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Section 1 | Fungi

Characteristics of Fungi



Read 7.1 (pp. 402-406).

Exercises

7.1

Circle the letter of the best answer.

- 1. What characteristic is shared by all fungi?
 - a. They obtain food from other organisms.
 - **b.** They live underground or in other dark places.
 - **c.** They depend on living host organisms for food.
 - **d.** They are composed of many threadlike hyphae.
- 2. How do all fungi obtain nourishment?
 - a. by ingesting living organic matter
 - **b.** by absorption from plant roots in the soil
 - c. by photosynthesizing with fruiting bodies
 - d. by extracellular digestion of organic molecules
- 3. What characteristic is shared by the cells of both plants and fungi?
 - a. contain chloroplasts
 - **b.** contain cellulose in cell walls
 - c. contain membrane-bound organelles
 - d. are arranged into tissues, organs, and systems
- 4. What characteristic is shared by most, but not all, fungi?
 - a. eukaryotic
 - b. heterotrophic
 - **c.** multicellular
 - d. parasitic
- 5. What part of a fungus performs extracellular digestion and absorbs nutrients?
 - a. septa
 - **b.** aerial hyphae
 - c. fruiting bodies
 - d. rhizoid hyphae

- 6. Why is the largest part of a fungus usually invisible?
 - **a.** The mycelium is spread out over a vast area.
 - **b.** Most of the mycelium is buried in organic matter or soil.
 - **c.** The majority of the mycelium only lives for a short time.
 - **d.** The hyphae that make up the mycelium are too small to be visible.

Circle *T* **if the statement is true or** *F* **if it is false.**

- **7. T F** A primary function of fungi in the ecosystem is to return nutrients to the food chain.
- **8. T F** The cell walls of fungi contain chitin.
- **9. T F** Fungal hyphae form specialized tissues.
- **10. T F** Fungal cells share the same cytoplasm.
- **11. T F** Fruiting bodies are the largest part of a fungus.
- **12. T F** All fungi use spores to reproduce.
- **13. T F** Fungal spores germinate best when the soil is dry.
- **14. T F** Most fungi are annuals.

Match each description with the fungus part it describes.

- **15.** _____ rootlike fungal filament embedded in a support material
- **16.** _____ all the threadlike filaments that collectively form a fungus
- **17.** _____ interwoven filaments that hold spore-producing structures
- **18.** _____ partition with pores that divides a fungal filament into cells
- **19.** _____ filament rising above the material on which a fungus grows

Answer these questions.

- **20.** What is a saprophyte?
- **21.** How do fungi benefit their ecosystems through extracellular digestion?
- 22. What are the steps by which fungi digest proteins, carbohydrates, and other biomolecules?

- **b.** fruiting body
- c. mycelium
- **d.** rhizoid hypha
- e. septum

- 23. What are three ways in which fungi are unlike plants?
- 24. How do cell components travel between fungal cells?

25. What are three functions of aerial hyphae?

26. What are the two ways that fungi can form spores, and under what conditions is each way used?

- 27. Why is the underground mycelium of a fungus not considered a root system?
- 28. Most organisms either create or directly consume their food, but fungi absorb food from their environment. How do the characteristics of fungi make them well-suited for feeding by absorption? Especially consider how they are structured and where they grow in relation to their food source.



Read 7.2 (pp. 406-410).

Exercises

Circle the letter of the correct answer.

- 1. What is the largest group of fungi?
 - a. yeasts
 - **b.** sac fungi
 - c. club fungi
 - d. zygote fungi
- 2. When do most fungi form fruiting bodies?
 - a. when two mating types of hyphae meet and fuse in fertilization
 - **b.** when two mating types of hyphae meet, and their cells fuse and divide
 - c. when male and female hyphae meet, and both their cells and nuclei fuse
 - d. when male and female hyphae meet and fuse, but the nuclei remain separate
- 3. What type of fungus forms asci?
 - a. yeasts
 - **b.** sac fungi
 - c. club fungi
 - d. zygote fungi
- 4. What type of fungus are molds?
 - a. yeasts
 - **b.** sac fungi
 - c. club fungi
 - d. zygote fungi
- 5. What is not a method of asexual reproduction used by fungi?
 - a. growing new individuals from fragments of hyphae
 - **b.** one cell dividing into two equal daughter cells by mitosis
 - c. specialized hyphae producing spores within a fruiting body
 - d. creating new individuals from cells produced during meiosis
- 6. What method of reproduction is performed only by unicellular fungi?
 - **a.** A cell forms spores that can germinate and form new individuals.
 - b. A cell breaks into several fragments, each of which forms a new individual.
 - c. A cell divides equally into two daughter cells, each becoming a new individual.
 - d. A cell forms a bud that pinches off, carrying the genes needed to form a new individual.

Circle T if the statement is true or F if it is false.

- 7. T F Club fungi differ from other types of fungi by having no males or females.
- 8. T F Sac fungi form durable unicellular sacs when two types of hyphae meet and their cells fuse.
- **9. T F** Zygospores often remain dormant until favorable conditions allow them to undergo meiosis and produce spores.
- **10. T F** Fungi can produce spores either sexually or asexually.
- **11. T F** Unicellular fungi are known as yeasts.

Number the steps of club fungus reproduction in the order in which they occur. The first step is numbered for you.

- **12.** _____ Tiny club-shaped cells called basidia are produced on gills or inside fruiting bodies.
- **13.** _____ Fused cells divide and form a fruiting body such as a mushroom or bracket fungus.
- **14.** _____ Spores float away from the parent fungus and germinate as new individuals.
- **15. 1** A hypha of the + type meets a hypha of the type. Their cells fuse, while their nuclei remain separate.
- **16.** _____ The daughter cells resulting from meiosis separate from the basidium and become spores.
- **17.** _____ Nuclei fuse within each basidium, forming a diploid cell that immediately divides by meiosis.

Answer these questions.

- 18. How does a sac fungus form spores after fusing the nuclei of cells in the fruiting body?
- **19.** How is the reproduction of zygote fungi different from that of other fungi?
- **20.** When are zygospores formed, and how does the design of a zygospore enable it to fulfill its purpose?
- **21.** How is asexual sporulation similar to sexual reproduction in fungi?

- 22. Fungal spores can sit dormant for long periods. How does this benefit fungi?
- 23. How does budding differ from fragmentation?

Review

Complete these statements. 7.1

- **24.** All fungi are _____, relying on other organisms for food.
- **25.** Multicellular fungi are composed of numerous threadlike ______.
- **26.** Fungal cell walls are composed of the carbohydrate ______.
- **27.** Fungi are multicellular and ______, which means they have membrane-bound organelles.

Circle the letter of the correct answer. 7.1

- **28.** What are all the hyphae of a fungus called?
 - a. septum
 - **b.** mycelium
 - c. mushroom
 - **d.** fruiting body
- 29. What structure separates two fungal cells?
 - **a.** hypha
 - **b.** septum
 - c. cell wall
 - **d.** mycelium
- 30. What structures do all fungi use for reproduction?
 - a. asci
 - **b.** basidia
 - c. septa
 - d. spores