What Are Mollusks and Annelid Worms?

Have you ever eaten clams? Have you ever seen earthworms on the sidewalk after it rains? If so, then you have already seen mollusks and annelid worms. These invertebrates are more complex than the simple invertebrates. For example, mollusks and annelid worms have circulatory systems that carry materials throughout their bodies.

What Are Mollusks?

Snails, slugs, clams, oysters, squids, and octopuses are all mollusks. Most mollusks live in the ocean. However, some live in fresh water and some live on land.

There are three classes of mollusks: gastropods, bivalves, and cephalopods. The gastropods include snails and slugs. The bivalves include shellfish with two shells, such as clams and oysters. Cephalopods include squids and octopuses.

HOW MOLLUSKS EAT

Each kind of mollusk has its own way of eating. As shown below, snails and slugs eat with a special organ called the radula. The radula is a tongue covered with curved teeth. It lets the animal scrape food off rocks, seaweed, or plants. Clams and oysters use gills to filter tiny organisms from the water. Squids and octopuses use tentacles to grab their food and place it in their jaws.

The rows of teeth on a slug’s radula help scrape food from surfaces. This radula has been magnified 2,000 times.
GANGLIA AND BRAINS
All mollusks have complex ganglia. They have special ganglia to control breathing, movement, and digestion. Cephalopods have the most advanced nervous system of all invertebrates. An octopus, for example, has a large brain that connects all of its ganglia. Cephalopods are thought to be the smartest invertebrates. ✓

PUMPING BLOOD
Unlike simple invertebrates, mollusks have a circulatory system. The circulatory system moves materials through the body in blood. Most mollusks have open circulatory systems. In an open circulatory system, a heart pumps blood through blood vessels that empty into spaces in the animal’s body. These spaces are called sinuses.

Squids and octopuses have closed circulatory systems. In a closed circulatory system, a heart pumps blood through a network of blood vessels that form a loop.

MOLLUSK BODIES
Although mollusks can look quite different from one another, their bodies have similar parts. The body parts of mollusks are described below.

Body Parts of Mollusks

Mollusks have a broad, muscular foot. The foot helps the animals move. In gastropods, the foot makes mucus that the animal slides along.

The gills, gut, and other organs form the visceral mass. It lies in the center of the mollusk’s body.

A layer of tissue called the mantle covers the visceral mass. The mantle protects the bodies of mollusks that do not have a shell.

In most mollusks, the outside of the mantle makes a shell. The shell protects the mollusks from predators. It also keeps land mollusks from drying out.

TAKE A LOOK
5. Identify Which mollusk does not have an obvious shell?

6. List What are two functions of a mollusk’s shell?
What Are Annelid Worms?

The bodies of annelid worms are segmented. Annelid worms are sometimes called segmented worms. A segment is an identical, or almost identical, repeating body part.

Annelid worms are more complex than other worms. They have a closed circulatory system. They also have a complex nervous system with a brain. A nerve cord connects the brain to a ganglion in each segment.

Annelid worms live in salt water, fresh water, or on land. There are three kinds of annelid worms: earthworms, marine worms, and leeches.

EARTHWORMS

Earthworms are the most familiar annelid worms. An earthworm has between 100 and 175 segments. Most segments look the same. However, some segments have special jobs, such as eating and reproduction.

As they feed, earthworms break down plant and animal matter in soil. They leave behind wastes called castings. Castings make soil richer by adding nutrients near the surface. Earthworms also improve soil by digging tunnels. These tunnels let air and water reach down into the soil.

MARINE WORMS

Some worms live in the ocean. These marine worms are called polychaetes. They are covered with hairlike bristles and come in many bright colors. Marine worms eat small animals and mollusks. Some also filter food from the water.

LEECHES

Many people think of leeches as parasites that suck other animals' blood. This is true of some leeches. However, not all leeches are parasites. Some feed on dead animals. Others eat insects, slugs, and snails.
Section 2 Review

SECTION VOCABULARY

**closed circulatory system** a circulatory system in which the heart circulates blood through a network of blood vessels that form a closed loop.

**open circulatory system** a circulatory system in which the circulatory fluid is not contained entirely within vessels.

**segment** any part of a larger structure, such as the body of an organism, that is set off by natural or arbitrary boundaries.

1. **Compare** What is the difference between an open circulatory system and a closed circulatory system?

2. **List** What are the four body parts that all mollusks have?

3. **Summarize** Complete the organizer below to show the classes of mollusks.

4. **Describe** Describe two ways earthworms improve soil.

7. **Explain** Are all leeches parasites? Explain your answer.
Chapter 15 Invertebrates

SECTION 1 SIMPLE INVERTEBRATES

1. The two sides of an animal's body mirror each other.
2. bilateral
3. a nerve cord
4. coelom
5. to remove food from water
6. osculum
7. Asexual—only one parent produces offspring.
8. stinging cells
9. radial
10. to protect themselves, to catch food
11. hydrozoan, coral, sea anemone
12. flatworms
13. to find food
14. suckers
15. Some tapeworms can grow longer than a bus. Planarians are often only 15 mm long.
16. It is long, slim, and round like a short piece of spaghetti.

Review

1. They do not have backbones.
2. sponges, cnidarians, flatworms, roundworms
3. The gut of a complex animal is surrounded by a coelom.
4. to grow back missing parts, to reproduce
5. medusa and polyp
6. A parasite feeds on its host. If the host dies, the parasite won't have a way to get nutrients, and it will die as well.
7. Type of flatworm | Parasitic or nonparasitic? | Features
--- | --- | ---
Planarians | nonparasitic | head, eyespots, sensory lobes, brain
Flukes | parasitic | suckers, no eyespots, no sensory lobes
Tapeworms | parasitic | no eyespots, no sensory lobes, no gut
8. No, some roundworms are parasites. Others eat dead tissues of plants and animals.

SECTION 2 MOLLUSKS AND ANNELID WORMS

1. gastropods
2. to scrape food from surfaces
3. cephalopods
4. closed
5. squid
6. protects it from predators, keeps land mollusks from drying out
7. earthworms, marine worms, leeches
8. the wastes earthworms leave after breaking down plant and animal matter

Review

1. In an open circulatory system, blood is pumped into sinuses in the animal's body. In a closed circulatory system, blood is pumped through a network of blood vessels that form a closed loop.
2. foot, visceral mass, mantle, shell
3. Gastropods and bivalves are the other two classes of mollusks; squids and octopuses are two types of cephalopods; clams and oysters are two types of bivalves.
4. Their castings make soil richer. The tunnels they dig let water and air reach deep into the soil.
5. No, only some leeches are parasites. Some feed on dead animals, and some eat insects, slugs, and snails.

SECTION 3 ARTHROPODS

1. 75%
2. head, thorax, and abdomen
3. protein and chitin
4. compound
5. 188 segments, 177 segments
6. Crustaceans have two pairs of antennae.
7. cephalothorax and abdomen
8. chelicerae
9. egg, larva, pupa, adult
10. Complete metamorphosis has four stages, and incomplete has three. Incomplete metamorphosis has a nymph stage. The nymphs look like small adults.

Review

1. segmented body with specialized parts, exoskeleton, well-developed nervous system, jointed limbs
2. Arachnids have two main body parts, and most arthropods have three. The arachnid's cephalothorax is made of the head and thorax. In other arthropods, the head and thorax are separate.