



How Giant Tube Worms Survive at Hydrothermal Vents

NAME _____

DATE _____

This handout supplements the I Contain Multitudes film [How Giant Tube Worms Survive at Hydrothermal Vents](#).

1. Researchers on the first Alvin dive in 1977 were looking for _____
 - a. life on the ocean floor.
 - b. new habitats for humans to colonize.
 - c. hydrothermal vents.
 - d. minerals that could be mined.
2. What surprised the researchers on Alvin when they arrived at the hydrothermal vents? _____
 - a. hot water temperatures
 - b. volcanic activity
 - c. low light levels
 - d. an abundance of life.
3. Describe the appearance and features of the giant tube worm, *Riftia pachyptila*.
4. The anatomy of the tube worms surprised Dr. Jones because _____
 - a. there were two hearts.
 - b. the worms had no mouth and gut.
 - c. their circulatory system had hemoglobin.
 - d. there was no respiratory system.
5. What is a trophosome?
6. The trophosome of *Riftia pachyptila* was found to be full of sulfur crystals. Why were there sulfur crystals in the trophosome? _____
 - a. The trophosome filters toxic sulfides from the water and converts it to sulfur crystals, which are less toxic.
 - b. The trophosome absorbs sulfides in order to digest it for energy.
 - c. Giant tube worms produce and store sulfur crystals because predators don't like the taste of them.
 - d. Bacteria in the trophosome use sulfides as an energy source for making organic compounds, and sulfur is a byproduct of the bacterial metabolism.

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7. Compare and contrast the processes of photosynthesis and chemosynthesis in the table below.

	Photosynthesis	Chemosynthesis
Kinds of organisms that can convert energy using this process		
Source of energy		
Reactants needed for this process	CO_2 H_2O	
Chemical products of this process	$\text{C}_6\text{H}_{12}\text{O}_6$ O_2	

8. A student read online that chemosynthesis only occurs in hydrothermal vent communities in the deep sea. Was the source the student read a reliable one? Defend your claim with information from this film.

9. Symbiosis is defined as a close, prolonged association that is of benefit to at least one of the partners. Is the relationship between *Riftia pachyptila* and the chemosynthetic bacteria an example of symbiosis? Defend your claim with evidence.