Chapter 23 The Fungi

Multiple Choice Questions

1. Which of the following spores is the result of asexual reproduction?
   A) sporangiospores
   B) zygospores
   C) ascospores
   D) basidiospores
   E) None of these are asexual.

   Answer: A

2. Which of the following structures are NOT involved in sexual reproduction?
   A) mushrooms
   B) ascocarps
   C) condia
   D) gametangia
   E) basidia

   Answer: C

3. Fungal diseases include all but which of the following?
   A) thrush
   B) athlete's foot
   C) strep throat (pharyngitis)
   D) histoplasmosis
   E) ringworm

   Answer: C

4. In contrasting fungi with the other kingdoms, which of the following is NOT a correct statement?
   A) Animals are heterotrophic by ingestion while fungi are heterotrophic by absorption.
   B) Plants have cell walls of cellulose; fungi have cell walls of chitin.
   C) The energy reserve of fungi is starch while the energy reserve of animals is glycogen.
   D) Fungi lack flagella at all stages of their life while most protists have a stage that possesses flagella.
   E) Fungal spores develop into haploid hyphae without embryo development; plants have embryo development.

   Answer: C

5. The difference between septate hyphae and nonseptate hyphae is
   A) a difference in haploid and diploid cells.
   B) a distinction between saprotrophic fungi and parasitic or disease-causing fungi.
   C) determined by whether the hyphae have cross walls or lack cross walls.
   D) a distinction between sexual and asexual reproduction.
   E) a classification trait that separates basidiomycotes from ascomycotes.

   Answer: C

6. Dikaryotic cells of fungi
   A) are just another form of haploid cells.
   B) are just another name for diploid cells.
   C) contain two haploid nuclei but fail to fuse them for an extended time period.
   D) are nonseptate plasmodial masses with many nuclei and no cell partitioning.
   E) are potential symbionts that can join with algae to form lichens.

   Answer: C

7. An individual filament of a fungus, with an elongated mass of cytoplasm, is called
   A) a mycelium.
   B) a conidium.
   C) an ascospore.
   D) a basidiospore.
   E) a hypha.

   Answer: E

8. At one time, biologists thought that fungi were merely forms of plants that had lost their chlorophyll and had returned to saprotrophy to gain food. Why is this no longer considered a solid theory?
   A) Fungal cell walls contain chitin rather than cellulose.
   B) Fungi attack and engulf food for internal digestion.
   C) Fungi have flagella at some stage, providing mobility that plants never have.
   D) Plants are multicellular and fungi are unicellular or multinucleated noncellular plasmodia.
   E) All of these are differences between fungi and plants.

   Answer: A

9. The major groups of fungi may have evolved
   A) directly from the Prokaryotes.
   B) probably from the green algae through loss of chlorophyll.
   C) from the amoeboid Protista.
   D) from the Plant kingdom through degeneration.
   E) separately from several Protista groups.

   Answer: E

10. In time, bread becomes stale and grows mold on the exposed surfaces. Why does mold not begin growing inside the bread loaf?
   A) Mold can grow only on dry surfaces.
   B) Only molds at the surface of the bread can get oxygen to respire.
   C) Mold actually begins from anywhere inside but produces colored spores only at the surface.
   D) There is an antibiotic antagonism between the bread mold and the internal yeasts that made the bread rise.
   E) The bread was sterilized when it was baked and thereafter mold spores settle only on the outside of the cooled bread.

   Answer: E

11. A dormant fungal structure that can survive unfavorable growing conditions is the
   A) mycelium.
   B) sporangium.
   C) ascocarp.
   D) basidium.
   E) zygospore.

   Answer: E

12. The parasitic sac fungus that grows on rye and other grains and contains the hallucinogenic chemical lysergic acid is
   A) *Aspergillus.*
   B) *Penicillin*.
   C) *Rhizopus*.
   D) *Saccharomyces.*
   E) ergot.

   Answer: E

13. The term "ascus" is based on the Greek root word meaning
    A) club or bat.
    B) spore-forming.
    C) network.
    D) bag or sac.
    E) fermentor.

    Answer: D

14. A sexual spore produced by a sac fungus is called
    A) a mycelium.
    B) a conidium or conidiospore.
    C) an ascospore.
    D) a basidiospore.
    E) a hypha.

    Answer: C

15. An asexual spore produced by a sac fungus or club fungus is called
    A) a mycelium.
    B) a conidium or conidiospore.
    C) an ascospore.
    D) a basidiospore.
    E) a hypha.

    Answer: B

16. A mushroom would produce a sexual spore known as
    A) a mycelium.
    B) a conidium.
    C) an ascospore.
    D) a basidiospore.
    E) a hypha.

    Answer: D

17. The term "basidia" is based on the Greek root word meaning
    A) club or bat.
    B) spore-forming.
    C) network.
    D) bag or sac.
    E) fermentor.

    Answer: A

18. When the cap of an average gilled mushroom is cut off and placed on paper, a spoke-like print eventually appears on the paper under the cap. This powdery material would be
    A) mycelia.
    B) sporangia.
    C) hyphae.
    D) basidiospores.
    E) conidiospores.

    Answer: D

19. The fungi that parasitize cereal crops such as corn, wheat, oats, and rye, are the
    A) stinkhorns.
    B) yeasts.
    C) truffles.
    D) lichens.
    E) rusts and smuts.

    Answer: E

20. Which is NOT a correct association of a fungus and product?
    A) *Aspergillus*--soy sauce
    B) *Aspergillus*--citric and gallic acid
    C) *Saccharomyces cerevisiae*--beer and wine
    D) *Penicillium*--antibiotics
    E) Rusts and smuts--truffles

    Answer: E

Chapter 23 The Fungi

21. A member of the fungi is
    A) *Amoeba proteus.*
    B) *Plasmodium vivax.*
    C) *Chlamydomonas.*
    D) *Penicillium.*
    E) *Paramecium.*

    Answer: D

22. Crustose, fruticose, and foliose are varieties of
    A) rusts and smuts.
    B) mushrooms.
    C) yeasts.
    D) lichens.
    E) mycorrhizae.

    Answer: D

23. The term "mycorrhizae" is based on the Greek root words meaning
    A) club and root.
    B) spore and lichen.
    C) network and fungus.
    D) fungus and root.
    E) mutualistic and root.

    Answer: D

24. The relationship between the fungi and algae in lichens is best described as
    A) a simple cooperative mutualism between normally free-living strains.
    B) a complete mixing of the genomes of the two groups at the cellular level.
    C) an endosymbiotic transfer of the chloroplasts of algae to the hyphae cells.
    D) a possible controlled parasitism wherein the fungi withdraw food from the algae and the algae can grow better alone.
    E) a possible controlled parasitism wherein the algae are moistened and protected by the fungi, but the fungi can grow better alone.

    Answer: D

25. The relationship between soil fungi and the roots of plants
    A) is restricted to just a few species of conifer trees.
    B) is parasitic or harmful to plants about half of the time.
    C) provides nutrients to the fungus but is a neutral or commensal relationship for the plant.
    D) dates to the earliest fossil plants and was likely a factor in their ability to live on land.
    E) All of the choices are true.

    Answer: D

26. Biodegradation of organic matter is due to
    A) protists and fungi.
    B) bacteria and fungi.
    C) members of the chlorophyta.
    D) protists and bacteria
    E) All of the choices apply.

    Answer: B

27. All of the following are characteristics of fungi EXCEPT
    A) may be saprotrophic decomposers.
    B) may be parasitic on plants producing costly rusts and smuts of crop plants.
    C) may cause ringworm and yeast infections in humans.
    D) are always environmentally detrimental.
    E) may be sources of antibiotics

    Answer: D

28. Which of the following is an incorrect association with a fungal phylum and the characteristic organisms in that phylum.
    A) Deuteromycota--club fungi
    B) Ascomycota--sac fungi
    C) Zygomycota--zygospore fungi
    D) Basidiomycota--mushrooms
    E) all are correct associations

    Answer: A

29. Asexual reproduction in the ascomycota involves the production of
    A) Ascospores.
    B) Conidiospores.
    C) Zygospores.
    D) Basidiospores.
    E) sporaniospores

    Answer: B

30. Yeasts are
    A) members of the ascomycota.
    B) reproduce asexually by budding; budding yeasts include brewers yeast.
    C) are responsible for beer, wine, and bread production.
    D) are important organisms in genetic engineering experiments on eukaryotic cells.
    E) All of the choices are correct.

    Answer: E

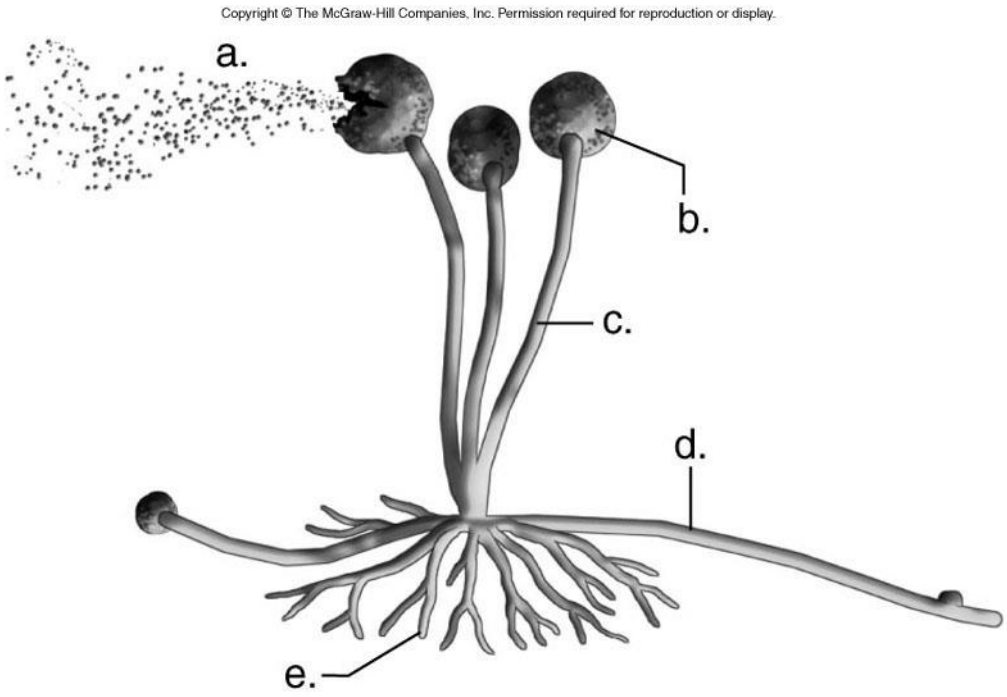
31. Fungal poisonous or physiologically active chemicals include all of the following EXCEPT
    A) muscarine and muscaridine.
    B) psilocybin, a structural analog of LSD and mescaline.
    C) ergot alkaloids.
    D) botulinum toxin.
    E) carcinogens

    Answer: D

32. Mycorrhizae
    A) aid plants in acquiring mineral nutrients.
    B) receive carbohydrates from the plant.
    C) increase the ability of plants associated with the mycorrhizal hyphae to successfully grow in poor soild.
    D) are classified as endomycorrhizae and ectomycorrhizae
    E) All of the choices are true of mycorrhizae.

    Answer: E

Use the following to answer questions 33-35:



Match the labels in the above diagram to the following structures:

33. Rhizoids

    Answer: E

34. Stolon

    Answer: D

35. Sporangiophore

    Answer: C

Use the following to answer questions 36-38:

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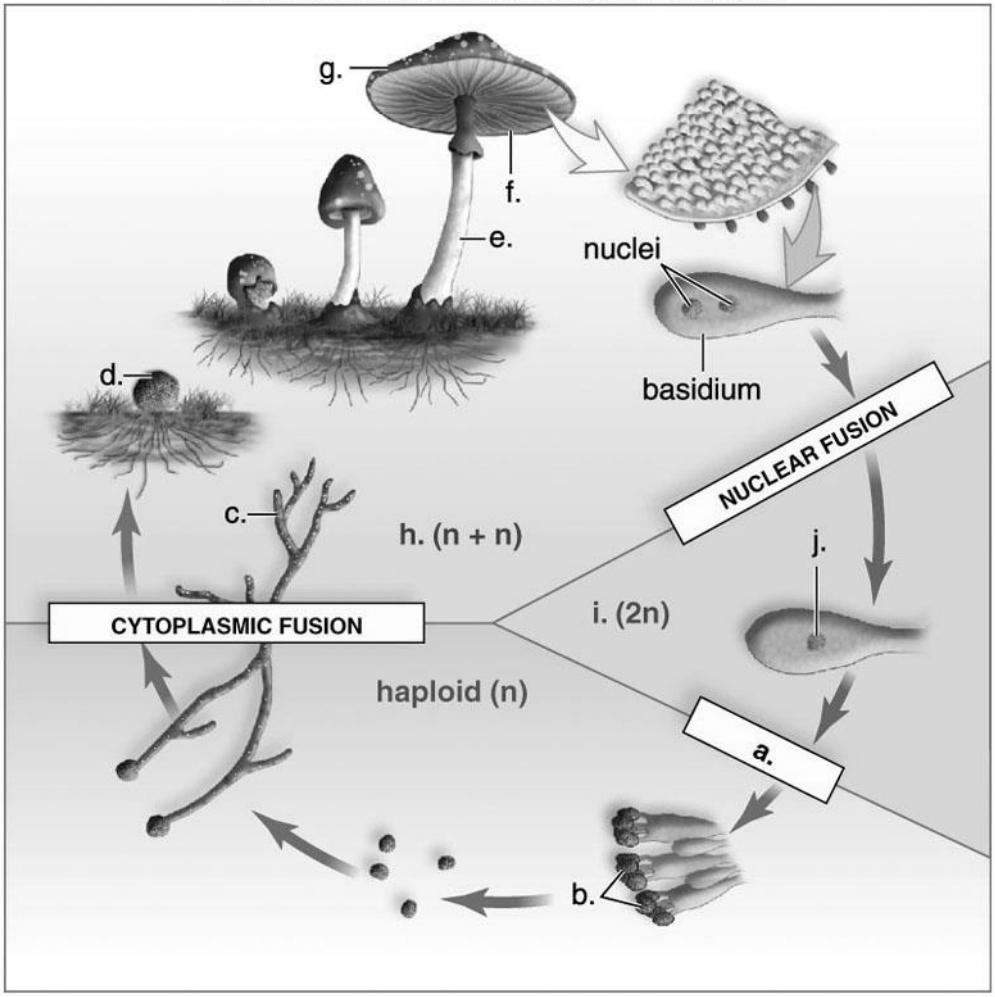

36. Labels “e”, “f”, and “g” above are all part of what structure?
    A) hyphum
    B) basidium
    C) mycelium
    D) basidiocarp
    E) zygospore

    Answer: D

37. The sexual spores in the diagram above are labeled
    A) "j"
    B) "b"
    C) "c"
    D) "d"
    E) None of these are the sexual spores.

    Answer: B

38. Which of the following is NOT in the same phylum as the above organism?
    A) puffball
    B) morel
    C) shelf or bracket fungi
    D) smuts
    E) Rusts

    Answer: B

Chapter 23 The Fungi

Essay Questions

39. For being an unobtrusive, often-neglected group of organisms, fungi have significant value both positive and negative to all aspects of the ecosystem and its organisms. Choose four of the following categories and discuss the value of fungi in these areas. Include examples.
    a. Medicine
    b. Biogeochemical cycles
    c. Food industry
    d. Pathology (disease and other health concerns)
    e. Symbiosis
    f. Agriculture

    Answer:
    a. numerous examples: source of antibiotics (penicillin), immunosuppressants (cyclosporine), steroids.
    b. decomposers in all material cycles- carbon cycle, nitrogen, phosphorus. Not only decomposers of typical organic material such as dead organisms but can decompose materials such as chitin and lignin that other decomposers have difficulty with.
    c. Many food examples: some directly consumed- mushrooms, morels, truffles; some used in manufacture of food- such as cheese and soy sauce; other such as yeasts for baking and brewing.
    d. Human diseases: any acceptable example- thrush and other yeast infections, ringworm, sick-building syndrome, histoplasmosis, athlete's foot and many other examples. Also, carcinogen producers, possible allergens.
    e. Lichens- fungus plus a photosynthesizer. Important as pioneer organisms. Mycorrhizae-important for proper growth and health of majority of plants. May have helped plants colonize land.
    f. Many crop diseases: rusts, smuts, ergot, Dutch elm disease, chestnut blight, etc.