Life in the Current

Trace how body structures help two aquatic animals feed.

ZOO.2 "Students will understand the structure and function of phylum Porifera and phylum Cnidaria and how each adapts to their environments. Differentiate among asymmetry, radial symmetry, and bilateral symmetry in an animal's body plan..."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline the path water takes through a sponge and the path prey takes into a cnidarian. Circle structures that help either animal capture food, then box two habitat changes that could disrupt feeding.

Two Ways to Feed on a Reef

1. A barrel sponge stands on the seafloor as water moves past it. Water enters through tiny pores, crosses chambers inside the sponge, and exits through a large opening called the osculum. Beating flagella on choanocytes, or collar cells, pull water through the chambers. The collars trap food particles, which the cells take in and digest. Amoebocytes carry nutrients to other cells. These specialized cells cooperate, but they do not form true tissues. Most sponges have no plane that divides their bodies into matching halves, a body plan called asymmetry.

2. A nearby sea anemone is a cnidarian with radial symmetry: its parts are arranged around a central axis. A fish has bilateral symmetry because one plane divides its body into left and right halves. Most sea anemones live as attached polyps, with a mouth and tentacles facing upward. A jellyfish is a swimming medusa, with its mouth and tentacles facing downward. In both forms, prey touches the tentacles, where stinging structures called nematocysts fire from specialized cells. The tentacles bring prey to the mouth and into a digestive cavity. That same opening also releases undigested waste.

3. These animals also affect their neighbors. Sponges filter particles from water, recycle nutrients, and provide shelter for small animals. On a coral reef, many tiny cnidarian polyps build a hard framework that shelters fish and other life. Algae living inside many reef-building corals make food using sunlight and share it with the polyps. A new pier could stir up sediment that clogs sponge pores or settles on coral polyps, making feeding harder. Its shadow could also reduce the light available to the corals' algae. Protecting water clarity helps both kinds of animals.

2 ANSWER WITH EVIDENCE

Use the passage

1. Trace the route water takes through a sponge. Which cells pull it along, and where does it leave?

2. How do two kinds of sponge cells work together to feed the animal without forming tissues?

3. Compare the body plans and feeding positions of a sea anemone polyp and a jellyfish medusa. What happens at the single opening in both?

4. A pier stirs up sediment and casts a shadow over the reef. Explain one feeding problem this could cause for a sponge and one for a coral polyp.

3 YOUR TURN

Your own words

In two panels, sketch a sponge and a coral polyp living beside a new pier. Label the sponge's water route and the polyp's prey route, then write one sentence under each sketch predicting a different way the pier could affect that animal.

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PART 1 · READ AND MARK

Underline the path water takes through a sponge and the path prey takes into a cnidarian. Circle structures that help either animal capture food, then box two habitat changes that could disrupt feeding. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	Trace the route water takes through a sponge. Which cells pull it along, and where does it leave?	**Water enters through pores, crosses internal chambers, and leaves through the osculum. Beating flagella on choanocytes pull it through.**
2	How do two kinds of sponge cells work together to feed the animal without forming tissues?	**Choanocytes trap, take in, and digest food particles. Amoebocytes carry nutrients to other cells; these specialized cells cooperate without forming true tissues.**
3	Compare the body plans and feeding positions of a sea anemone polyp and a jellyfish medusa. What happens at the single opening in both?	**Both have radial symmetry. The attached polyp faces upward, while the swimming medusa faces downward. In both, the mouth takes in prey and releases undigested waste.**
4	A pier stirs up sediment and casts a shadow over the reef. Explain one feeding problem this could cause for a sponge and one for a coral polyp.	**Sediment could clog sponge pores and limit the flow of food-bearing water. The shadow could reduce food made by algae living in the coral polyp.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

Sponge panel: Draw a sponge with arrows from pores through chambers to the osculum; label choanocytes in the chambers. Sediment stirred up by the pier could clog the pores and reduce the flow of food-bearing water. Coral polyp panel: Draw tentacles around a mouth, with an arrow showing prey moving from a tentacle through the mouth into the digestive cavity. The pier's shadow could limit the sunlight the polyp's algae need to make food.

Accept accurate alternative labels for collar cells and the sponge's large exit opening. In the sketches, look for correctly directed routes and distinct, plausible effects of the pier.