

# EXTREME YELLOWSTONE EXPEDITION

## LESSON 1 - TEACHER'S GUIDE

### LESSON SUMMARY

Students will be introduced to Yellowstone National Park through a mapping activity and examine facts and statistics about the Park. They will also learn about the scientifically valuable microbial life that lives in Yellowstone's extreme environments and some of what it takes to plan a research expedition there. Students will also be asked to think about the role that science plays in their lives.

### LESSON OBJECTIVES

- Students will gain an understanding of where Yellowstone National Park is located and what kinds of natural resources and scientific treasures it holds.
- Students will be able to define microbes and extremophiles.
- Students will be able to cite some of the potential scientific breakthroughs that may be achieved by studying extremophiles.
- Students will gain an appreciation for the difficulty of planning a scientific expedition and the dangers involved on such trips.
- Students will be able to define science.

### NEXT GENERATION SCIENCE STANDARDS

**Note:** This is an introductory lesson. The standards are more fully developed in successive lesson plans.

- **MS-LS1-5.** Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.
- **MS-LS2-1.** Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.



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### MATERIALS NEEDED

- Student worksheets that go with this lesson.
- Markers or colored pencils to shade in parts of the maps. (optional)
- Overhead projector or a means of demonstrating to the students where to mark certain landmarks on their maps.

### TEACHER INSTRUCTIONS

1. Pass out the student worksheet, "**Extreme Yellowstone Expedition – Lesson 1: Expedition Briefing**" that goes with this activity.
2. After the students read the short introductory text about Yellowstone, help them mark the places mentioned on their worksheets.
3. Have the students read the rest of the sections of the worksheet and answer the questions about the text.
4. Discuss the students answers with them when they have finished the worksheets.

### EXTENSION ACTIVITY:

#### Eat a microbial meal

Try eating a microbial meal made up of foods that are the products of microbial activity. Eat foods like bread (especially sourdough), yogurt, cheese, pickles, chocolate, tea, root beer, and olives. Do some research and find out what microbes help produce each food.