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## Mushrooms



Author:  
Nathan Wilson, Encyclopedia  
of Life, Marine Biological  
Laboratory

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### Defining mushrooms

All mushrooms are fungi, but not all fungi are mushrooms. For those fungi that produce them, the mushroom plays a similar role to a flower or a fruit in plants. Some part of each mature mushroom produces microscopic spores that are similar to pollen or seeds, sometimes numbering in the trillions [1]. The rest of the fungal organism typically lives in the soil, wood, or some other material and is composed of thread-like strands known as mycelium. The expanding growth of the mycelium often results in circles of mushrooms or “fairy rings.” An individual mycelium can grow quite large, with at least one well-documented case covering more than 1,500 acres in Oregon [2].

Many mushroom-producing species are important decomposers, particularly of wood. These species are often relatively easy to cultivate. However, many species have a special, symbiotic, “mycorrhizal” relationship with particular species of plants. Often, neither the mushroom nor the plant will grow without a mycorrhizal partner.

Most mushroom-producing fungi are members of the phylums Basidiomycota or Ascomycota. The technical difference between these groups has to do with how the spores develop, which can be detected only by using a microscope. However, the “ascos” (ascospores) are less frequently noticed and are often shaped like small cups. Probably the best-known ascos are the highly prized morels (genus *Morchella*), which typically fruit in the spring and are often mycorrhizal, or the true truffles (genus *Tuber*), all of which are mycorrhizal.

### **Some types of mushrooms that may interest you**

Most of the well-known mushrooms are “basidios,” including widely cultivated species like the button mushroom (*Agaricus bisporus*), various oyster mushrooms (genus *Pleurotus*) and shiitake (*Lentinula edodes*). Popular wild edibles (which are also mycorrhizal) include the porcini (*Boletus edulis* and its relatives) and the chanterelles (genus *Cantharellus*).

### **Poisonous mushrooms**

The common death cap (*Amanita phalloides*) or its relatives can be fatal if eaten. There are several other species that can be deadly if eaten, but all known species can be handled safely. However, relatively few mushroom species are dangerously poisonous. Many more species, including the commonly illustrated *Amanita muscaria*, can cause stomach pains, vomiting, or diarrhea. Even the popular morel is toxic if eaten raw.

A number of species, most notably some species in the genus *Psilocybe*, are psychoactive and can cause various types of hallucinations. This is considered a type of toxicity, but they are not known to have any long-term effects. However, possession of many of these species is illegal in many countries.

### **Medicinal mushrooms**

Some species of mushrooms have been used as medicine for thousands of years, particularly in China and Japan [3]. Some of the immune- enhancing and anti-cancer effects of traditional species such as *Ganoderma lucidum* and *Trametes versicolor* have been demonstrated scientifically [4]. regular consumption of oyster mushrooms has been shown to reduce cholesterol [5].

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