

# Physarum Polycephalum

## A CAROLINA™ CareSheet

### About Physarum

*Physarum polycephalum* is commonly called a slime mold, although it isn't a fungus at all. It is more closely related to protists, such as *Amoeba*.

### Immediate Care and Handling

We ship *Physarum* as an active plasmodium growing on agar or as an inactive dry sclerotium.

**Note:** Store active plasmodial cultures in the dark except during periods of observation.

**Plasmodium:** When your culture arrives, immediately open the shipping container and remove and inspect the culture. The plasmodium is available as a tube or plate culture and is a yellow growth on the surface of the agar. Ensure that tubes are intact with caps firmly in place and plates are uncracked with lids securely taped.

**Sclerotium:** The sclerotium is a dry crust on filter paper packaged in a labeled envelope. The sclerotium remains viable—for weeks or perhaps even years—as long as the paper remains dry.

### Maintaining and Culturing

*Physarum* is easy to culture, so it is a good choice for a student's first experience in culturing an organism. A plate culture is ready to use or subculture. You can transfer a tube culture to a plate for class use, but you must first activate a sclerotium before growing it as a plasmodium.

### Subculturing from a Tube

Flame the mouth of the tube and insert a sterile swab (item #703032) to lift a portion of the plasmodium and transfer it to a 2% agar (non-nutrient) plate (item #821429). Place a few oat flakes on the surface of the agar. Make sure 1 flake touches or almost touches the plasmodium. Incubate at room temperature in the dark and in a few days you will have a thriving plate culture.

### Subculturing from a Plate

Use a sterile scalpel (item #625924) to remove a pea-sized piece of plasmodium from the plate

culture and relocate it to the center of a new 2% agar plate. As soon as you complete the transfer, place 10 to 12 oat flakes on and about the plasmodium to feed the new piece of *Physarum*. You can multiply 1 plate culture into several using this method.

### **Activating a Sclerotium on Paper or 2% Agar**

To activate on paper, place a circle of filter paper in the bottom of a petri plate and add a few drops of distilled water, barely wetting the entire paper. Lay the sclerotium face down on the damp paper and cover the plate. When the plasmodium emerges (in 8 to 16 hours), position a few oat flakes on the filter paper near and on the edge of the plasmodium. Remove the sclerotial paper once the plasmodium moves away from it. Add a few oat flakes daily as the plasmodium grows. Also add a few drops of water as needed to prevent the filter paper from drying out.

To activate on agar, simply place the sclerotium face down on the agar surface.

### **FAQ's**

#### ***What is a sclerotium?***

The sclerotium is a resting stage that *Physarum* forms when moisture is unavailable in amounts necessary for the plasmodium to remain active. This stage enables the organism to survive dry conditions but quickly become active when moisture returns.

#### ***What is a plasmodium?***

It is the active feeding stage of *Physarum* and other slime molds. It is a multinucleate mass of protoplasm slowly crawling about and engulfing food particles. As it moves, it forms fanlike lobes connected by thinner veins. You can easily observe protoplasmic streaming (also called "streaming of protoplasm") in the veins using a microscope set at 20× or greater magnification.

#### ***Small dark bodies have formed on the plasmodium. What is wrong?***

Nothing is wrong. After growing for a time, a plasmodium may exhaust its food supply and be exposed to other stresses. This triggers the production of sporangia filled with spores, which are the dark bodies you are seeing. Spores can remain dormant or, when conditions are favorable, they can germinate. The cells that emerge from spores can exist as free-living cells for an indefinite period or fuse to form zygotes that develop into new plasmodia.

**Problems?** We hope not, but if so contact us. We want you to have a good experience.

**Orders and replacements:** 1-800-334-5551, then select Customer Service.

**Technical Support and Questions:** [caresheets@carolina.com](mailto:caresheets@carolina.com)



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