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**SYNOPSIS:**

Although it grows in the ground, many students may be surprised to discover that the familiar mushroom is not really a plant. It belongs to a family of organisms known as fungi - a group so unique, biologists have placed them in a kingdom all their own.

This program provides a close-up look at these intriguing and varied life forms. Existing in thousands of sizes and shapes from microscopic baker's yeast to fungi that weigh as much as a whale, fungi can be both harmful and beneficial to humans. As we discover more about the unusual fungi, we are finding new ways to grow healthier crops, fight insect pests and treat diseases.

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**CURRICULUM UNITS:**

Biology  
Botany  
Ecology  
General Science  
Health and Medicine  
Microbiology

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**CAREER OPPORTUNITIES:**

Agriculturist  
Biochemist  
Biologist  
Botanist  
Ecologist  
Environmental Scientist  
Microbiologist  
Mycologist  
Naturalist  
Veterinarian  
Virologist

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**BACKGROUND INFORMATION****& PROGRAM OVERVIEW:**

Unique among all organisms, FUNGI, such as the common mushroom, are technically neither plants - primarily because they don't contain chlorophyll and can't synthesize their own food - nor animals - because they can't digest food within their bodies. So biologists have placed fungi in a scientific kingdom all their own.

Since fungi can't produce their own food, they must depend on other organisms for survival. Many fungi survive through a SYMBIOTIC relationship with plants. The fungus receives food from the plant, and in return the fungus extends the plant's reach to life-giving nutrients in the soil. Many other forms of fungi serve as "nature's recyclers," living on the decaying remains of plants and animals, breaking them down into HUMUS. Other fungi are parasitic and do great harm to their hosts.

Students will see a variety of mushrooms, including the beautiful but poisonous FLY AGARIC. Other fungal forms shown in this program are those that team with algae in lichen, molds such as penicillium from which the ANTIBIOTIC PENICILLIN is derived, rust fungi on grain crops, mildew, and yeast. They'll learn how researchers are using fungi to help plants grow, provide food, control pests, and produce medicines.

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**ISSUES AND CRITICAL THINKING:**

- 1) After showing the program, ask your students the following questions:
  - a) Why aren't fungi considered plants? Animals?
  - b) What are some of the ways fungi benefit humans?

- c) What is a symbiotic relationship?
- d) What are spores?
- e) What is the name of the one very important medicine we get from a fungus?

2) Fungi aren't plants or animals, but they do have characteristics of each. Discuss the similarities and differences between fungi and plants: fungi and animals.

3) Talk about the kinds of fungi we can eat. Have students cut pictures of them out of magazines or draw them. Make a bulletin board. (Stress that only mushrooms purchased in the grocery store are safe to eat.

4) Buy mushrooms from the grocery store and gently examine the cap and stem of one (retain for item 51). Make spore prints with the others. Cut off the stems about 1/4 inch below the caps. Place the caps gills downward on white paper. Cover with a bowl, and leave them for at least a couple of hours. Remove the bowl and carefully pick the cap up off the paper. A spore pattern which exactly matches the shape of the gills will be left behind. Use spray fixative to make the spore print last longer.

5) Use the mushroom cap from item 4 to grow mushrooms in a terrarium. What type of environment do they need to grow? How long does it take them to appear? How are mushrooms grown commercially? Stress again that only mushrooms purchased at the grocery store are safe to eat.

6) Have students ever seen mushrooms growing in a "fairy ring"? Explain how mushrooms can grow in this pattern.

7) Take a field trip to a bakery so students can see the part yeast plays in making breads and cakes. Or mix some quick rising bread dough in class and talk about what causes it to rise.

8) Grow various molds in class on cheese, bread, wet leaves, and fruit. Do the same fungi grow on all the materials?

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### GLOSSARY:

**Antibiotic-** A substance that can kill or stop the growth of microbes, and is used to prevent or treat disease.

**Chlorophyll-** The green pigment in plants that enables them to absorb energy from sunlight and change simple inorganic compounds into sugars and other nutrients.

**Fly agaric-** A type of poisonous mushroom, red with white spots, named for its use in the past as an insecticide.

**Fruiting body-** The part of a fungus that bears spores, i.e., the mushroom cap.

**Fungus-** A spore-bearing organism, neither plant nor animal, that lacks chlorophyll and therefore cannot synthesize its own food.

**Gills-** Thin folds of tissue beneath the cap of a mushroom, where spores are produced.

**Humus-** The moist, dark brown material in soil, composed of decaying plant and animal remains.

**Penicillin-** An antibiotic used to treat infections and diseases, obtained from *Penicillium*, a group of molds.

**Spore-** Tiny reproductive unit of fungi.

**Symbiosis-** The relationship of two or more organisms in a close association with each other.

**Wonders of Biology – Animals,  
Insects, Plants & Fungi**



**Show Me Science**

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# BIOLOGY: FUNGI-NEITHER PLANT NOR ANIMAL



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