

NAME _____

DATE _____

Introduction to Ascomycetes

Ascomycota, the largest fungal phylum, consists of fungi whose sexual spores are produced in sac-like or tubular structures called asci. The asci may be bare or borne on or within an ascocarp, a specialized fruiting body.

Anthracobia

Examine the plate culture of *Anthracobia*, noting the circular bodies that cluster near the margin of the plate. These are the ascocarps.

Place 2 drops of water on a microscope slide. Pass a dissecting needle through a burner flame and use it to remove an ascocarp from the plate and transfer it into the water on the slide. Pass the needle through the flame again. Place one edge of a coverslip against the slide and next to the water drop. Support the opposite edge of the coverslip with the needle and slowly lower the coverslip until it lies flat on the slide. Using the eraser end of a pencil, press the coverslip to spread the ascocarp. This will make the asci visible under magnification.

Observe your slide, using the scanning and low- and high-power lenses of a microscope. Look for tubular asci with spores.

Eurotium

Examine the plate culture of *Eurotium*, noting the green and yellow areas of the plate.

Place 2 drops of water on a microscope slide. Pass a dissecting needle through a burner flame and use it to remove a bit of material from a green area of the plate. (Try to avoid any yellow material.) Transfer the material into the water on the slide. Pass the needle through the flame again. Place one edge of a coverslip against the slide and next to the water drop. Support the opposite edge of the coverslip with the needle and slowly lower the coverslip until it lies flat on the slide.

Observe your slide using the scanning and low- and high-power lenses of a microscope. Look for hyphae that have swollen tips covered with conidia (asexual spores).

Eurotium also produces sexual spores. Go back to the plate and remove a bit of material from the yellow area of the plate. Make a slide as before, but this time press down on the coverslip with the eraser end of a pencil to crush the ascocarps.

Observe your slide using the scanning and low- and high-power lenses of a microscope. The ascocarps are almost spherical. Some will have been crushed, releasing their spores. Look for tightly clumped spores that are still contained within their asci. You may have difficulty seeing the walls of the asci due to their transparency.

Schizosaccharomyces

Schizosaccharomyces is a yeast. Examine the plate culture, noting the growth of the yeast on the surface of the agar. Unlike other fungi you will examine, yeasts are primarily unicellular, at most forming only loose chains of cells.

Place 2 drops of water on a microscope slide. Pass a dissecting needle through a burner flame and use it to remove some yeast from the surface of the agar and transfer it into the water on the slide. Use the needle to disperse the clumped cells as much as possible. Place one edge of a coverslip against the slide and next to the water drop. Support the opposite edge of the coverslip with the needle and slowly lower the coverslip until it lies flat on the slide.

Observe your slide using the scanning and low- and high-power lenses of a microscope. Look for the cells, most of which will be circular. You may see some that are budding, a common form of asexual reproduction in yeasts. There are no ascocarps. If you search diligently, you may find an isolated, elongated ascus containing eight ascospores.

Sordaria

Examine the plate culture of *Sordaria*, noting the dark specks on the surface of the agar. These are the ascocarps.

Place 2 drops of water on a microscope slide. Pass a dissecting needle through a burner flame and use it to remove one or more ascocarps from the plate and transfer this into the water on the slide. Pass the needle through the flame again. Place one edge of a coverslip against the slide and next to the water drop. Support the opposite edge of the coverslip with the needle and slowly lower the coverslip until it lies flat on the slide. Using the eraser end of a pencil, press down on the coverslip to crush the ascocarps.

Observe your slide using the scanning and low-power lenses of a microscope. The ascocarps are flask-shaped. Some will be crushed, releasing asci, which are tubular. Look closely at the end of an ascus and you may see the pore through which the spores will be ejected. Count the spores in an ascus. What is the normal number of spores per ascus? _____ These spores were produced by meiosis, and meiosis results in a tetrad of spores. What do you think happened after meiosis to produce the number that you observe?

Below is a description of three basic types of ascocarps. Using your observations, match each culture with its ascocarp.

Ascocarp type	Description	Example
Apothecium	An open ascocarp that does not enclose the asci.	_____
Cleistothecium	A completely closed ascocarp.	_____
Perithecium	An ascocarp with one opening.	_____

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