

## 6.1: Exploring Different Kinds of Decomposers

Decomposers such as fungi and bacteria are found in many different places, yet we often don't notice them. Here are several suggestions about ways to learn more about decomposers. Answer the questions on a separate sheet of paper.

### 1. Learning more about bacteria

In the previous lessons you studied fungi as important decomposers. But the most common decomposers on Earth are not fungi; they are bacteria. Learn more about bacteria by reading the Bacteria Reading, then answer the following questions:

1. According to the handout, "if you could take the mass of all the bacteria on earth it would be greater than the mass of all of the plants and animals!" If there are so many bacteria, why don't we see them?
2. The handout also says that "A spoonful of soil contains 50 million bacterial cells representing up to 10,000 different species." All of those cells are made mostly of water and large organic molecules. How did the bacterial cells make their large organic molecules?
3. All of those bacterial cells also need energy to live and grow. Where does their energy come from?
4. Are bacteria more like fungi or more like animals in the way that they digest food? Explain your answer.
5. All animals, plants, and fungi get energy from food through cellular respiration, so they need oxygen to survive. Most bacteria also depend on cellular respiration for their energy. Some bacteria, though, can get energy from food without using oxygen. How do they do that?

### 2. Reading about Dr. Death

Read about how Dr. Mark Harmon, a professor at Oregon State University, came to be known as "Dr. Death." Here are some questions about the decaying trees that he studies:

1. The decaying trees are made mostly of large organic molecules containing atoms of carbon, hydrogen, oxygen, and other elements such as nitrogen. Where do the carbon atoms go when the tree decays?
2. How do fungi help plants to grow while getting energy for themselves?
3. Dr. Harmon found that "some of the nutrients from the rotting log are returned to the forest floor to replenish the soil almost immediately." What kinds of atoms do you think are found in those nutrients?

### 3. Learning about spontaneous combustion of hay

Watch a YouTube video about how hay can sometimes get so hot that it bursts into flames: <https://www.youtube.com/watch?v=zRNCrHqD0zE>. Answer these questions about the video:

1. It takes a lot of heat energy to make the hay so hot that it catches on fire. What form was that energy in before it was heat?
2. How do decomposers contribute to the heat that builds up in the hay?
3. We usually think of water as something that keeps fires from burning, but hay fires occur when there is too much water in the hay. How does water contribute to making the hay hotter?

#### **4. Modeling fermentation**

Read the Decomposers Without Oxygen Reading and Modeling Handout and follow the directions for modeling yeast fermentation of glucose. Then answer the questions below.

1. Why do bacteria and yeast that depend on fermentation get less energy from their food than decomposers that depend on cellular respiration?
2. What are some foods that are produced using fermentation?
3. How do yeast help to produce biofuels from corn?
4. Follow the directions for modeling yeast fermentation of glucose, then write a balanced chemical equation for yeast fermentation of glucose.