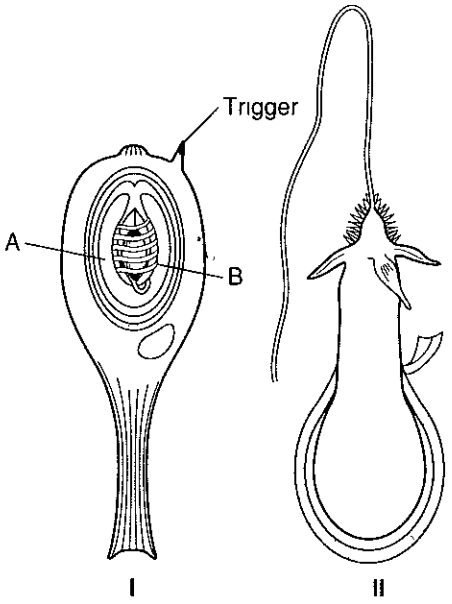
_____

4. Briefly describe the condition of the stinging cell in Figure I

_____

_____

_____



5. What is the function of the trigger? _____

_____

_____

_____

_____

6. What is the condition of the nematocyst in Figure II? What has happened?

_____

_____

_____

_____

_____

_____

Concept Mapping

The construction of and theory behind concept mapping are discussed on pages vii–ix in the front of this Study Guide Read those pages carefully Then consider the concepts presented in Section 26–3 and how you would organize them into a concept map Now look at the concept map for Chapter 26 on page 258 Notice that the concept map has been started for you Add the key facts and concepts you feel are important for Section 26–3 When you have finished the chapter, you will have a completed concept map

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Section 26–4 Unsegmented Worms

(pages 570–579)

SECTION REVIEW

In this section you were introduced to the group of animals known as unsegmented worms Unsegmented worms include flatworms (phylum Platyhelminthes) and roundworms (phylum Nematoda)

You learned that flatworms are the simplest animals with bilateral symmetry You also learned that most members of this phylum exhibit enough cephalization to have what can be called a head

You discovered that roundworms are among the simplest animals that have a digestive system with two openings, a mouth and an anus Several parasitic roundworms that cause diseases in humans were discussed, including *Ascaris*, *Trichinella*, and hookworms.

Understanding Definitions: Building Vocabulary Skills

Each of the statements below describes either flatworms, roundworms, or both. If the statement describes flatworms, write an F in the blank before the statement. If the statement describes roundworms, write an R If the statement describes both, write both an F and an R

_____ **1.** Are invertebrates

_____ **2.** Are members of phylum Nematoda

_____ **3.** Includes blood flukes

_____ **4.** Includes free-living and parasitic animals

_____ **5.** Have a digestive system with only one opening

_____ **6.** May have asexual reproduction

_____ **7.** Eliminate undigested wastes through the anus

_____ **8.** Includes *Ascaris*

Applying Concepts: Understanding the Main Ideas

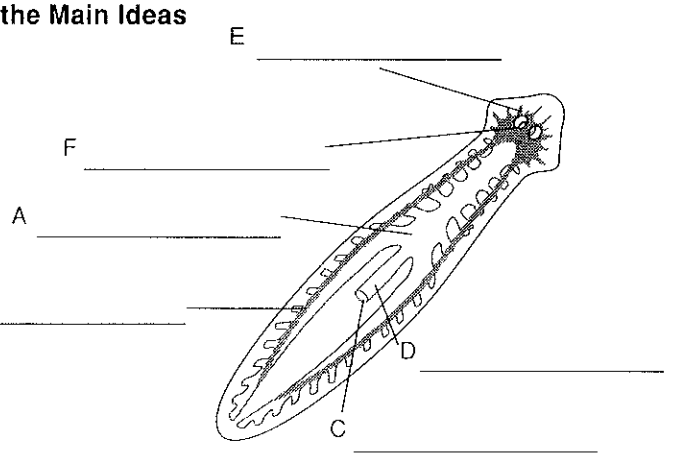
The body plan of a free-living flatworm is shown at right

1. Label each lettered structure on the diagram

2. Label the anterior and posterior ends of the worm

3. What type of symmetry does the body show?

_____



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4. What is the purpose of the branches on structure A?_____

5. What evidence does this diagram show of cephalization?_____

6. What is the function of the structure labeled D? _____

7. What is the function of the structure labeled F? _____

Concept Mapping

The construction of and theory behind concept mapping are discussed on pages vii–ix in the front of this Study Guide. Read those pages carefully. Then consider the concepts presented in Section 26–4 and how you would organize them into a concept map Now look at the concept map for Chapter 26 on page 258. Notice that the concept map has been started for you. Add the key facts and concepts you feel are important for Section 26–4 When you have finished the chapter, you will have a completed concept map.