

## Learning Guide

### Tutorial: The Biology of Fungi I

In this tutorial, we will be exploring the fascinating fungi. Read the questions below before you begin reading the tutorial. Then as you read the tutorial, fill in your answers to help you prepare for our class session. In addition to the questions below, as you read through the tutorial, ask yourself what did I learn on this page?

Before our class session answer the following questions from the online tutorial:

1. Describe the diversity and basic characteristics of organisms in the Kingdom Fungi.
2. What is the fungal mode of metabolism?
3. Think back to our carbon and life tutorial (#3) when we discussed carbohydrates. How is the composition of fungal cell walls different from most other eukaryotic organisms? What polysaccharide is present and what is its purpose?
4. What is the difference between hyphae and mycelia? Using the information from your tutorials about fungal anatomy, explain how the structure of mycelia is ideal for the fungal mode of metabolism.
5. What characters support the classification of fungi and plants in different kingdoms?

6. If fungi colonized land before plants, where might the fungi have lived? How would their food sources have differed from what they feed on today? (hint there would have been no plants or animals present)

7. When would you expect fungi to reproduce sexually versus asexually? Explain your answer in no more than two sentences.

8. What is the predominant ploidy level of fungi?

9. Define the following terms and be able to recognize when they occur if given a diagram of a fungal life cycle.

Plasmogamy:

Karyogamy:

Dikaryon/Heterokaryon:

Note: Although you will not have to memorize each of the fungal life cycles individually, you should be familiar with:

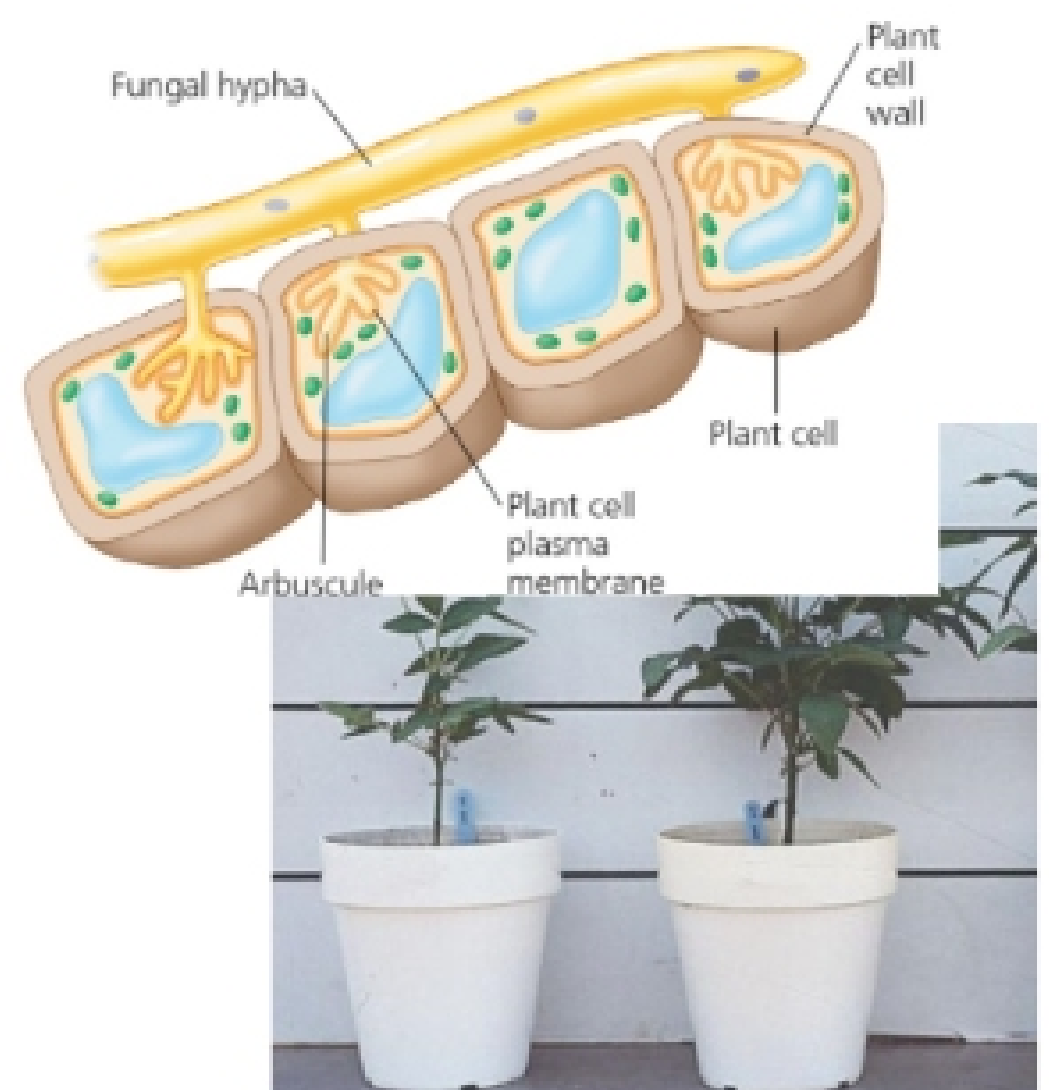
- ✓ The general fungal life cycle as presented in this tutorial
- ✓ Any structures and/or processes unique to a particular fungal phylum

10. What is the distinguishing characteristic of the chytrid fungi? Do any other fungi have this characteristic?

11. Microsporidian infections are mainly seen in people who have compromised immune systems. What could cause a compromised immune system? Why are infectious diseases such as this referred to as "opportunistic diseases"?

12. Look at the diagram in the tutorial that shows the sexual and asexual production of spores for the zygomycete life cycle. What is the reproductive structure that is unique to the zygomycete fungi? When is this structure formed?

13. Members of the Glomeromycota are characterized by their ability to form an arbuscular structure. How is this structure used and why are mycorrhizae ecologically important (hint see "environmental impacts of fungi" section of this tutorial as well, to help answer this question)? What type of symbiotic relationship is this?



14. Does having mycorrhizae benefit a plant?