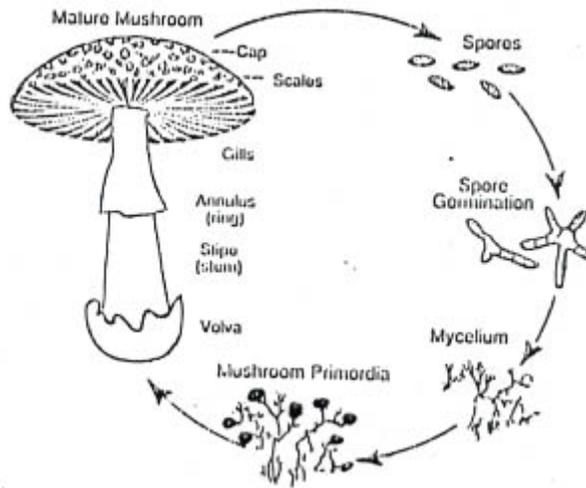


# THE FUNGAL KINGDOM

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Grades 4-12

Mushrooms belong to a group of organisms called fungi. All living things are divided into five Kingdoms, one of which is the Fungal Kingdom.



- The life cycle of a fungus begins as a spore (the reproductive body) that grows when conditions are just right. Out of the spore wall grows a hypha that looks like a clear, microscopic fingertip.
- The body of the fungus is made up of a network of hyphal threads collectively called the mycelium. The mycelium grows in soil or within dead wood or living organisms. When growing conditions are favorable, the mycelium develops fruiting bodies, appearing as what we recognize as mushrooms or as other forms. Unlike members of the Plant Kingdom that use chlorophyll to utilize the energy from the sun to produce their own food, fungi do not have chlorophyll and must obtain their food from other sources.
- Fungi find nutrition doing one of or a combination of four things:
  1. Fungi act as parasites and feed on living things, usually doing some degree of harm. Parasitic fungi use enzymes to break down tissues. Examples: the "Honey Mushroom" (*Armillariella mellea*) and the "Cauliflower Mushroom" (*Sparassis crispa*).
  2. Fungi form beneficial partnerships (symbiosis) with other organisms such as trees and flowering plants:
    - a. Ectomycorrhizal fungi grow thick coats of mycelia around the rootlets of trees and bring water and minerals from the soil into the roots. In return the host tree supplies the fungus with sugars, vitamins and other root substances. Examples: the Bolete Family associated with many species of

conifer trees, aspen and birch, and the "Dead Man's Foot" (*Pisolithus tinctorius*) which helps many plants grow.

- b. Endomycorrhizal fungi are microscopic soil fungi and penetrate the cells of plant roots. This relationship may be beneficial to both parties or may be harmful to one of them.
3. Fungi decompose dead plant and animal matter. Called saprophytes, they act as recyclers of dead organic matter, obtaining food from this material. Hyphal tips release enzymes that eventually decompose and release organic materials into the surrounding environment. Saprophytic fungi appear on dead trees, logs, plant litter such as leaves, and even dead insects and animals. Examples: "Gem-studded Puffball" (*Lycoperdon perlatum*) and "Turkey Tail" (*Trametes versicolor*).
4. Fungi break down inorganic matter such as rocks in order to obtain nutrients. It was recently reported by Dr. Torguy Unestram of the Swedish University of Agricultural Sciences at Uppsala that fungal hyphae, along with bacteria, dissolve rock to release nutrients.