CLASSROOM ACTIVITY
It's *Aliiive*—Or Is it?

Investigate life at the deep sea vents—literally! You and your team will examine images of a deep sea vent community to determine which of the virtual samples are living and which are not. As you conduct your investigation, focus on the questions below. After you have completed the activity, respond to these questions directly in your journal.

- What makes a living thing a living thing?
- How do living and non-living things contribute to the ecosystems of which they are a part?
- What living and non-living things are found in a deep sea vent ecosystem? How does each contribute to that ecosystem?

Before you begin your investigation, consider what you already know about living things and deep sea vents. Use the questions below to structure your discussion and jot down your answers in your journal.

- What makes a living thing a living thing? What characteristics do all living things share?
- How can you tell that something is a living thing? How can you tell that it was once living and is now dead? How can you tell that it was never a living thing?
- What adaptations would an organism need to be able to survive the extremes of temperature and pressure at the deep sea vents?
- What features would a non-living thing have if it were formed in and around the mid-ocean ridges and deep sea vents?

The captain should appoint group members to collect the required materials while the rest of the group reviews today's procedure. Before beginning, the captain should make sure that the group has all required materials, and that everyone knows the day's procedure.

The note taker will take notes on the group's findings for your team, but remember to record your observations and explanations in your journal for your own research notes. Include drawings to illustrate your findings.

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MATERIALS

- computer with Web access
- journal
- activity sheet

PROCEDURE

1. Before you begin, make some predictions with your team about the kinds of life forms and non-living things you might observe at the deep sea vents. Use the questions on your activity sheet to structure your discussion; record your ideas on the activity sheet.

2. Take your journals to your computer and log on to the Web. Go to:

   http://www.amnh.org/education/resources/rfl/web/dsv/alive

   Read through the introductory text before you begin.

3. Follow the directions on the site—roll the mouse to observe the specimens. Jot down your observations before examining the evidence offered. Then read through the evidence and draw conclusions about whether or not the specimen is alive. Record and explain your conclusions for each specimen on your activity sheet before checking to find out if you were correct.

4. Discuss what you discovered after checking your answers. How was your explanation similar to or different from the explanation in the interactive? Record the key points of your discussion on the activity sheet.

5. Finally, consider what you have discovered during your investigation. How are these specimens, living and not living, related within their ecosystem? What new questions do you have about deep sea vents and deep sea exploration? Record your ideas on your activity sheet.

6. Once you have finished your investigation, you'll be able to read a paragraph discussing some of the questions raised by studies of deep sea vent ecosystems. Which of these questions came up during your discussion? Which of these questions would you like to investigate further and what resources could you consult?

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GROUP WORKSHEET 1
DSV TEAM _____

GROUP MEMBERS _____

CAPTAIN _____ NOTE TAKER _____

1. How can you tell whether or not something is living or non-living? What kinds of life forms might you observe at the deep sea vents? What qualities might they need to live so far below the surface? To what conditions would they need to adapt?

2. What sort of geological features might you see? What features would a non-living thing have if it were formed in and around the mid-ocean ridges and deep sea vents? What kinds of living and non-living things would need to be there in order for the entire ecosystem to survive?

3. Now begin your underwater investigation. Describe each specimen and make a sketch of it. In your description, consider physical features, color, shape, appendages, etc. Then try to interpret your observations. Which characteristics would indicate a living thing? Which would indicate a non-living thing? Now read the evidence and finalize your conclusions.

   Use the specimen chart provided or create your own in your journal, as your teacher requests.

4. What have you learned about living things? About deep sea vent ecosystems? What clues does each specimen provide about its role at the vents and/or its formation along mid-ocean ridges and/or deep sea vents?

5. How are the specimens you studied related? How does each contribute to the ecosystem?

6. What new questions do you and your team have about deep sea vent ecosystems and deep sea exploration?

7. How do your questions compare with the questions raised in the conclusion of the interactive? What resources could you consult to begin researching those questions?

GROUP DYNAMICS

Comment on how each group member participated in today's discussion.

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Specimen Chart

DESCRIPTION OF LOCATION	DRAWING
DESCRIPTION OF SPECIMEN	
FIRST INTERPRETATION	**INTERPRETATION BASED ON EVIDENCE**
COMPARE YOUR CONCLUSION TO THE EXPLANATION IN THE INTERACTIVE	