

OOMYCOTA AND MYXOMYCOTA DIVERSITY

Remember to return the plates/boxes to their proper place when you are finished!

The major event today is the *Achlya* life cycle (#1-3). We want you to spend most time on this. The instructions on your lab manual (p. 19) is very helpful.

1. *Achlya* on seeds - grab a petri plate with individual colonies on seeds and observe the organism under the highest magnification of your dissecting scope. Look at the margin and find sporangia. Once you have done this, mount the colony like you did with *Allomyces* last week and find the sporangia under the compound scope.
2. *Achlya* control plates (♂ x ♂ or ♀ x ♀) – Observe that there is no mating at the junction with plates of the same mating type. Compare this to plates with opposite mating types. In either of the same sex plates, find sporangia under the compound without cover slip. Find mature sporangia and perhaps even encysted zoospores being released. In dry conditions (agar plates) these zoospores will germinate and form germ hyphae. Look for these (they are smaller than regular hyphae). You can do this with plates for #3 as well.
3. *Achlya* mating plates (♂ x ♀) – Pick a “young” plate, look in the mating junction under the compound scope and find the antheridium coming close to the oogonium. Make sure you can distinguish antheridium hyphae from regular hyphae. Also look for the ones that have joined together (these can be difficult to see). Once you have observed this potential mating, move the plate to an older region (or find a plate labeled “older”) and observe the maturing oospheres (maturing oospores) within the oogonium. Once the oospheres have been fertilized, they form a thick wall and a large lipid droplet in the middle. Make a wet mount of this material to observe the oospheres better.
4. *Saprolegnia* – observe the infection on salmon tails and eggs.
5. *Albugo* asexual slides – make sure you can find the sporangiophores and the chains of sporangia. The chains are multinucleate and these can be cleaved into asexual zoospores.
6. *Albugo* sexual slides – find the antheridium (smaller) attached to the oogonium (larger). Once fertilization has completed, the walls will thicken. Make sure you can find both of these events.
7. *Dictyostelium* life cycle – follow the instructions in your lab manual (p. 21). Make sure you can find the sorocarps, myxoamoebae, aggregating amoebae, and the slug.
8. *Didinium* myxoamoebae – look at the agar away from the center of the colony under the compound scope to find the myxoamoebae. Cut out a bit of agar surface and make a water mount. Observe the mount under a compound scope to find the amoebae. Adjust your setting to phase contrast (light source 40) to best view these clear organisms on slides.
9. *Didinium* swarm cells – place a small drop of water taken from near the white colonies at the bottom of the plate on a slide. Spread this droplet out and observe under phase contrast of your compound scope *without* a cover slip. Find the swarm cells swimming around. Place a cover slip on it and find trapped myxoamoebae. Make sure you can see the flagellum(a).
10. *Physarum* plate – place the *Physarum* plasmodium under the compound scope and observe the cytoplasmic streaming. Watch for a while and notice the reverse direction in flow of the cytoplasm!
11. *Didinium* sporangia plate – observe under the dissecting scope and find the sporangia covered in oxalate crystals. Pluck one out and make a water mount and observe under the compound scope.

The following is a diversity of slime mold exercise:

12. *Physarum* – observe the lime-covered capillitia under the dissecting scope. Grab a box of specimen and make a mount by plucking a little bit of the material and mount in Tween+EtOH. Find the capillitia under the compound scope.

13. Stemonitis slides and specimens– observe the slide and make sure you can find all the parts. Observe the specimen under a dissecting scope. You can make your own slide by plucking a little bit of the material and mount in Tween+EtOH.
14. Arcyria – organisms in this group have light colored spores compared to the rest. Observe under the dissecting scope. Then make a wet mount in Tween+EtOH and observe under the compound scope to find the spine-covered capillitia.
15. Dictydium – Observe the specimen under the scope. Read the info on the sheet.
16. Hemitrichia – Observe the specimen under the scope. Read the info on the sheet.
17. Fuligo – observe the aethalia of the slime mold. You can make a mount in Tween+EtOH if you want of the specimen labeled for dissection.
18. Plasmodiophora – observe the deformed *Brassica* roots.