

Plants, Fungi, and the Colonization of Land

1. The intimate, mutually beneficial association formed between a fungus and the root of a plant is called a(n)

- a) ingrowth
- b) mycorrhiza
- c) parasitic infection
- d) fungal association
- e) None of the choices are correct

2. Gas exchange in plants occurs through structures called

- a) stomata
- b) spiracles
- c) phloem
- d) gas pores
- e) None of the choices are correct

3. In plants, vascular tissue made of dead cells that transport water and minerals from the roots is called

- a) xylem
- b) phloem
- c) stomata
- d) transport tissue
- e) None of the choices are correct

4. In plants, vascular tissue that consists of living cells that distribute sugars throughout the plant is called

- a) xylem
- b) phloem



- c) stomata
- d) transport tissue
- e) lichens

5. Which of the following is / are true?

- a) Both angiosperms and gymnosperms produce ovules in a specialized structure called an ovary.
- b) The gametophyte is the dominant generation in both angiosperms and gymnosperms.
- c) "Double fertilization" to produce a fertilized egg and a triploid endosperm is characteristic of both angiosperms and gymnosperms.
- d) The leaves of plants are covered by a waxy cuticle that helps to protect the leaves from desiccation.
- e) All of the statements are correct.

6. Plants and green algae share which of the following homologous structures?

- a) cell walls made of cellulose
- b) starch as a storage molecule for carbohydrates
- c) a cell plate formed from vesicles derived from the Golgi apparatus
- d) All of the choices are correct.
- e) None of the choices are correct.

7. The early fossil plant *Cooksonia* exhibited all of the following features except

- a) sporangia
- b) branched, upright stems
- c) leaves
- d) primitive vascular tissue
- e) spores



8. Mosses are included in a group of plants called the

- a) angiosperms
- b) gymnosperms
- c) bryophytes
- d) vascular plants
- e) lichens

9. Which of the following is true of ferns?

- a) They are seedless, vascular plants.
- b) They have well-developed roots and rigid stems.
- c) Many species have leaves called fronds.
- d) They are most diverse in the tropics.
- e) All of the choices are correct.

10. The dominant types of seed plants today are the

- a) conifers and angiosperms
- b) angiosperms and seed ferns
- c) conifers and seed ferns
- d) ferns and conifers
- e) conifers

11. Which of the following are adaptations that help plants live on land?

- a) vascular tissue
- b) gametangia
- c) seeds
- d) All of the choices are correct.
- e) None of the choices are correct.

12. The type of life cycle seen in plants is called

- a) haplodiploidy
- b) gametophyte production
- c) alternation of generations
- d) karyogamy
- e) cyclic reproduction

13. Which of the following correctly describes the alternation of generations in a plant life cycle?

- a) Diploid sporophytes that produce spores by meiosis alternate with gametophytes that produce gametes by mitosis.
- b) Diploid sporophytes that produce gametes by meiosis alternate with haploid sporophytes that produce gametes by mitosis.
- c) Diploid gametophytes that produce gametes by meiosis alternate with diploid sporophytes that produce spores by mitosis.
- d) Diploid gametophytes that produce spores by mitosis alternate with haploid sporophytes that produce gametes by meiosis.
- e) Diploid gametophytes that produce gametes by meiosis alternate with haploid sporophytes that produce spores by mitosis.

14. The dominant stage of mosses is the

- a) sporophyte
- b) gametophyte
- c) pollen
- d) ovule
- e) None of the choices are correct.

15. Ferns and mosses are similar because



- a) both produce eggs in antheridia and sperm in archegonia
- b) both have dominant sporophytes
- c) neither rely on water for fertilization to occur
- d) both have sporophytes that produce haploid spores
- e) All of the choices are correct

16. Which of the following adaptations to a terrestrial existence is/ are found in ferns?

- a) spores that disperse without the need for water
- b) a female gametophyte that remains enclosed in the sporangium
- c) a mechanism for uniting gametes that eliminates the need for water
- d) All of the choices are correct.
- e) None of the choices are correct.

17. Which of the following has a dominant sporophyte generation and a free-living gametophyte generation?

- a) a moss
- b) a fern
- c) a mushroom
- d) a conifer
- e) None of the choices are correct.

18. The key step in the adaptation of seed plants to dry land was the evolution of

- a) chlorophyll *a*
- b) flowers
- c) a dominant sporophyte generation
- d) carotenoids
- e) pollen



19. Which part of the life cycle does a pollen grain represent?

- a) a spore
- b) a sperm cell
- c) a male gametophyte
- d) a male sporangium
- e) a male sporophyte

20. Which of the following plants has a dominant sporophyte generation and a seed but no fruit?

- a) fern
- b) pine tree
- c) tulip
- d) dandelion
- e) None of the choices are correct.

21. The _____represents the sporophyte generation of a conifer, and the _____produces gametophytes.

- a) cone...tree
- b) tree...cone
- c) tree...pollen
- d) tree...seed
- e) seed...tree

22. The male gametophyte of a conifer is represented by which of the following?

- a) pollen grain
- b) sperm
- c) spore
- d) pollen tube
- e) None of the choices are correct.



23. Which one of the following statements is not true?

- a) Petals are usually the most striking part of a flower.
- b) The anther is the male organ in which pollen grains develop.
- c) The carpel consists of a stalk with an ovary at the base.
- d) Sepals enclose the flower before the flower opens.
- e) The stigma is a protective chamber where the eggs develop.

24. The angiosperm plant we see represents the _____ generation, and the flower produces _____.

- a) sporophyte...gametophytes
- b) sporophyte...bryophytes
- c) gametophyte...sporophytes
- d) gametophyte...bryophytes
- e) seed ... sporophytes

25. The ripened ovary of a flower, which is adapted to disperse seeds, is called a(n)

- a) ovule
- b) casing
- c) fruit
- d) cone
- e) sporangium

26. Fruits, vegetables, corn, rice, and wheat are all examples of

- a) gymnosperms
- b) ferns
- c) nonvascular plants
- d) angiosperms
- e) seedless plants



27. Plants dependent on nocturnal pollinators typically have flowers that

- a) reflect UV light
- b) are small
- c) have long and narrow floral tubes
- d) are highly scented
- e) are located close to the ground

28. The United Nations and other groups are responding to the widespread loss of biodiversity by

- a) trying to halt all harvesting of lumber
- b) promoting management practices that are sustainable
- c) encouraging people in tropical environments to farm instead of cut timber
- d) trying to raise more animals in zoos and botanical gardens
- e) moving exotic species to new locations where they hope they can survive

29. Heterotrophic eukaryotes that digest their food externally and absorb the small molecules are referred to as

- a) bacteria
- b) protozoans
- c) fungi
- d) plants
- e) multicellular algae

30. Fungi are found associated with the earliest plant fossils. Which of the following is a way in which fungi may have helped plants become terrestrial?

- a) by forming mycorrhizal associations and helping early plants to extract mineral nutrients from hostile soils
- b) by forming lichenlike associations with ancestral plants
- c) by protecting early plants from desiccation



- d) by providing simple organic compounds in return for sugars
- e) None of the choices are correct.

31. *The fungi*

- a) are similar to bacteria because fungal organisms are composed of prokaryotic
- b) are similar to bacteria because fungi use extracellular digestion to obtain their nutrients
- c) are similar to green plants because fungi produce chlorophyll
- d) differ from members of the animal kingdom because fungi are autotrophic
- e) are similar to green plants because most fungal cells are surrounded by a cellulose cell wall

32. *Individual fungal filaments are called*

- a) mycelia
- b) hyphae
- c) sporangia
- d) root hairs
- e) mold

33. *A mushroom*

- a) is composed of many threadlike filaments called hyphae
- b) is the fruiting structure of the class of fungi known as ascomycetes
- c) is specialized to obtain most of the nutrients for the fungal mycelium
- d) contains haploid spores that will eventually develop into a new fungal mycelium
- e) produces sperm and eggs for the fungal thallus

34. *Which one of the following statements is not true?*

- a) A yeast is a unicellular fungus
- b) Most fungi are multicellular
- c) Fungi have cell walls made of chitin, identical to that found in the external skeletons of insects
- d) Most fungi are nonmotile
- e) Most fungi have flagellated or amoeboid or amoeboid cells in their life cycles

35. Which of the following functions does a mushroom perform?

- a) production of spores
- b) production of zygotes
- c) production of spores and zygotes
- d) nutrition of the fungus
- e) water storage

36. The dikaryotic phase of a fungal life cycle is

- a) a stage in which the mycelium contains hyphae of more than one mating type
- b) a stage in which hyphae contain two, genetically different, haploid nuclei
- c) a stage in which hyphae contain two, genetically different, diploid nuclei
- d) a stage that is diploid but functions as a gametophyte (like the body of an animal)
- e) a triploid stage formed by the fusion of a diploid nucleus with the haploid nucleus of a compatible mating-type hypha

37. What kind of entity is lichen?

- a) an association between a fungus and a brown alga
- b) an association between a multicellular protist related to the brown algae and a bacterium
- c) an association between a fungus and a cyanobacteria or a green alga



- d) an association between a bryophyte and a fungus
- e) an association between a bryophyte and a bacterium

38. Which one of the following statements is not true?

- a) A mycosis is a type of mold that grows on corn.
- b) Dutch elm disease is caused by a fungus.
- c) Some fungi that attack food crops can be toxic to humans.
- d) Athlete's foot is caused by a fungus.
- e) Yeast infections are caused by a fungus.

39. Which one of the following statements is not true?

- a) Fungi are important decomposers in ecosystems.
- b) Fungi help to recycle organic matter.
- c) The distinctive flavor of certain cheeses is due to fungi.
- d) The first antibiotic discovered came from a fungus.
- e) Fungi are more closely related to plants than to animals.

40. Which characteristic is shared by algae and seed plants?

- a) pollen
- b) cuticle
- c) vascular tissue
- d) cell walls
- e) stomata

41. Biodiversity hot spots are recognized on the basis of

- a) the number of species present
- b) the number of endemic species



- c) the degree to which the species are threatened with extinction
- d) the numbers of species present and endemic species
- e) all of the above

42. Madagascar is an island in the _____ Ocean.

- a) North Atlantic
- b) South Atlantic
- c) Indian
- d) North Pacific
- e) South Pacific

43. Fungi are

- a) photoautotrophs
- b) triploid
- c) prokaryotic
- d) heterotrophs
- e) chemoautotrophs

44. Fungal mycelia are composed of

- a) gills
- b) hyphae
- c) spores
- d) cellulose
- e) heterocysts



