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Molds



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Photo credit: *Lycogala epidendrum*, by Geoff Gallice. CC BY-NC-SA

Defining mold

The term 'mold' gets applied to a very diverse group of organisms. While most of them are Fungi, the unifying feature is essentially that they make some sort of multi-cellular, relatively unstructured blob of glup [1].

Fungal mold

Within fungi, “mold” applies to a wide variety of species including members of the Zygomycota, Ascomycota, and Basidiomycota phyla. Fungal molds include the familiar bread mold *Penicillium*, which led to the discovery of antibiotics, and *Stachybotrys chartarum*, one of the species linked to "sick building syndrome" [7]. The different groups of fungal molds are related to various other groups of fungi better known for producing mushrooms and which typically aren't thought of as mold. However, even in these species, many people are unaware that the mushroom is only the flower-like, spore-producing “fruiting body” of a larger organism that is often invisibly growing either in the soil or inside wood or other material. The larger organism is made up of small threads, or mycelium, that in mass has that moldy look. You can often see this sort of mold inside rotted logs or in composting leaves. However, if you turn over a log and see something that appears to be moldy, it may also be what specialists call a

“crust.” Crusts, such as *Botryobasidium cancans*, are fruiting bodies like mushrooms that essentially attach to a log (or other surface) rather than create a free-standing mushroom. It is easy to assume that crusts must be helping to decompose the log, and in many cases they are. However, in some cases—e.g., *Byssocorticium atrovirens*—they are simply covering the surface and the larger fungal organism is actually in the soil, often helping trees gather water and nutrients more efficiently.

Slime molds

The term mold also gets applied to some non-fungal species, particularly slime molds such as *Lycogala epidendrum* or *Fuligo septica*. Most slime molds are more closely related to the well-known, single-celled Amoeba than to the various fungal molds. In many cases, these fascinating organisms live most of their life as single cells that wander through soil eating bacteria until a chemical signal causes them to converge on a single spot, in what has been described as a microbiotic orgy [4]. These groupings are so large that they become visible to the naked eye and result in spore-producing structures specialized for propagation.

Water molds

Water molds don't quite fit the common idea of a mold since the multicellular groups they create aren't typically visible to the naked eye; under the microscope they were originally mistaken for some sort of fungal mold. In this case, these organisms are Oomycetes, which are more closely related to kelp than the other groups previously discussed. This group includes the organisms that cause potato blight (*Phytophthora infestans*) and sudden oak death (*Phytophthora ramorum*).

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