

Fascinating Fungi

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Fungi is the name given to a group of living things which are neither plants nor animals. Most of us know very little about these fascinating growths. Hopefully this article will Enlighten you.



What are Fungi?

Fungi are not plants, and neither are they animals. Unlike plants, which convert the sun's energy into food, fungi have no chlorophyll to convert the sun's energy into food, instead they feed on other plant and animal material and do not need sunlight; they use enzymes to dissolve their food before they absorb it. Around 80% of fungi are found on or near trees.

The toadstools and mushrooms (there is no clear distinction between these two terms) we see, which may indeed rot away after a few days, are just the visible fruiting bodies connected to long-lived underground fungal threads, called hyphae. The hyphae combine to form a mycelium as shown below.



Fungal mycelium from an unidentified species of fungus, found underneath the bark of a rotting tree branch.

The mycelium is the vegetative part of the fungus and is made up of a mass of tiny thread like hyphae.

Mushroom or Toadstool?

At one time there was a convention to refer to edible cap-and-stem fungi as mushrooms and all poisonous, inedible or doubtful ones as toadstools. The term toadstool probable comes from toads as their warty skin contains many of the toxic poisons also found in some of the toadstools.

Poisonous or Edible?

Of the 4000 or more large fungus species found in the British Isles, only a small minority are poisonous, but they can be deadly.



The most deadly of all fungi is the aptly named 'Death Cap', found mainly in southern Britain, the Destroying Angel is equally as deadly and found mainly in northern Britain. For these fungi there is no cure if eaten, they account for more than 90% of fungus-related poisoning deaths in Europe. It's quite a common species in most parts of Britain and Ireland. The Death Cap has a bronze to olive green cap, white stem and an unpleasant sickly sweet smell.

Several toxins have been isolated from this poisonous toadstool, its potency is not reduced by either freezing or cooking the fungi before eating them. It causes symptoms such as diarrhea, nausea and stomach pains occurring within five to twelve hours. Cruelly, the symptoms usually fade away for several hours or even a day or two, tricking the victim into thinking that they are recovering. When in due course the symptoms return with a vengeance, it may be too late: kidney and liver damage are already well underway. Without treatment, coma and eventual death are almost inevitable. Often, people hospitalised late into a poisoning episode can only be saved by major surgery and a liver transplant, and even then recovery is a precarious, painful and a protracted process. In 2011 in the Ukraine 112 people died from fungi poisoning, 90% of these were attributed to the Death Cap.

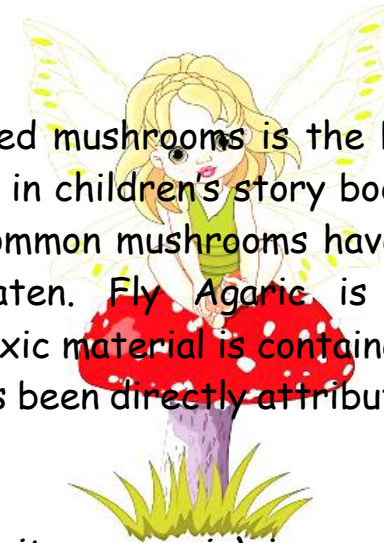
**Someone once said,
'All mushrooms are edible'
- Some only once!**



Hallucinogenic fungus



One of the most commonly recognised mushrooms is the bright red with white spots 'Fly Agaric', often shown in children's story books with fairies or pixies sitting on them. Several common mushrooms have hallucinogenic properties and should not be eaten. Fly Agaric is a dangerously hallucinogenic fungus. Most of the toxic material is contained in the cap of the mushroom. At least one death has been directly attributed to poisoning by this species.



The common name Fly Agaric (*Amanita muscaria*), is a reference to the tradition of using this mushroom as an insecticide. In some European countries caps are crumbled up and placed in saucers of milk to attract house flies. The flies drink the milk, which contains toxins - they are soluble in water and hence in milk also - dissolved from within the mushroom, and the flies soon become drowsy, collapse and die (or they simply drown in their spiked milk drink). The specific epithet *muscaria* comes from the Latin word *musca*, meaning 'a fly'.

Fairy Rings.

Fairy rings are found in lawns and meadows as well as in woodland, and their cause has long intrigued people. At one time it was widely accepted that mushrooms growing in a circles followed paths made by dancing fairies. In fact the fairy rings of fruiting bodies that we call mushrooms or toadstools are attached by tiny hyphal threads to an underground mycelium that grows outward continually in a circle.

At Belfort, France there is a Fairy Ring that is 600metres across and believed to be 700 years old.



This is a picture is of a Fairy Ring on a grass lawn in Brisbane, Australia, which grows steadily outward at about 30cms (1 foot) each year.

The Fruiting Body

This is the above ground part of the fungus that we refer to as the mushroom. A temporary membranous tissue, called a universal veil (shown right), fully envelops immature fruiting bodies of certain [gilled mushrooms](#). The veil protects the spore bearing gills/pores of the fruit body during its emergence from the ground. As the cap expands, the veil breaks, and remnants of the veil may remain as a ring around the middle of the stalk.



Only in wet weather do the remains of the universal veil wash off. However in the case of the Fly Agaric (shown right), it leaves white patches or warts, stuck to the cap. As the cap opens & expands the veil fragments remain more or less regularly spaced.



There are three main groups of fungi types:

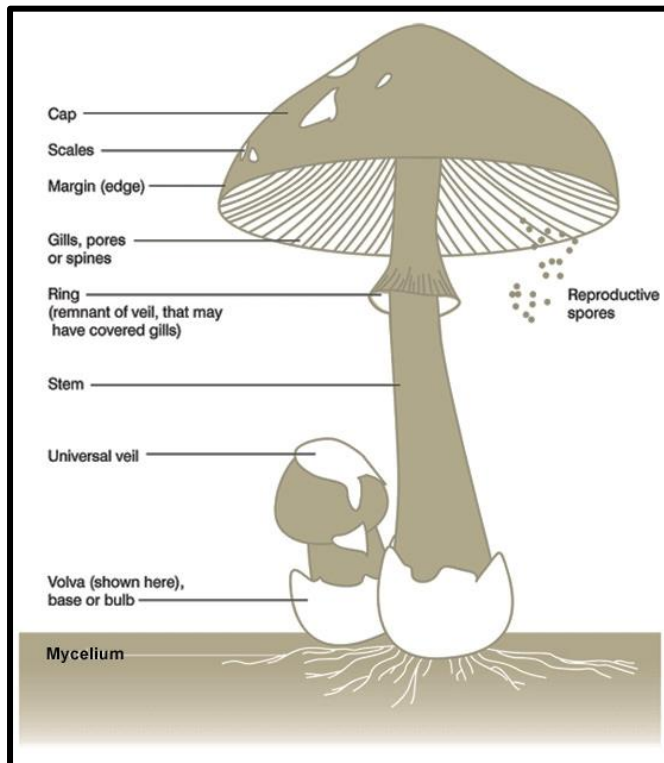
1. Cap & Stem
2. Shelf & Bracket
3. Ball, Club & others

Cap & Stem Fungi. There are an estimated 3,000 identified cap and stem species in northern Europe. These fungi have soft, fleshy caps and more or less central stems, with most of the edible and poisonous species occurring in this group. Their fruit bodies only appear for short periods of time; the main part of the fungus lives permanently underground. All produce spores on the underside of the cap, which fall by gravity and are carried away by the wind. The spore-bearing structure may be gills, spines or pores.



The Portobello Mushroom (*Agaricus bisporus*), has two color states while immature —white and brown—both of which have various names. When mature, it is known as portobello mushroom.

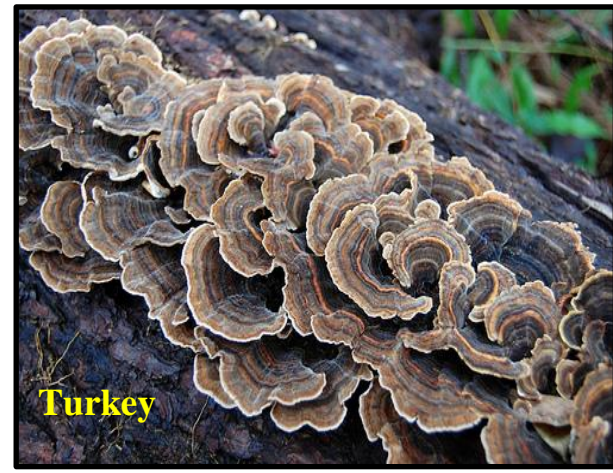
When immature and white, this mushroom may be known as common mushroom, button mushroom, white mushroom, cultivated mushroom, and champignon mushroom. When immature and *brown*, this mushroom may be known variously as brown cap mushroom, or chestnut mushroom. This mushroom is [cultivated](#) in more than seventy countries, and is one of the most commonly and widely consumed mushrooms in the world.



Parts of a Cap & Stem Fungus

Three quarters of all our fungi are of the cap & stem type. This illustration shows the complete fruiting body of a typical Mature cap & stem type.

Shelf & Bracket Fungi. Shelf and bracket fungi grow on dead or living woody material, some high up on the trunks of standing trees, others at ground level. There are about 300 fungi that fit into this group. All are attached to the wood from one side of the fruit body and may grow singly or in tiers. Shelf fungi are very thin, while bracket fungi are thicker. Ear shaped species tend to be soft and have gills or folds underneath. Other species may have pores; most of these, such as the Hoof Fungus are woody and inedible.



As with the cap & stem fungi,
The bracket fungi mainly produce
spores on the underside of the
bracket, which fall by gravity
and are carried away by the wind.



Hoof Fungus

Ball, Club, & other Fungi. These fungi include a huge range of fruit body shapes, but nearly all lack gills, pores, or spines. Very much a simplified grouping, it includes an enormous variety of unrelated fungi, accounting for around 6,500 species in northern Europe. Among the huge variety of shapes are cups, fingers, cages, balls and clubs, as well as brain-shaped fungi. Many of these rely on a trigger to release their spores, such as rain drops falling on them or passing animals brushing against them.



Scarlet Elf Cup



Dead Man's Fingers



Common Puff Ball

The Stinkhorn (pictured right) emerges from an 'egg' that develops beneath the leaf litter or pine needles. The cap is covered with olive-green 'gleba', a smelly spore-laden coating that attracts insects. At the same time some of it gets stuck to their legs so that the spores are transported over large distances when the insects fly off. The gleba is quickly consumed so most people only ever see an all-white fruit body.



How Fungi Reproduce

The Cap & Stem type all produce spores on the underside of the cap, which fall by gravity and are carried away by the wind. The spore-bearing structure may be gills, spines or pores.

As with the cap & stem fungi, the bracket types also produce spores on the underside of the bracket, which also fall by gravity and are carried away by the wind. Many of the Ball, Club and others types rely on a trigger to release their spores, such as rain drops falling on them or passing animals brushing against them. The spore sends out its **hyphae**, which will eventually meet up with the **hyphae** of another mushroom. After the sexual reproduction has begun, the mushroom forms the structures of a "**fruiting body**" (the visible part above ground) which in turn will eventually produce and disperse spores thus completing the reproduction cycle.



Mycelium is made up of multi-branched networks of microscopically fine fibres called hyphae (These are about 20 times smaller in diameter than a human hair). With very few exceptions fungal spores are too small to be seen with the naked eye (most large fungi produce spores less than 20 microns long, that's about a fiftieth of a millimetre).

Asexual Reproduction

Many fungi reproduce only by vegetative means or via asexual spores that develop on the mycelium itself. Fungi that are produced only asexually are referred to as, 'imperfect Fungi' - just as a flower with only male or female reproductive organs (stamens or pistil but not both) is known as an 'imperfect' flower.

Example 1 of locally photographed fungi

Cap & Stem types



Parasol Mushrooms



Bay Bolete

Example 2 of locally photographed fungi

Cap & Stem types



Golden Scalycap



Oyster Mushroom

Example 3 of locally photographed fungi

Cap & Stem types



Trooping Funnel



Fairy Inkcap

Example 4 of locally photographed fungi

Cap & Stem types



Porcelain Fungus



Chanterelle

Example 5 of locally photographed fungi

Bracket & Shelf types



Birch Polypore



Dryad's Saddle

Example 6 of locally photographed fungi

Bracket & Shelf types



Chicken of the Woods



Root Rot

Example 7 of locally photographed fungi

Bracket & Shelf types



Oak Mazegill



Artist Bracket

Example 8 of locally photographed fungi

Bracket & Shelf types



Turkey Tail



Branching Oyster

Example 9 of locally photographed fungi

Ball, Club and Other fungi types



Common Earthball



Stump Puffball

Example 10 of locally photographed fungi

Ball, Club and Other fungi types



Yellow Stagshorn



Wood Cauliflower

Example 11 of locally photographed fungi

Ball, Club and Other fungi types



Candlesnuff



Jelly Ear

Example 12 of locally photographed fungi

Ball, Club and Other fungi types



Yellow Fan



Dead Moll's Fingers



Oyster Mushrooms growing between oak timbers at Knaves Hill entrance to Linslade Wood.