

Episode: The Forgotten Kingdom

EXPLORING NORTH CAROLINA



USEFUL VOCABULARY

algae
antibiotic
biomass
enzyme
genetic
kingdom
lichen
molecular
mycophobic
mycorrhizae
symbiosis

CHAPTER 2 (0:00–5:36)

1. What is the forgotten kingdom? List some other kingdoms of living organisms.
Fungi; animals, plants, monerans (bacteria), protists.
2. According to Larry Grand, how were fungi originally classified and why?
Fungi were considered plants because they look sort of like plants and grow in the soil.
3. What kinds of evidence led to fungi being placed in a separate kingdom in the 1970s and 1980s?
Molecular and genetic evidence revealed that fungi were very different from plants and merited their own kingdom.
4. Are fungi more closely related to plants or animals? What type of evidence was used to confirm this relationship?
Animals; DNA.
5. How are fungi different from plants? How are they similar to animals?
Fungi cannot produce their own food; fungi obtain energy by secreting enzymes to break down organic matter.

CHAPTER 3 (5:36–7:42)

6. How are lichens related to fungi?
A lichen is a combination of a fungus and an alga. The fungus provides a substrate and moisture for the alga, and the alga provides food via photosynthesis.
7. What other organisms are confused with fungi? How are they different from fungi?
Moss and mistletoe; they can make their own food.

CHAPTER 4 (7:42–12:14)

8. What characteristic does a fungus have that is like an iceberg?
An iceberg is 90 percent hidden (underwater), just as most of a fungus is hidden (underground).
9. Why can a single fungus have so much biomass?
Because there are so many tiny filaments underground.
10. How does a fairy ring represent one genetic individual?
All of the mushrooms arise from a long, continuous thread of a single fungus.

CHAPTER 5 (12:14-23:49)**11.** Why are fungi important to ecosystems and people?

Some possible answers:

- *Mycorrhizae wrap around a plant's roots and channel nutrients from the soil to the plant; they also produce antibiotic-like substances that prevent root infections.*
- *Fungi are vital decomposers of forest waste; they are the primary decomposers of woody plant material.*
- *Edible fungi have a balance of proteins, minerals and vitamins. The yeast fungus is used for fermenting alcohol and leavening bread. Fungi help produce cheese flavors, and fungal fermentation helps make soy sauce.*
- *Fungi provide habitat for squirrels and woodpeckers by creating hollow logs.*

12. How are truffles grown commercially? How do growers find truffles?

Trees are inoculated with fungus and planted in rows—truffles have a mutual relationship with tree roots; using pigs and dogs.

13. How are fungi important in medicine?

Fungi produce antibiotics such as penicillin and drugs that can be used in cancer therapy.

14. What might be some important future uses for fungi?

Biofuels and paper (biopulp).