

# Chapter 31

## Fungi

- 1) In fungi, karyogamy does not immediately follow plasmogamy, which
  - A) means that sexual reproduction can occur in specialized structures.
  - B) results in more genetic variation during sexual reproduction.
  - C) allows fungi to reproduce asexually most of the time.
  - D) creates dikaryotic cells.
  - E) is necessary to create coenocytic hyphae.
- 2) The division Deuteromycota
  - A) includes members of all three divisions of fungi.
  - B) is the division in which all the fungal components of lichens are classified.
  - C) includes the imperfect fungi that have abnormal forms of sexual reproduction.
  - D) is the classification of molds, yeasts, and lichens.
  - E) is a practical classification that includes molds that usually reproduce asexually by conidia.
- 3) Which of the following do all fungi have in common?
  - A) meiosis in basidia
  - B) coenocytic hyphae
  - C) sexual life cycle
  - D) absorption of nutrients
  - E) symbioses with algae
- 4) What is the threadlike basic structural element of a fungus?
  - A) filament
  - B) mold
  - C) pseudoparenchyma
  - D) mycelium
  - E) hypha
- 5) Gilled mushrooms typically available in supermarkets have meiotically produced spores located in or on \_\_\_\_\_ and belong to the division \_\_\_\_\_.
  - A) asci; Basidiomycota
  - B) hyphae; Phycomycota
  - C) basidia; Basidiomycota
  - D) asci; Ascomycota
  - E) hyphae; Ascomycota



The questions below refer to the following divisions. Each term may be used once, more than once, or not at all.

- A. Zygomycota
- B. Ascomycota
- C. Basidiomycota
- D. Deuteromycota
- E. Lichens

- 6) This division has the fewest species.
- 7) This division is characterized by the lack of an observed sexual phase in its life cycle.
- 8) This division is made up of coenocytic hyphae with asexual spores that develop in aerial sporangia.
- 9) This division produces two kinds of haploid spores, one kind being asexually produced conidia.
- 10) This division contains the mushrooms, shelf fungi, puffballs, and stinkhorns.
- 11) All of the following are characteristic of fungi EXCEPT:
  - A) They acquire their nutrients by absorption.
  - B) Their body plan is a netlike mass of filaments called mycelium.
  - C) Their cell walls consist mainly of cellulose microfibrils.
  - D) They are specialized as saprobes, parasites, or mutualistic symbionts.
  - E) The nuclei of the mycelia are haploid.
- 12) You are given an organism to identify. It has a fruiting body that contains eight haploid spores lined up in a row. What kind of a fungus is it most likely to be?
  - A) zygomycete
  - B) ascomycete
  - C) deuteromycete
  - D) lichen
  - E) basidiomycete

- 13) A coenocytic structure implies being
- A) multicellular.
  - B) multinucleate.
  - C) commensalistic.
  - D) saprobic.
  - E) heterotrophic.
- 14) What are mycorrhizae?
- A) the fruiting bodies of basidiomycetes
  - B) mutualistic associations of plant roots and fungi
  - C) the pores in fungi that allow ribosomes, mitochondria, and cell nuclei to flow from cell to cell
  - D) the horizontal hyphae that spread out over food
  - E) asexual structures formed by deuteromycetes
- 15) The fungus that produces a compound responsible for the disease ergotism (St. Anthony's Fire) is
- afn)
- A) deuteromycete.
  - B) zygomycete.
  - C) lichen.
  - D) basidiomycete.
  - E) ascomycete.
- 16) A mycelium is characteristic of most
- A) bacteria.
  - B) protozoa.
  - C) fungi.
  - D) mosses.
  - E) sponges.
- 17) What do fungi and arthropods have in common?
- A) Both groups are commonly coenocytic.
  - B) The haploid state is dominant in both groups.
  - C) Both groups are predominantly saprobic in nutrition.
  - D) Both groups use chitin for the construction of protective coats.
  - E) Both groups have cell walls.

- 18) Which characteristic is found in all fungal groups?
  - A) heterotrophic nutrition
  - B) saprobic nutrition
  - C) multicellularity
  - D) dikaryotic hyphae
  - E) parasitism
  
- 19) Parasitic fungi have specialized hyphae called
  - A) aseptate hyphae.
  - B) coenocytic hyphae.
  - C) sporangia.
  - D) dikaryotic hyphae.
  - E) haustoria.
  
- 20) The sporangia of bread molds are
  - A) asexual structures that produce haploid spores.
  - B) asexual structures that produce diploid spores.
  - C) sexual structures that produce haploid spores.
  - D) sexual structures that produce diploid spores.
  - E) vegetative structures with no role in reproduction.
  
- 21) Which of these fungal structures is associated with asexual reproduction?
  - A) zygosporangium
  - B) basidium
  - C) conidium
  - D) ascus
  - E) antheridium
  
- 22) Mushrooms and toadstools are classified as
  - A) basidiomycetes.
  - B) ascomycetes.
  - C) deuteromycetes.
  - D) zygomycetes.
  - E) lichens.

- 23) Lichens are symbiotic communities consisting of fungi and
- A) mosses only.
  - B) cyanobacteria only.
  - C) chlorophytes only.
  - D) Only A and B are correct.
  - E) Only Band C are correct.
- 24) The symbiotic associations called mycorrhizae are considered
- A) parasitic.
  - B) mutualistic.
  - C) commensal.
  - D) harmful to the plant partner.
  - E) the beginning stages of the formation of lichens.
- 25) What is the best definition of a fungus?
- A) eukaryotic, heterotrophic plants
  - B) eukaryotic, parasitic plants
  - C) saprobic plants
  - D) eukaryotic, multicellular heterotrophs
  - E) saprobic heterotrophs
- 26) The body of a fungus is made of a network of filaments called
- A) septa.
  - B) mycelia.
  - C) hyphae.
  - D) haustoria.
  - E) dikaryons.
- 27) What does the word *dikaryon* mean?
- A) only two cells
  - B) two hyphae
  - C) only two mitochondria
  - D) two chromosomes
  - E) two nuclei

- 28) About how many different kinds of fungi are there?
- A) 1,000
  - B) 10,000
  - C) 50,000
  - D) 100,000
  - E) 500,000
- 29) A downy mildew is a member of which of the following groups?
- A) Deuteromycota
  - B) Basidiomycota
  - C) Ascomycota
  - D) Oomycota
  - E) Zygomycota
- 30) Bread covered with a black fungus is most likely providing nutrition to what kind of organism?
- A) lichen
  - B) ascomycete
  - C) basidiomycete
  - D) deuteromycete
  - E) zygomycete
- 31) Yeast is a member of which division?
- A) Deuteromycota
  - B) Basidiomycota
  - C) Ascomycota
  - D) Zygomycota
  - E) lichens
- 32) If there were no mycorrhizae, which of the following would be TRUE?
- A) There would be fewer infectious diseases.
  - B) We wouldn't have antibiotics like penicillin.
  - C) There would be no mushrooms for pizza.
  - D) A lot of trees would not grow well.
  - E) Cheeses like blue cheese or Roquefort could not exist.

- 33) The sac fungi get their name from which aspect of their life cycle?
- A) vegetative growth form
  - B) asexual spore production
  - C) sexual structures
  - D) shape of the spore
  - E) type of vegetative mycelium
- 34) Both *Penicillium* and *Aspergillus* produce asexual spores at the tips of the
- A) asci.
  - B) antheridia.
  - C) rhizoids.
  - D) gametangia.
  - E) conidiophores.
- 35) The primary role of the mushroom's underground mycelium is
- A) absorbing nutrients.
  - B) anchoring.
  - C) sexual reproduction.
  - D) asexual reproduction.
  - E) protection.
- 36) Which aspects of mitotic division are unique to fungi?
- A) Cytokinesis involves formation of a cell plate after the nuclei have split.
  - B) Chromosomes are few in number and the nuclei are small.
  - C) The nuclear membrane remains intact around an internal spindle.
  - D) An internal spindle does not form.
  - E) Spores are always produced by mitotic division.
- 37) In septate fungi, what structures allow cytoplasmic streaming to distribute needed nutrients, synthesized compounds, and organelles within the hyphae?
- A) chitinous layers in cell walls
  - B) pores in septal walls
  - C) complex microtubular cytoskeletons
  - D) two nuclei
  - E) tight junctions that form in septal walls between cells

- 38) What accounts for the extremely fast growth of a fungal mycelium?
- A) a rapid distribution of synthesized proteins by cytoplasmic streaming
  - B) their lack of motility that requires rapid spread of hyphae
  - C) an increased surface area provided by long tubular body shape
  - D) the readily available nutrients from their absorptive mode of nutrition
  - E) a dikaryotic condition that supplies greater amounts of proteins and nutrients
- 39) Lichens sometimes reproduce asexually by forming soredia, which are
- A) aseptate fungal hyphae located within algal cells.
  - B) the fruiting bodies of fungi.
  - C) flagellated, conjoined spores of both the fungus and alga.
  - D) specialized conidiophores.
  - E) clusters of fungal hyphae with imbedded algal cells.
- 40) Why do biologists who study lichens sometimes refer to the symbiotic relationship between fungus and alga as "controlled parasitism"?
- A) Together, the fungus and alga may parasitize and kill other living organisms, such as plants.
  - B) Each contributes to the maintenance of the other.
  - C) Fungal haustoria may kill algal cells, but at a pace slow enough not to destroy all the algae present.
  - D) Algal cells die at a faster rate than fungal cells.
  - E) Fungal cells reproduce slower than the algae, thus becoming enclosed and unable to grow.

*The questions below refer to the following information. A biologist is trying to classify a new fungal organism on the basis of the following characteristics: funguslike in appearance, reproduces asexually by conidia, and parasitizes woody plants.*

- 41) If asked for advice, to which group would you assign this new species?
- A) Deuteromycota
  - B) Oomycota
  - C) Ascomycota
  - D) Basidiomycota
  - E) Chytridiomycota
- 42) Knowledge of which additional characteristic would enable you to refine or confirm your identification?
- A) presence of soredia
  - B) form of sexual reproduction
  - C) chemical composition of cell walls
  - D) presence of flagellated sperm
  - E) detection of algal cells imbedded in mycelium



- 43) Fossil fungi date back to 440 million years ago, which coincides with the origin and early evolution of plants. What combination of environmental change and morphological change is similar in both fungi and plants?
- A) presence of "coal forests" and change in mode of nutrition
  - B) periods of drought and presence of filamentous body shape
  - C) predominance of swamps and presence of cellulose in cell walls
  - D) colonization of land and loss of flagellated cells
  - E) continental drift and mode of spore dispersal
- 44) Which of the following characteristics does NOT provide evidence for a close evolutionary relationship between fungi and chytrids?
- A) presence of hyphae
  - B) flagellated zoospores
  - C) absorptive mode of nutrition
  - D) chitinous cell walls
  - E) amino acid base sequences of some enzymes
- 45) Which of the following terms would you NOT associate with fungi?
- A) decomposers
  - B) sexual and asexual spores
  - C) ecological importance
  - D) arose from several different ancestors
  - E) absorptive nutrition
- 46) All of the terms below refer to symbiotic relationships that occur in fungi EXCEPT
- A) pathogens.
  - B) decomposers.
  - C) spore production.
  - D) lichens.
- 47) Fungi can be all of the things below EXCEPT
- A) predators.
  - B) decomposers.
  - C) symbionts.
  - D) absorptive heterotrophs.
  - E) autotrophs.

- 48) The vegetative (nutritionally active) bodies of most fungi are
- A) called hyphae.
  - B) referred to as a mycelium.
  - C) often underground.
  - D) sometimes extremely large.
  - E) Vegetative fungi are often all of the above.
- 49) "Coenocytic" refers to fungi (and other organisms) whose parts are not clearly divided into cells.
- A) The above statement is true and describes all fungi.
  - B) The above statement is true, but restricts the movement of fungal mycelia.
  - C) The above statement is true, but refers to only some fungi.
  - D) The above statement is true, but only for parasitic fungi.
  - E) The above statement is false.
- 50) Fungi produces spores, both sexually and asexually, in a variety of shapes and sizes. The advantage(s) to fungi that produce spores is/ are
- A) genetic diversity if the spores are produced sexually.
  - B) perseverance during adverse conditions.
  - C) the ability to travel great distances on wind currents because of their small size.
  - D) rapid growth in favorable environments.
  - E) All of the above are advantages of fungal spores.
- 51) Which of the following constitutes a monophyletic combination?
- A) basidiomycetes and maple trees
  - B) chytrids and fungi
  - C) ascomycetes and grapes
  - D) chytrids and slime molds
- 52) Which of the following fungal groups is best at decomposing lignin?
- A) saprobic basidiomycetes
  - B) shelf fungi
  - C) rusts
  - D) smuts
  - E) All of the above decompose lignin easily.

- 53) Which of the following is NOT a fungal disease?
- A) AIDS
  - B) athlete's foot
  - C) *Rhodotulula*
  - D) *Candida*
- 54) A new disease arises in humans who live near monkeys in the rain forest. Which of the following might be a first attempt at determining whether the disease is caused by fungus?
- A) Treat affected people with an enzyme that digests chitin.
  - B) Treat affected people with extracts from the gut of a termite.
  - C) Bring affected and unaffected people together in both rain forest and desert locations.
  - D) Grind up tissue from affected people and feed it to unaffected people.
  - E) Quarantine the entire area until the affected people die or get well.
- 55) Which of the following best describes the symbiotic relationship in lichens?
- A) Fungal cells are enclosed within algal cells.
  - B) Lichen cells are enclosed within fungal cells.
  - C) Algal cells are enclosed within fungal cells.
  - D) The fungi grow on rocks and trees and are covered by algae.
  - E) Algal cells and fungal cells mix together without any apparent structure.