Fungi04

Life Science | Lesson Guide

3rd Grade

Photo Description

This image shows bright pink, round structures growing on dead wood and plant materials on the forest floor. These small, ball-like objects are clustered together in groups. They are a type of fungus that helps break down old plant parts in nature.

Scientific Phenomena

The anchoring phenomenon is decomposition by fungi. These pink fungal structures are fruiting bodies (reproductive parts) of decomposer fungi that are breaking down dead organic matter. The fungi secrete enzymes that break down complex materials like cellulose and lignin in the wood, converting them into simpler nutrients that can be recycled back into the ecosystem. This process is essential for nutrient cycling and preventing the accumulation of dead plant material in forests.

Core Science Concepts

1. Decomposition Process: Fungi break down dead plants and animals, turning them into nutrients that living plants can use again.

2. Fungal Life Cycles: The pink structures are fruiting bodies that produce spores, which are like seeds that help fungi reproduce and spread.

3. Ecosystem Roles: Fungi are decomposers that clean up the forest by recycling dead materials into food for new plants.

4. Habitat Requirements: Fungi need moisture, organic matter, and the right temperature to grow and survive.

Pedagogical Tip:

Use a "before and after" comparison by showing students fresh wood versus decomposed wood to help them visualize the decomposition process over time.

UDL Suggestions:

Provide tactile experiences by letting students feel different stages of decomposing wood (safely collected) and use graphic organizers to show the decomposition cycle visually for different learning styles.

Zoom In / Zoom Out

Zoom In: At the microscopic level, fungal hyphae (thread-like structures) are releasing powerful enzymes that break chemical bonds in dead plant cells, converting complex molecules into simpler sugars and nutrients that the fungi absorb.

Zoom Out: This decomposition is part of the larger forest ecosystem's nutrient cycle, where decomposers like fungi work alongside bacteria to recycle all dead organic matter, supporting the entire food web and maintaining soil health across the forest.

Discussion Questions

1. What do you think would happen to the forest floor if there were no fungi to break down dead wood? (Bloom's: Evaluate | DOK: 3)

2. How are these pink fungi similar to and different from the plants growing nearby? (Bloom's: Analyze | DOK: 2)

3. Where do you predict you might find similar fungi in your neighborhood, and why? (Bloom's: Apply | DOK: 2)

4. What evidence from the photo shows that these fungi are doing their job as decomposers? (Bloom's: Analyze | DOK: 2)

Potential Student Misconceptions

1. Misconception: "Fungi are plants because they don't move."
   Clarification: Fungi are their own kingdom - they can't make their own food like plants and instead get energy by breaking down other materials.

2. Misconception: "These pink things are bad because they're growing on dead wood."
   Clarification: Decomposer fungi are helpful because they clean up the forest and make nutrients available for new plants to grow.

3. Misconception: "Mushrooms and fungi are the same thing."
   Clarification: Mushrooms are just the fruiting bodies (reproductive parts) of fungi - most of the fungus lives underground or inside what it's decomposing.

NGSS Connections

Performance Expectation: 3-LS4-3 - Construct an argument that some animals form groups that help members survive.

Disciplinary Core Ideas:
- 3-LS4.D - Being part of a group helps animals obtain food, defend themselves, and cope with changes
- 5-LS2.A - The food of almost any kind of animal can be traced back to plants

Crosscutting Concepts:
- Systems and System Models
- Energy and Matter

Science Vocabulary

* Decomposer: A living thing that breaks down dead plants and animals into smaller parts.
* Fungi: Living things that get energy by breaking down dead materials (not plants or animals).
* Spores: Tiny parts that fungi use to make new fungi, like seeds for plants.
* Nutrient: Food that living things need to grow and stay healthy.
* Fruiting body: The part of a fungus that makes spores, like the pink structures in the photo.
* Ecosystem: All the living and non-living things in an area that work together.

External Resources

Children's Books:
- The Magic School Bus Meets the Rot Squad by Joanna Cole
- Fungus Is Among Us by Melissa Stewart
- The Decomposers by Rebecca Hirsch

YouTube Videos:
- "What Are Fungi? | Biology for Kids" - Simple explanation of fungi basics and their role as decomposers (https://www.youtube.com/watch?v=bE-f68aOl9w)
- "Decomposers | Science for Kids" - Shows how decomposers like fungi recycle nutrients in nature (https://www.youtube.com/watch?v=Yj_R9jduHTo)