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Mollusks

Mollusks are a diverse group of animals that belong to the phylum Mollusca. Many members of the mollusk family, like snails and clams, are familiar to most people. Snails are mollusks that occupy a wide variety of environments; various species of snails can be found on land, in fresh water, and in the salt water of the ocean. Other mollusks, like clams, live solely in aquatic habitats, but different species of clams prefer freshwater or salt water habitats. Both snails and clams have a protective outer shell, but other mollusks, like squid and octopuses, do not. Squid and octopuses are mollusks that live only in the salt water of the ocean.

Even though species of mollusks can have very different characteristics, they have enough in common anatomically and developmentally (that is, how they develop from embryo to adult) to be placed in the same scientific category called a phylum. The fossil record includes about 35,000 extinct species of mollusks. Biologists estimate that there are tens of thousands of species of living mollusks, the majority of which are ocean animals. Even though there are terrestrial and fresh water mollusks, it is most appropriate to study mollusks as ocean creatures. The scientific study of mollusks is called malacology.

Characteristics of Mollusks

One characteristic common to all mollusks is that they are invertebrates, which means they do not have a backbone. Mollusks are not segmented like marine animals that are echinoderms, members of the phylum Echinodermata. Examples of echinoderms are sea stars and sand dollars. While echinoderms have radial symmetry, mollusks have bilateral symmetry. Bilateral symmetry simply means there is a center line that divides the creature into two similar sides. For example, humans and other mammals also have bilateral symmetry. Mollusks (other than clams and oysters) have a toothed tongue called a radula. This specialized tongue has rows of hornlike teeth and is used to tear food before it enters the animal's mouth.

Mollusks are advanced enough in the hierarchy of animals to possess internal organs; in particular, all mollusks possess a true heart. Many but not all mollusks have an exoskeleton that appears as an outer shell. Examples of mollusks with an outer shell are clams, oysters, and snails. The remains of these exoskeletons wash

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up onto beaches as sea shells. The shell of a mollusk is formed from secretions by its mantle, a thin flap of tissue that surrounds the animal's internal organs.

Whether or not it has an outer shell, a mollusk does have a soft body; in fact, the word "mollusk" comes from a Latin word meaning "soft." In general, all mollusks possess three body areas: a mantle, the layer of skin that encloses the main body organs; the head-foot, an area of the body that controls locomotion and contains the sensory organs; and the visceral area which contains the digestive and reproductive systems of the animal.

Classes of Mollusks

There are many classes of mollusks, some of which are extinct, but the three major classes of mollusks are bivalves, gastropods, and cephalopods.

Bivalves are shelled mollusks that have a two-part shell; examples of bivalve mollusks are clams, mussels, oysters and scallops. Bivalve mollusks are the only mollusks that do not have a radula because they are filter feeders. This means that they obtain food by filtering plankton or decaying matter from the water. The head-foot portion of bivalves is poorly developed. Some species of bivalves utilize their primitive foot for locomotion while other species attach to rocks.

Gastropods are a diverse group of mollusks; gastropods include snail and slug species that live on land, in fresh water and in salt water. Some gastropods, like the slug, do not have a shell while others, like snails, abalone and conch, have a single shell. In many species the shell has a characteristic twisted shape. Gastropods can be herbivorous, carnivorous or omnivorous, depending on the species. Gastropods use their well-developed foot for locomotion over the ocean bottom, for swimming or for burrowing. Many gastropods have a well-developed head that includes eyes and one or two pairs of tentacles. About 80% of mollusk species are gastropods.

Cephalopods are the most advanced class of mollusks and the class includes the shelled nautilus, octopuses and squid. All cephalopods live in the ocean. Octopus and squid species are soft-bodied creatures that do not have a shell. These cephalopods have a tube-shaped siphon for expelling the water that was used for respiration (breathing). Octopuses and squid can rapidly propel themselves through the water by changing the pressure of the water coming out of the siphon,

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providing them with a form of “jet propulsion.” Cephalopods have well-developed brains and are known for their intelligence among marine animal species.

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Circle True or False after analyzing each of the following statements.

1. True False Mollusks can be found on land, in freshwater environments and in the ocean.
2. True False Squid and octopuses are mollusks that live only in the salt water of the ocean.
3. True False The scientific study of mollusks is called molluscology.
4. True False The shell of a mollusk is secreted by its mantle, a thin flap of tissue that surrounds the animal's internal organs.
5. True False Species of echinoderms and mollusks can be found in the ocean. Echinoderms have radial symmetry; mollusks have bilateral symmetry.
6. True False All mollusks have a radula. This specialized tongue has rows of hornlike teeth and is used to tear food before it enters the animal's mouth.
7. True False In general, all mollusks possess three body areas: the mantle, the head-foot, and the visceral area.
8. True False Bivalves are shelled mollusks that have a two-part shell; examples of bivalve mollusks are clams, mussels, oysters and scallops.
9. True False Gastropods are mollusks that have a twisted shell and gastropods are herbivorous filter feeders.
10. True False Gastropods are mollusks that have well-developed brains and are known for their intelligence among marine animal species.

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Answers

1. True
2. True
3. False
4. False
5. True
6. False
7. True
8. True
9. False
10. False