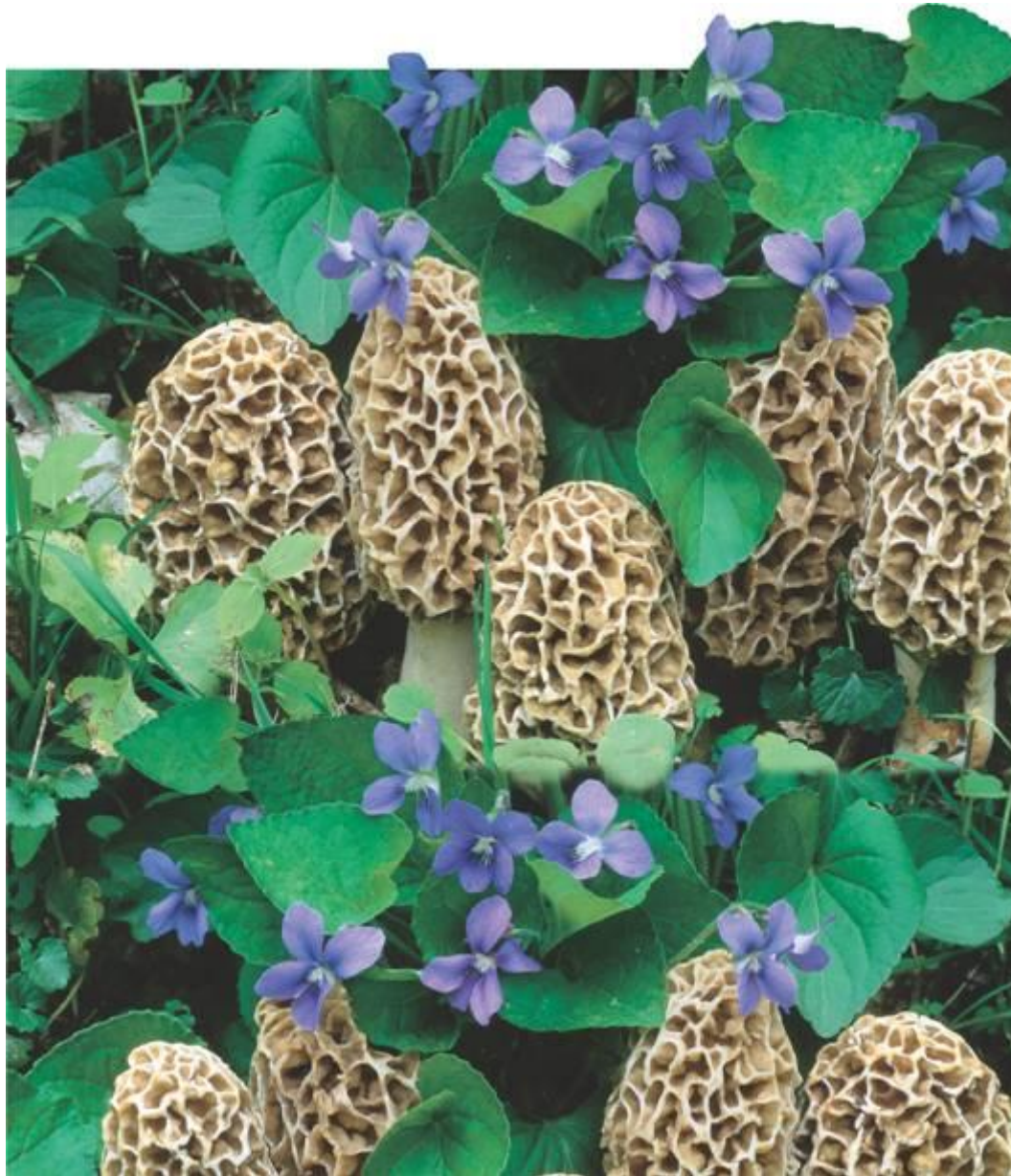


21-3 Ecology of Fungi



The oldest known fungi fossils are about 230 million years old.

Fungi may have helped early plants obtain nutrients and may have been essential to plants' colonization of the land.

All Fungi Are Heterotrophs

Fungi rely on other organisms for energy.

Many fungi are **saprobies**, which are organisms that obtain food from decaying organic matter.

Other fungi are parasites, which harm other organisms while living directly on or within them.

Other fungi are symbionts that live in close and mutually beneficial association with other species.

Fungi as Decomposers



What is the main role of fungi in natural ecosystems?



Fungi maintain equilibrium in nearly every ecosystem, where they recycle nutrients by breaking down the bodies and wastes of other organisms.

Fungi as Parasites



What problems do parasitic fungi cause?



Parasitic fungi cause serious plant and animal diseases. A few fungi cause diseases in humans.

Plant Diseases

Fungal diseases are responsible for the loss of approximately 15% of the crops grown in temperate regions of the world.

In tropical areas, where high humidity favors fungal growth, the loss of crops is sometimes as high as 50%.

Examples of plant diseases caused by fungi include:

- Corn smut
- Wheat rust

Human Diseases

Examples of fungus-caused disorders include:

- Athlete's foot
- Ringworm
- Thrush

Symbiotic Relationships



What kinds of symbiotic relationships do fungi form with other organisms?



Some fungi form symbiotic relationships in which both partners benefit.

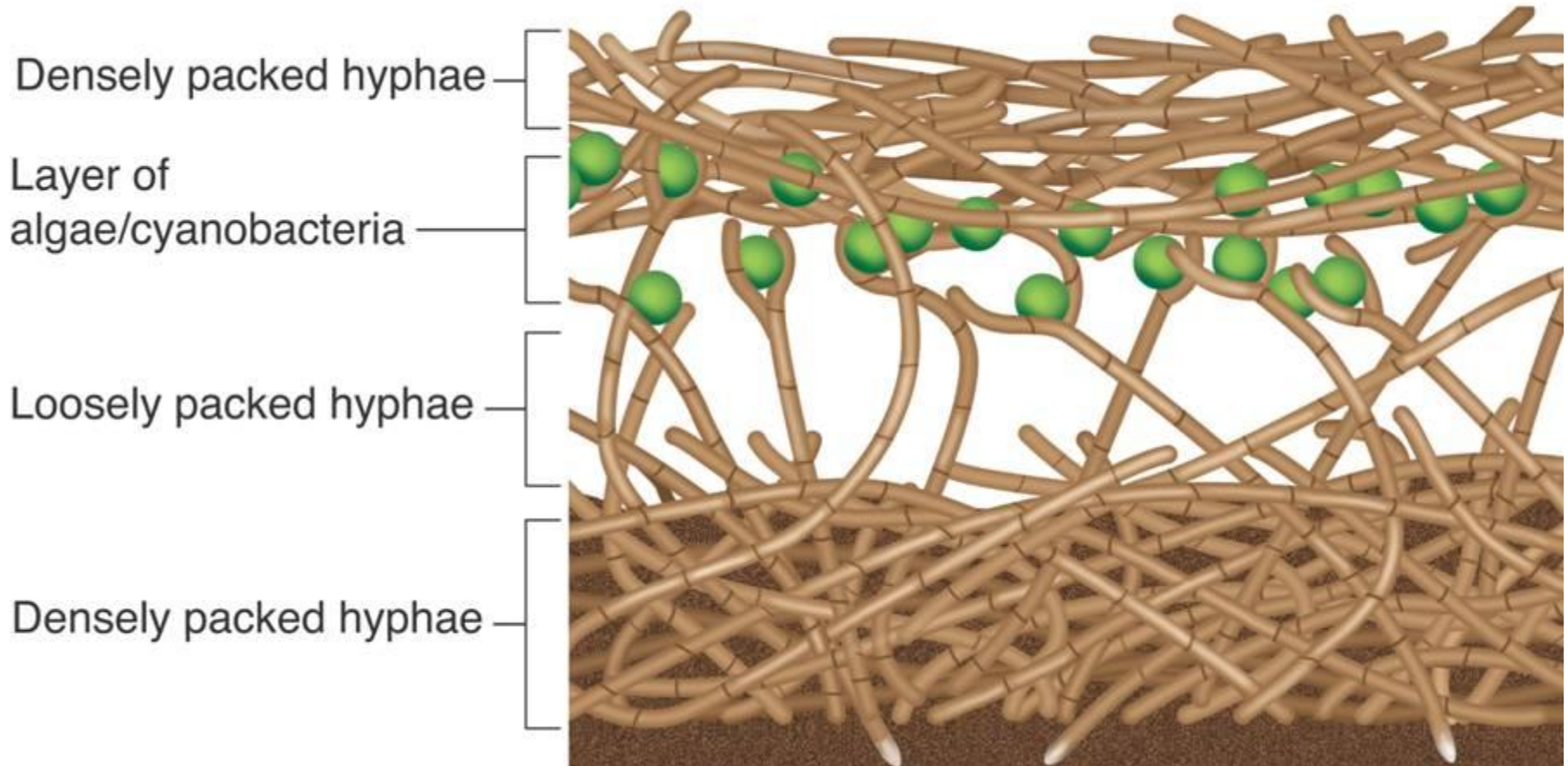
Two such mutualistic associations, lichens and mycorrhizae, are essential to many ecosystems.

Lichens

Lichens are symbiotic associations between a fungus and a photosynthetic organism.

The photosynthetic organism is either a green alga or a cyanobacterium, or both.

Structure of a Lichen



The algae or cyanobacteria carry out photosynthesis, providing the fungus with a source of energy.

The fungus provides the algae or bacteria with water and minerals and protects the green cells from intense sunlight.

Mycorrhizae

Fungi also form mutualistic relationships with plants. The associations of plant roots and fungi are called **mycorrhizae**.

Mycorrhizae is essential for the growth of many plants.

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1 Which of the following is NOT true of fungi?

- a. Some of them perform valuable service as decomposers.
- b. Some of them have a beneficial association with plants.

A c. Some of them can make their own food.

- d. Some of them cause serious diseases of plants, animals, and humans.

21-3 Section QUIZ

2 Ringworm is caused by a

a. worm.

A b. fungus.

c. plant.

d. protist.

21-3 Section QUIZ

- 3** Research on mycorrhizae shows that plants
- a. are not dependent on other organisms.
 - b. are closely related to fungi.
 - A** c. may depend on other organisms.
 - d. are seriously damaged by fungi.

21-3 Section QUIZ

4 In a mutualistic relationship

A a. both partners benefit.

b. one partner benefits.

c. neither partner benefits.

d. neither partners is affected by the other.

21-3 Section QUIZ

5 Lichens are symbiotic associations that might be formed between

- a. a fungus and an animal.
- b. a plant and a bacterium.
- c. a cyanobacterium and a plant.

A d. a fungus and an alga.

END OF SECTION