

Name \_\_\_\_\_ Date \_\_\_\_\_ Class \_\_\_\_\_

### Dive and Discover Expedition 15: "Dark Life at Deep-sea Vents"

Go to the site, [www.divediscover.who.edu](http://www.divediscover.who.edu) . Read the information on the home page, and then click on "Learn about our mission." We will watch some of the video interviews together, and then you will answer the following questions.

1) Hydrothermal vents are like undersea \_\_\_\_\_ that form near volcanic hotspots on the ocean floor.

2) How hot can hydrothermal fluids get? (include units) \_\_\_\_\_

2) Name three organisms that can live near vents. \_\_\_\_\_ ,  
\_\_\_\_\_, \_\_\_\_\_ .

3) Where is this expedition taking place (give study site and country nearby):

\_\_\_\_\_, 600 miles south of Manzanillo, \_\_\_\_\_ .

4) Define "mid-ocean ridge": \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

5) What two types of organisms will scientists be examining? \_\_\_\_\_  
and \_\_\_\_\_ .

6) Microbes are at the **base** or **top** of the food chain (as plants are on land).  
(circle one)

7) Since there is no \_\_\_\_\_ in the deep sea, there can be no photosynthesis. Instead, organisms in the deep sea rely on a process called \_\_\_\_\_ . Producers like bacteria use \_\_\_\_\_ , instead of sunlight, as an energy source.

8) What is the name of the ROV researchers will be using? \_\_\_\_\_

9) What are two questions scientists are trying to answer during this cruise? (Choose from the four given at the end of that paragraph; number each)

---

---

---

### DEEP SCIENCE

Studying microbes from more than a mile below the surface can be a \_\_\_\_\_ . Why? \_\_\_\_\_

---

The intense \_\_\_\_\_ at the seafloor here is also a problem for scientists. It can reach almost 3,600 pounds (1,600 kilograms) per square inch—the same pressure you’d feel if a \_\_\_\_\_ was standing on your big toe. Since the microbes evolved to live in this high-pressure environment, bringing them up to the ship will affect their \_\_\_\_\_, and could even \_\_\_\_\_ them.

The water itself would also be affected by the change in pressure. In the deep ocean, gases that the microbes need to survive are \_\_\_\_\_ in the seawater, where the organisms can use them to create \_\_\_\_\_. Under much less pressure at the surface, those gases would bubble out of the water and escape.

To get around these problems, the scientists will use \_\_\_\_\_ samplers (IGTs). Isobaric means “same pressure.”

### OBJECTIVES

How many hours a day will *Jason* be working? \_\_\_\_\_ Using special underwater \_\_\_\_\_, it will send the IGTs and samples back to the \_\_\_\_\_. While *Jason* continues to collect \_\_\_\_\_, scientists on the ship will start \_\_\_\_\_ on the samples already brought up.

Once the IGTs are on board, the scientists will try to grow the \_\_\_\_\_ (or bacteria and archaea) inside them. For the \_\_\_\_\_ time ever, they’ll be able to conduct experiments on living microbes in an environment that’s similar to their natural \_\_\_\_\_ .

What type of “rate” of the microbes will scientists be testing? \_\_\_\_\_

Define "biomass" \_\_\_\_\_

\_\_\_\_\_

EXTRA CHALLENGE: Why will researchers be looking at DNA, RNA, and proteins of the microbes? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_