

## Slime Molds Group

Read the attached information about slime molds. You must put together a presentation at least 2 minutes in length on slime molds. In your presentation you should include:

- The definition of slime mold
- The look of slime molds
- Where slime molds form
- The life cycle of a slime mold
- Anything else you think is important.

By the end of your presentation, the class should be able to answer these questions:

- What are slime molds?
- Are slime molds dangerous to humans?
- Where do slime molds grow?
- How fast do slime molds move?
- What is a plasmodial slime mold?

You're out surveying your yard one morning and there it is – a big, unsavory-looking splotch in your flower bed that looks for all the world as if Fifi threw up all those table scraps you gave her yesterday.

Forget the table scraps. It's probably slime mold, a brightly colored protist that spreads across wood mulches during periods when temperatures are warm and humidity is high.

Most people report seeing an area in mulched beds that appears as though someone has vomited. It really looks bad! Although this can be disturbing to most Gardeners, it's no cause for alarm.

Slime molds can appear bright yellow to orange, fading to brown and tan as they dry. They pose no threat to plants, animals or children, but they look awful and might be distracting at a Garden tour or barbecue.

You won't find any miracle cures for slime molds because chemicals do not kill nor eliminate the fungi. In fact, chemicals can do more harm to the applicator and the environment!

The best approach to controlling these unique organisms is to try changing the environment in which they grow. Slime molds and other fungi will not grow well in dry situations. Little can be done to reduce the amount of rainfall we get, but irrigation systems can be adjusted to keep the mulch from becoming excessively wet on the surface.

Another approach to controlling the fungus is to rake and loosen the mulch chips and to break up the weird-looking fungus. This will let air into the mulch so it can dry.

Wood chip mulches insulate soil from temperature fluctuations, protect trees from string trimmers and mowers and reduce problems of weeds in shrub beds. The slime molds that can grow in wood mulches are classed as 'beneficial' fungi and it's possible that they feed on harmful plant pathogenic fungi found in bark and wood chips, thus controlling the harmful fungi naturally. Therefore, the benefits of slime mold to tree and shrub health outweigh the aesthetic problem of vomit-like blobs in the Garden.

## Slime Molds

In 1973, a Dallas resident went out to the backyard only to stumble upon a reddish, jelly-like mass pulsating in the grass. News reports on the discovery claimed that a “new life form” had been found, and many people couldn’t help recalling the cult classic sci-fi thriller *The Blob*.

Scientists called to the scene, however, put any fears of menacing goo or alien creatures to rest by identifying the mass as an unusually large (46 centimeters or more than 14 inches in diameter) plasmodial slime mold.

Slime molds spend most of their lives independently, but during food shortages, they swarm and aggregate into an enormous single cell.

Slime molds have traits like both fungi and animals. They have very complex life cycles involving multiple forms and stages. During good times, they live as independent, amoeba-like cells, dining on fungi and bacteria. But if conditions become uncomfortable—not enough food available, the temperature isn't right, etc.—individual cells begin gathering together to form a single structure. This happens when the cells give off a chemical signal that tells all of them to gather together. The new communal structure produces a slimy covering and is called a slug because it so closely resembles the animal you sometimes see gliding across sidewalks. The slug oozes toward light. When the communal cells sense that they've come across more food or better conditions, the slug stops. It then slowly does a kind of headstand. Cells in the slug now begin to do different things. Some of the cells form an anchor for the upended slug. Others in the middle of the slug begin making a stalk and some at the tip turn into what's called a spore cap and others become spores in that cap. When a drop of rain or strong wind knocks the spore cap hard enough, the spores go flying out. These spores are like plant seeds. Each of them becomes a new amoeba-like cell when they land and each goes off on its merry way.

Slime molds were once considered fungi, but unlike fungi, they can move, and their cell membranes are made of different stuff.

Slime molds are made up of individual cells that form a combined mass. In their visible, combined states, they look like blobs, gooey or foamy masses, spilled jelly, or even dog vomit. They may be bright orange, red, yellow, brown, black, blue, or white.

These large masses act like giant amoebas, creeping slowly along and engulfing food particles along the way. If a slime mold aggregate is diced up, the pieces will pull themselves back together. The blobs can navigate and avoid obstacles and if a food source is placed nearby, they seem to sense it and head unerringly for it.

There are two kinds of slime molds. Plasmodial slime molds (the most common kind) share one big cell wall that surrounds thousands or millions of nuclei. Proteins called microfilaments act like tiny muscles that enable the mass to crawl at rates of about 1/25th of an inch per hour.

As long as there is enough food and moisture, the mass thrives. But when food and water are scarce, the mass separates into smaller blobs. The Plasmodium forms stalks topped by sphere-like fruiting bodies that contain spores that are carried by the rain or wind to new locations.

Cellular slime molds also produce spores, but these germinate into amoeba-like cells. The cells happily go their individual ways, as long as food and water are available.

When nutrients and moisture are scarce, individual cells send out a chemical beacon to attract other cells of the same species. The cells join up to form a mass that looks and acts like a slug to take them to a more favorable location.

Cells in cellular slime molds retain their individual cell walls when they form a mass, so the visible slug is actually a collection of hundreds of thousands of individual cells joined together.

Slime molds eat decaying vegetation, bacteria, fungi, and even other slime molds. They are most commonly found in forests.