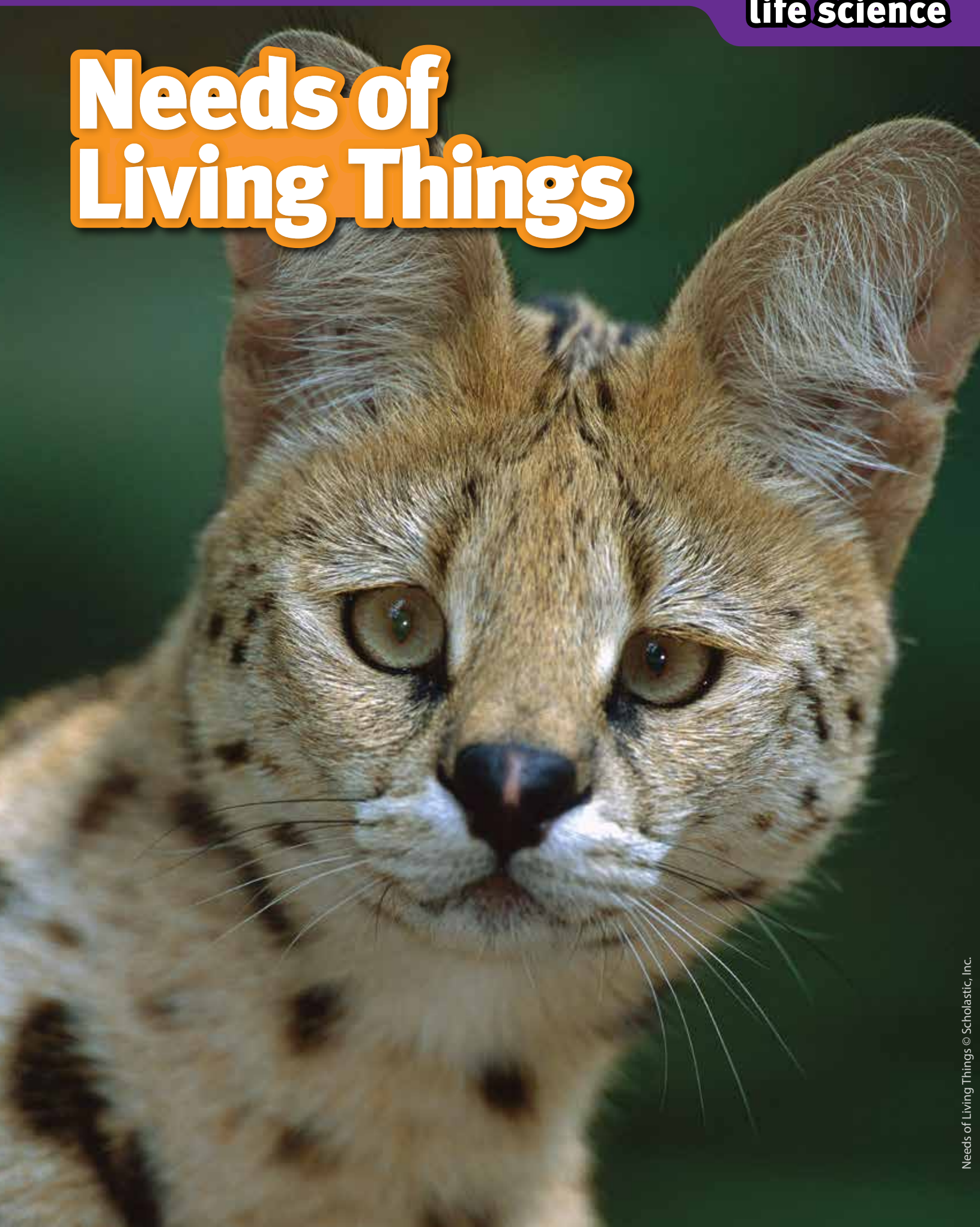
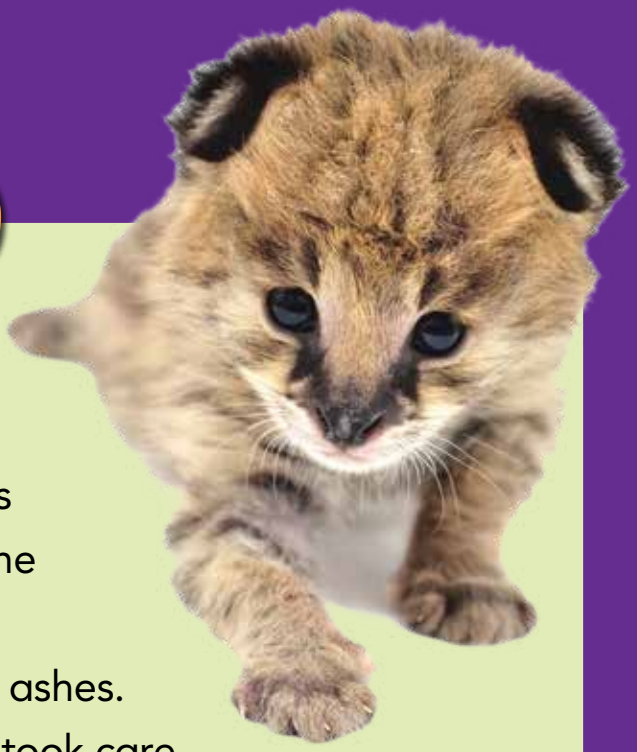
life science

Needs of Living Things



Saving Moto



What does a baby wildcat need so it can survive on its own?

A wildfire burned through grasslands in Africa. When the fire died out, some people found baby Moto. This little wildcat was all alone and covered in ashes. A wildlife photographer named Suzi took care of him. How did Suzi know what to do? She thought about wildcats and what they need to grow.

Suzi gave Moto milk from a bottle. After a few weeks, she started feeding him raw chicken. She also served him dead rats. That's what he would have eaten in the wild.

Then Suzi taught Moto how to hunt. Soon he could kill his own prey. That's important. Moto needed to do that so he could survive on his own. After six months, Moto went back into the wild.

What Does Yeast Need?

Dried yeast is actually a bunch of tiny living things. What does yeast need to live? Find out!

Materials

- measuring spoons and cups
- 1 packet dried yeast
- 4 zip-top sandwich bags
- marker
- hand lens
- 2 tsp flour
- warm water
- clock or watch
- "What Does Yeast Need?" data sheet

1. Measure 1/4 tsp of dried yeast into each of the four sandwich bags.
2. Press out most of the air and seal one bag. Label this bag "Control." Look at the yeast with a hand lens. In this form, yeast is not active. What do you think it needs to be active? (**Hint:** What do other living things need?)
3. To another bag, add 1 tsp flour. Press out most of the air and seal the bag. Label it "Food."
4. To another bag, add 1/4 cup warm water. Carefully press out most of the air and seal the bag. Label it "Water."
5. To the last bag, add 1 tsp flour. Then add 1/4 cup warm water. Press out most of the air and seal the bag. Label it "Food and Water."
6. Gently shake each bag to mix. Then set the bags next to one another on a table. Look at each bag closely. What do you observe? Record on your data sheet.
7. Wait 15 minutes, then observe. What changes do you see? (**Hint:** When yeast "eats," it gives off gas. Do you see any gas bubbles?)
8. Wait 15 more minutes and observe again. What does yeast need to live?

Name: _____

What Does Yeast Need?

1. Look at the yeast with a hand lens. What do you think yeast needs to be active?

_____

_____

2. Do Steps 1–8 of the Task Card. Record your observations below.

Yeast	What I observed	After 15 minutes	After 30 minutes
Control			
Food			
Water			
Food and Water			

3. What does yeast need to live?

_____

Food Face-Off

What foods work well for yeast? Try this!

Materials

- dried yeast
- zip-top sandwich bags
- measuring spoons
- measuring cups
- foods you want to test (for example, milk, ketchup, peanut butter, sugar, what else?)
- "Food Face-Off" data sheet

1. Different animals need different foods. (Could an otter eat the same food as a bee? Could a deer eat the same food as a shark?) What foods would you guess work well for yeast? Write your ideas on your data sheet.

2. Choose two foods to test. Then make up an experiment to see which food works better. **Remember:** It's important to test only one change at a time. You're changing the kind of food. Other things in your experiment should stay the same. That includes the amount of food you test. Write the steps of your experiment on your data sheet.

3. How will you tell which food works better? (**Hint:** How could you tell the yeast was "eating" the flour?)

4. Do your experiment! Then tell what happened. Which food was better for your yeast?

Name: _____

Food Face-Off

1. What foods do you think would work well for yeast?

_____

_____

2. Do Step 2 of the Task Card. Write the steps of your experiment.

_____

_____

_____

_____

3. How will you tell which food works better?

_____

4. Which food was better for your yeast?

_____

Next Generation Science Standards
LS1.B Growth and Development of Organisms
LS2.D Social Interactions and Group Behavior

Background

Moto is a serval kitten that was found in 2005 after a wildfire swept through the grasslands of the Masai Mara Reserve in Kenya. A serval is a medium-sized wildcat with a tan or yellowish coat with black spots and large ears. It has a long, thick tail and very long legs for its size. Servals live in marshes, grasslands, and woodlands of sub-Saharan Africa. Their diet includes rodents, small birds, reptiles, frogs, fish, and insects.

Hands-On Hints

Task Card 1: What Does Yeast Need?

You may need to help children press out the air from the bags and seal them. If you need to move the bags, place them on a tray. The less disturbed the bags are, the easier it will be for children to see the air bubbles forming in the "Food and Water" bag.

If possible, have a slice of leavened bread and unleavened bread in a plastic bag for children to look at and compare with a hand lens. Can they see evidence of yeast "eating" flour during the making of the leavened bread? (The "bubbles" in the bread)

The gas released by the yeast as it processes the food is carbon dioxide. Yeast needs water to function, much like plants and animals need water to function. Yeast needs food, like animals do. It can't make food using the energy from sunlight, like plants can.

After children have finished with the activity, you can either compost their yeasty mixtures or throw away the bags unopened. Don't pour them down a drain.

Task Card 2: Food Face-Off

You can have children bring food from home or save it from their lunches. Or you may choose to offer them a selection. Children may adapt the first yeast activity for their food test, or they may come up with something new. The important thing is that they control variables and have a plan for deciding which food worked better (perhaps noticing the amount of gas released by the yeast while processing the food).

Pure sugar works very well and likely will result in producing the most impressive amount of gas.

For optimal results, we suggest following these steps:

1. Introduce the topic by reading aloud the nonfiction acticle. The article helps build background knowledge and provides context for the hands-on activities. You can project it onto your interactive white-board as you read it aloud. There is also a printable version that you can distribute to students so they can read along.

2. Divide the class into small groups. Hand each group a Task Card, and give each student a Data Sheet. (We recommend starting with Task Card 1.) Together with the class, read aloud the steps of the activity to ensure everyone understands what to do. You may also want to have each group conduct an inventory of their materials to make sure they have everything they need.

3. Have students do the activity and record on their Data Sheets.

4. Make sure to leave enough time before the end of the period so you can have a class discussion about the activity. Invite groups to share their findings and results, including any challenges they may have faced.

5. Gather students' data sheets to assess for understanding.

If you plan to continue the unit in your next lesson with the second Task Card, you might want to review the article with the class. In some cases, Task Card 2 builds upon Task Card 1, so you may want to quickly go over the first activity as well.

At the end of a unit, consider asking students to evaluate the topic and activities. This can be as simple as a thumbs-up or thumbs-down. Engage them in a discussion about what they liked or did not like and why. You might find this feedback useful for future lessons.

The two Task Cards feature hands-on activities that incorporate the following eight science and engineering practices—identified by the NGSS as essential for all students to learn:

1. Asking questions and defining problems
2. Developing and using models
3. Planning and carrying out investigations
4. Analyzing and interpreting data
5. Using mathematics and computational thinking
6. Constructing explanations and designing solutions
7. Engaging in argument from evidence
8. Obtaining, evaluating, and communicating information

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