

Gen Bio III Lab 5

Fungi

Introduction

Fungi are a monophyletic group within the Domain Eukarya. This group is the sister taxa to Kingdom Animalia, and contains several major clades (Figure 1). All fungi make their living by absorbing nutrients from living or dead organisms. A key feature of fungal morphology is the large amount of surface area for efficient absorption of nutrients.

You will not hear about fungi in lecture until next week. This lab is meant to introduce you to some major themes on the structure and function of animals using some organisms you may already be familiar with. You will understand the lab better if you **read Ch. 31: *Fungi* before** you come to lab.

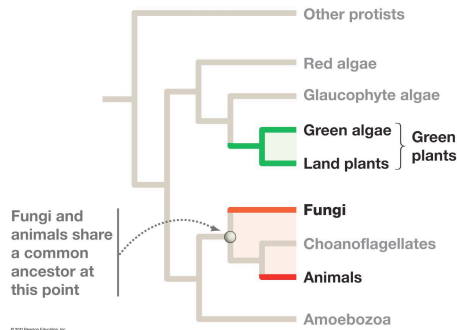


Figure 1: Cladogram showing relationships among the major groups of eukaryotes. Note that fungi are closely related to animals.

Learning Objectives

- Understand the major and minor clades within the Kingdom Fungi
- List some fungal adaptations associated with the absorption of nutrients.
- Describe how fungal life cycles differ from animal or plant life cycles.
- Identify the distinct reproductive structures of the four traditional groups of fungi
- Describe the ecological importance of fungi.
- Describe at least four types of symbiotic relationships that fungi can have with other organisms, and give an example of each.

Lab Organization

Today's lab is laid out as a series of stations that introduce you to some common themes in the evolution and morphology of fungi. Visit each station and use the material at that location to help you understand what you have read in the text.

Molecular phylogeny

Many fungi beyond the most common are unfamiliar to us. Stations 1–4 present the several clades within the Kingdom Fungi. A copy of this phylogeny is included as Figure 2 in this handout.

Fungal reproduction

Fungi have unusual life cycles. Most species have a long-lived heterokaryotic stage containing haploid nuclei from two different individuals. Although most species reproduce sexually, few produce gametes.

Ecological interactions

Fungi are decomposers that help to cycle nutrients within terrestrial environments. They participate in symbiotic, parasitic, and competitive interactions for these nutrients.

Economic impact

Humans are harmed by pathogenic fungi, and those that cause disease to important crops. But humans also benefit from fungi as food, aids to brewing, sources of enzymes on an industrial scale, and as sources of antibiotic compounds.

Lab Write Up

Your lab write up should include notes on the information at each station, as well as your answers to any questions found in the station notes. You should also include relevant sketches or diagrams to help you learn and remember the key concepts of today's lab.

Figure 2: A phylogeny of the fungi based on DNA sequence data. This figure also illustrates the major reproductive structures found in fungi.

