

Funky Fungi

The Wonderful World of Mushrooms

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We meet them in salads, soups, omelets and kugels. Our cookbooks are full of recipes that call for these remarkable foodstuffs for their distinctive, flavorful taste. While some of them are exotic and edible, others are highly toxic. Some are so small as to be invisible to the naked eye. They are found growing on people's feet, where creams and ointments are not always successful in killing them.

Some fungi are even capable of feats that have researchers completely befuddled, including running a maze and remembering the path! Some take over the minds of insects and turn them into zombies. And they are found in laboratories, where they are cultivated for medicinal purposes.

Learn about the amazing, wonderful world of fungi and mushrooms.



Among the most wonderful, amazing creations are humble mushrooms. They defy definition. Although they appear to grow from the ground like plants, they do not draw their nutrition from the ground as plants do, and their scientific classification is not with the plant kingdom. Our sages recognized this long ago when they stated that the appropriate blessing over a mushroom is not *Borei pri ha'adamah* (a blessing on the “produce of the ground”) but *Shehakol* (*Berachos* 40b). Similarly, the *Yerushalmi* (*Maasros* 1:1) explains that we recite *Shehakol* on mushrooms because they are not a product of seeds planted in the ground.

One of the major distinctions between members of the plant and animal kingdoms is that plants synthesize their own food. They use a complex chemical process involving nourishment drawn from the earth, water and sunlight commonly referred to as photosynthesis. Because animals cannot replicate this process to produce the organic substances they need, they are dependent—directly or indirectly—upon the plant world for their nourishment.

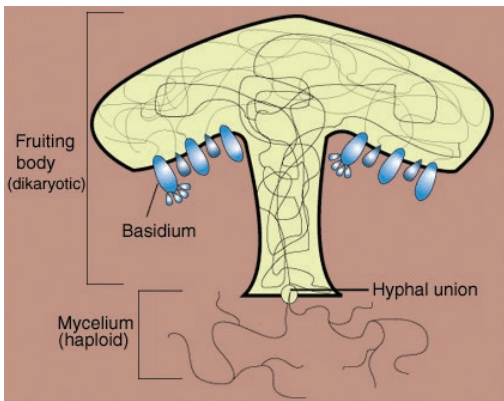
In this respect, mushrooms are closely related to the animal world. They are incapable of hosting the photosynthesis process, so they must draw their energy from other plants or animals. They are therefore not candidates for the blessing of *Borei pri ha'adamah*, which implies sustenance drawn from the ground.

Mushrooms are capable of pulling off some incredible feats. They can thrive under conditions so adverse that no plant can grow. They can transform fields that are chemically inhospitable to life into rich plains. And they can be so dangerously toxic that a single bite can be fatal to an adult.

The truth is that mushrooms constitute a family of paradoxical extremes. They nourish the soil, but they can damage plants. They make a luxurious addition to the most expensive repasts, but they can also be deadly. They create illness, but they can also heal.



Amanita muscaria mushroom.



Although the stem and cap are familiar, the main body of the mushroom lies buried beneath the ground.

Although we are used to picturing mushrooms as a gracefully curved trunk with a dainty hat perched jauntily on top, this overlooks the essence of their being. The most significant section of the mushroom is the network of hairs, called mycelia, that flourishes in the ground. The part that

we ingest is only the “fruit” of the actual mushroom. The mycelia can be extensive, even gigantic. One mushroom was found in Michigan whose mycelia spread beneath the earth over an area of 5.5 miles! Scientists estimate its age at over 2,000 years.

The earth beneath our feet is full of these mycelia that spread quietly over time. They bear “fruit”—the mushrooms we see and eat—in order to reproduce in a manner reminiscent of trees. Some mushrooms will grow for decades before they begin to bear fruit.

To this day, scientists are unclear about how this process works. They have not fully identified the conditions that trigger the mycelia to begin fruiting. As a result, they are incapable of cultivating the exotic, super-valuable types of mushrooms, such as morels and truffles, which are so prized by connoisseurs. These mushrooms can only be found growing wild. Hunting for truffles, using hounds or hogs to sniff them out from beneath the ground, has developed into an art in itself.

Mushrooms 101

As stated, mushrooms are dependent on outside sources to metabolize their energy. They are divided into two categories according to the method they use to obtain their nutrition:

- One type of mushroom receives its nourishment from dead plant or animal sources. These include the commonly recognized mushrooms, which are sold in the stores, that grow on rotting or decayed plants.
- The second type includes those that feed off organic substances that are alive. These take the form of various molds that grow on trees as well as those fungi that attach themselves to human skin. These parasitical forms feed off the host organism, which provides them with the nutrients they need.

There are also types of mushrooms that live in harmony with other life forms. An outstanding example of this is lichen, which

is actually a mutually benefitting partnership of a fungus and an alga. In this example, the fungus provides the water and minerals while the alga uses photosynthesis to metabolize the water and other nutrients into an energy form that both parts of the lichen can use. Mushrooms lack chlorophyll, the green chemical that allows plants to soak in the nutritional provisions present in sunlight. The alga in lichen does have chlorophyll, and its services are enjoyed by both members of the lichen’s symbiotic relationship. Such is the case not only with lichen, but also with many orchids that cannot blossom without the presence of their fungus friends.

The pine mushroom is a fungus that enjoys a similar mutually beneficial relationship with the pine trees it occupies. This



Lichen growing on a stone.



Mushroom growing on a tree.