

Name \_\_\_\_\_

Date \_\_\_\_\_

## Symbiotic Interactions

Read each scenario below. First, indicate which kind of symbiotic interaction is being described. Write P for parasitism, M for mutualism, or C for commensalism. Be prepared to explain your reasoning for your choices.

- \_\_\_\_\_ 1. Some shrimp and crab live and capture food from within the tentacles of giant anemones.
- \_\_\_\_\_ 2. A pearlfish spends the day inside the alimentary tract, or intestines, of a sea cucumber. The fish emerges from the sea cucumber at night to feed on small crustaceans. The pearlfish gets a safe place to live. The sea cucumber does not gain anything from the relationship, nor is it harmed.
- \_\_\_\_\_ 3. A cymothoid isopod lives inside the mouth of a snapper fish. The isopod severs blood vessels in the fish's tongue, causing the tongue to atrophy and degenerate. The isopod then hooks its pereopods, or legs, to the base of the fish's tongue, essentially replacing the tongue. The isopod stays there for the rest of its life, feeding on blood, mucus, and stray pieces of food from the fish.
- \_\_\_\_\_ 4. A boxer crab carries a pair of small anemones in its chelipeds, or claws. When approached by a predator, the crab waves the stinging tentacles of the anemones to deter the predator. The anemones benefit from the small particles of food dropped by the crab during feeding.
- \_\_\_\_\_ 5. An alpheid shrimp digs and maintains a deep burrow. While underground, the shrimp is safe. Above ground, it is vulnerable to predators. A goby fish lives in the burrow with the shrimp. The goby fish sits at the entrance, keeping watch for predators, and signals the shrimp with a flick of its tail when it is safe to come out. Or, if a predator swims by, the goby darts into the burrow and the shrimp retreats further inside. These two animals are completely dependent on each other—the goby benefits by getting a burrow to live in and the shrimp knows when predators are near.
- \_\_\_\_\_ 6. Corals feed off the byproducts of a microscopic algae living within their own tissue, called zooxanthellae. The photosynthetic activity of the algae is vital to the survival of the coral animals, which use the energy to extract calcium from the seawater and build their calcareous skeletons. The zooxanthellae are protected by the hard coral and obtain plant nutrients from the coral.

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- \_\_\_\_\_ 7. Some species of barnacles attach themselves to sea turtles or whales. As the whales or sea turtles travel, the barnacles gain access to food in nutrient-rich waters. Their host neither benefits nor is harmed by its riders.
  
- \_\_\_\_\_ 8. A tapeworm needs to eat food that is already digested, so it lives in the intestines of a dogfish shark and derives nourishment from the shark. As a result of the tapeworm infestation, the shark is weakened and more vulnerable to disease and predation.
  
- \_\_\_\_\_ 9. Imperial shrimp attach themselves to sea cucumbers and get transported by their host to a large area of potential food with only a minimal expenditure of energy. They have been observed getting off their host cucumber to feed in productive areas and then getting back on for a ride to the next spot.
  
- \_\_\_\_\_ 10. The siboglinid tube worm, found at deep-sea hydrothermal vents and cold seeps, has no digestive tract. It relies on symbiotic bacteria that live in the tube worm's tissues. The bacteria oxidize hydrogen sulfide or methane for the worm.