

## Category V Life Science Examples

### Encouraging students to explain their ideas

#### Material A

In this middle school material that targets the key idea that "plants use the energy from light to make sugars from carbon dioxide and water" (American Association for the Advancement of Science, 1993), students are asked to express their ideas about the following statement: "All meat is ultimately grass" (p. 9s). By asking students to write their response in the *Science Log* in addition to discussing their ideas in the class, the material provides an opportunity for *all* students to express their ideas. The note to the teacher: "Monitor their discussions to assess how well students understand the concept that all food for virtually all living things comes from plants" does not provide *specific* suggestions to help the teacher provide feedback to students.

- Remove the leaves from the methanol and rinse them with tap water. Spread them face up on a piece of white paper.



- Treat one leaf with five or six drops of iodine solution. Then place the leaf in water to fix the color (make it permanent). Compare the treated leaf with the untreated leaf. Look for any slight change in color.



### Questions

- Sketch the two leaves in your ScienceLog, noting any changes observed.
- What evidence shows you that starch is present in a plant leaf?
- Why was it necessary to heat the methanol that you used to soak the leaves?
- What was the purpose of using two leaves if only one was treated with iodine?

## Starch—Essential for Life

The starch in plants is essential to other living things. Even organisms that do not feed on plants depend on them indirectly for food. Carnivorous (meat-eating) animals, for example, prey upon other animals. But the preyed-upon animals either ate plants or

Consider the statement, "All meat is ultimately grass." What does it mean? Write your explanation in your ScienceLog. **A**

Starch is a carbohydrate—a complex organic compound. Learn more about organic compounds on pages 52–56 of the SourceBook.



9

## Starch—Essential for Life

The lesson concludes with a writing exercise about the meaning of the following statement: All meat is ultimately grass. Students should be encouraged to express their ideas in their own words.

When students have finished writing, provide them with the opportunity to share and discuss their ideas. Monitor their discussions to assess how well students understand the concept that virtually all food for virtually all living things ultimately comes from plants.

### Answer to In-Text Question

- A** The statement refers to the fact that the meat we eat generally comes from animals that eat grasses and other plants.

## FOLLOW-UP

### Reteaching

Have students make poster diagrams that illustrate how all of the items they ate the previous day came, either directly or indirectly, from plants.

### Assessment

Suggest that students use an iodine starch-test reagent to test several substances, such as a slice of potato, orange juice, flour, a slice of bread, and a piece of apple, for starch. *(The potato, flour, and bread should test positive for starch, but the apple and orange juice should not.)*



### Extension

Point out to students that starch is a nutrient that makes up over 70 percent of the world's food supply. Have students research how the human body uses starch. Have volunteers share what they learn with the class.

### Closure

Have students research which foods contain large amounts of starch. They should compile their information in a chart. The chart should include the name of each food item, a specified quantity of each food, the amount of starch in each sample, and what percentage of the USRDA (United States Recommended Daily Allowance) this amount of starch corresponds to.

## Meeting Individual Needs

### Learners Having Difficulty

Have students make a poster or mobile that depicts how energy moves through a food chain. They may wish to use the food chain that they constructed for the Getting Started activity on page 5. You may wish to have volunteers present their posters to the class.