

A Simple Method of Growing the Plasmodial Slime Mold

Physarum polycephalum

Physarum polycephalum can be easily grown in its yellow plasmodial stage and in its flagellated stage. With a little care and attention your plasmodium will flourish and perhaps startle you with amazing growth and an ability to escape from almost any container. Keep in mind that slime molds are sensitive to the following: light (they don't like light but light does help trigger spore formation); an excess of water; and not enough moisture.

Growing Plasmodia

Materials:

- Petri dish (glass or plastic, need not be sterile) or other suitable container.
- Paper towels (white is best, brown will work).
- Old Fashioned Oatmeal Flakes (not the instant).
- Tap water.
- A plasmodium or sclerotium-available from biological supply houses.

Methods:

- Cover container bottom with piece of paper towel.
- Place piece of living plasmodium or sclerotium on paper towel.
- Moisten paper towel with tap water and drain off excess water.
- Add one oat flake near slime mold.
- Place lid over dish and place in a dark place at room temperature (e.g. place in a drawer or closet).
- Next day examine culture and sprinkle with water to give Physarum a gentle rinse and pour off excess water (rinsing improves growth). Add 1-3 additional oat flakes near advancing front of plasmodium.
- Continue to examine, rinse, and feed daily or every few days.

Additional cultures are easily made by transferring a plasmodial covered oat flake to another container. Producing several cultures is desirable to ensure that you don't lose an only culture due to a unforeseen failure of a plasmodium. Also, having more than one culture allows you to test the effects of different treatments on the slime mold (e.g. exposure to light, cold, different food sources, etc.).

Producing Sclerotia

Simply allow the paper containing the plasmodium to dry over a period of 2-3 days. During this drying period, the plasmodium may migrate and attempt to get out of the container. But usually a nice sclerotium will form on the paper towel. Once formed and dry, cut out the paper towel that has the sclerotium and store this section of paper w/sclerotium under refrigeration. Try placing them in ziplock bags for this storage. They should remain viable for up to a year (or longer?).

Producing sporangia

Sporangia have been successfully obtained from plasmodia that have remained active for at least two weeks (you may have success with younger plasmodia). After two weeks of feeding, showering, and tending to your plasmodium, transfer the section of paper towel with active plasmodium to a fresh container (or rinse and prepare the existing container) prepared as if you were starting a new plasmodium. Expose for brief periods to light and do not feed or rinse. Within a few days the plasmodium will migrate and transform into sporangia.

Producing flagellated unicellular stage (=swarmers)

Materials: depression- or well-slide; coverslip; Vaseline; 1-2 Physarum sporangia; test tube; spring water or clear pond water (tap water may work).

Methods: With tweezers gently crush a couple of sporangia into a test tube half-filled with water. Drop crushed sporangia into the test tube and agitate. Place a drop or two from test tube into the "well" of a depression slide and ring with Vaseline and add coverslip. The microscopic flagellated stage should appear within 24-48 hours. To observe, simply examine slide with a compound microscope.

Alternative Materials and Method for Growing Plasmodia

Larger and more vigorous plasmodia have been produced with this method. Use a large container such as a plastic food container or an ice chest. Into this large container place a small bowl. Drape paper towels over bowl so that edges of paper towel contact bottom of large container. Pour enough tap water into the large container to cover the bottom and to wet the edges of the paper towels. Also sprinkle water on dry paper towel that is over the top of the bowl. The water in the bottom of the large container should continue to wick up the paper towel keeping it moist but not soaking wet. Onto the top of the paper towel that is spread across the bowl, place the living plasmodium or sclerotium and place an oat flake nearby. Cover the large container (loosely if possible) and keep in the dark. At least once every two days or so (more frequently if growth is rapid) open container and lightly sprinkle plasmodium with water and add a few additional oat flakes near the advancing front of the plasmodium. To initiate sclerotium formation, allow to slowly dry over several days. To initiate sporangia formation, transfer section of paper towel with plasmodia to clean, moist paper towel (discarding older, oat containing paper towel). Keep moist and periodically briefly expose to light. DO NOT FEED. This is an attempt to starve the plasmodium and induce spore formation.

[Return to Fungi Page](#)

