

FUNGI

The Kingdom Fungi includes the common mushroom along with yeasts, molds, rusts, smuts puffballs morels, and truffles. There are more than 100,000 species in this kingdom. Many are economically important as food sources such as mushrooms, morels and yeasts. Others, are serious agricultural problems such as smuts and molds that can cause extensive crop damage. Molds such a *Aspergillus flavus* grows on starchy foods and produce toxic and carcinogenic compounds called [aflatoxins](#). There is an entire extensive scientific website solely dedicated to *Aspergillus*.



[Clockwise from top left: *Amanita muscaria*, a basidiomycete; *Sarcoscypha coccinea*, an ascomycete; bread covered in mold; a chytrid; a *Penicillium conidiophore*. Ref. Wikipedia](#)

Life Cycles

Life cycles tell us how the **Parental** generation of organisms produces the next generation of **Offspring** organisms.

Information that determines the life of an organism is passed down from generation to generation in chromosomes. Every cell at some time of its life has a set of chromosomes. The set is made up of pairs of chromosomes. The chromosomes have the recipes for the organism to be what it is, act like it acts, and appear as it seems.

Every organism is made of cells with the same number of chromosomes in all its cells except for reproductive cells.

Human have cells with 23 pairs of chromosomes $23 \times 2 = 46$ total

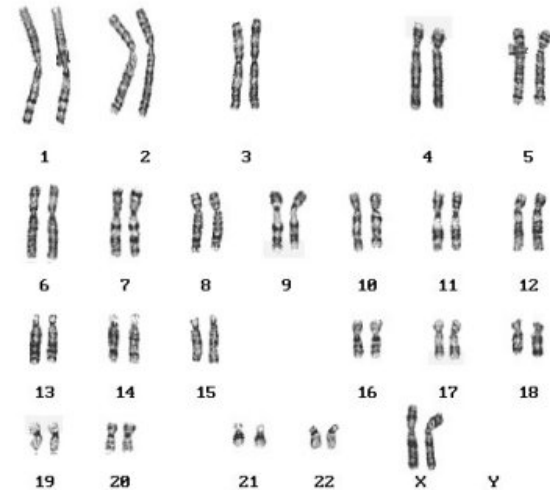
A pair is 2 of each or $2n$

If we had only one of each of the pairs we would have $1n$

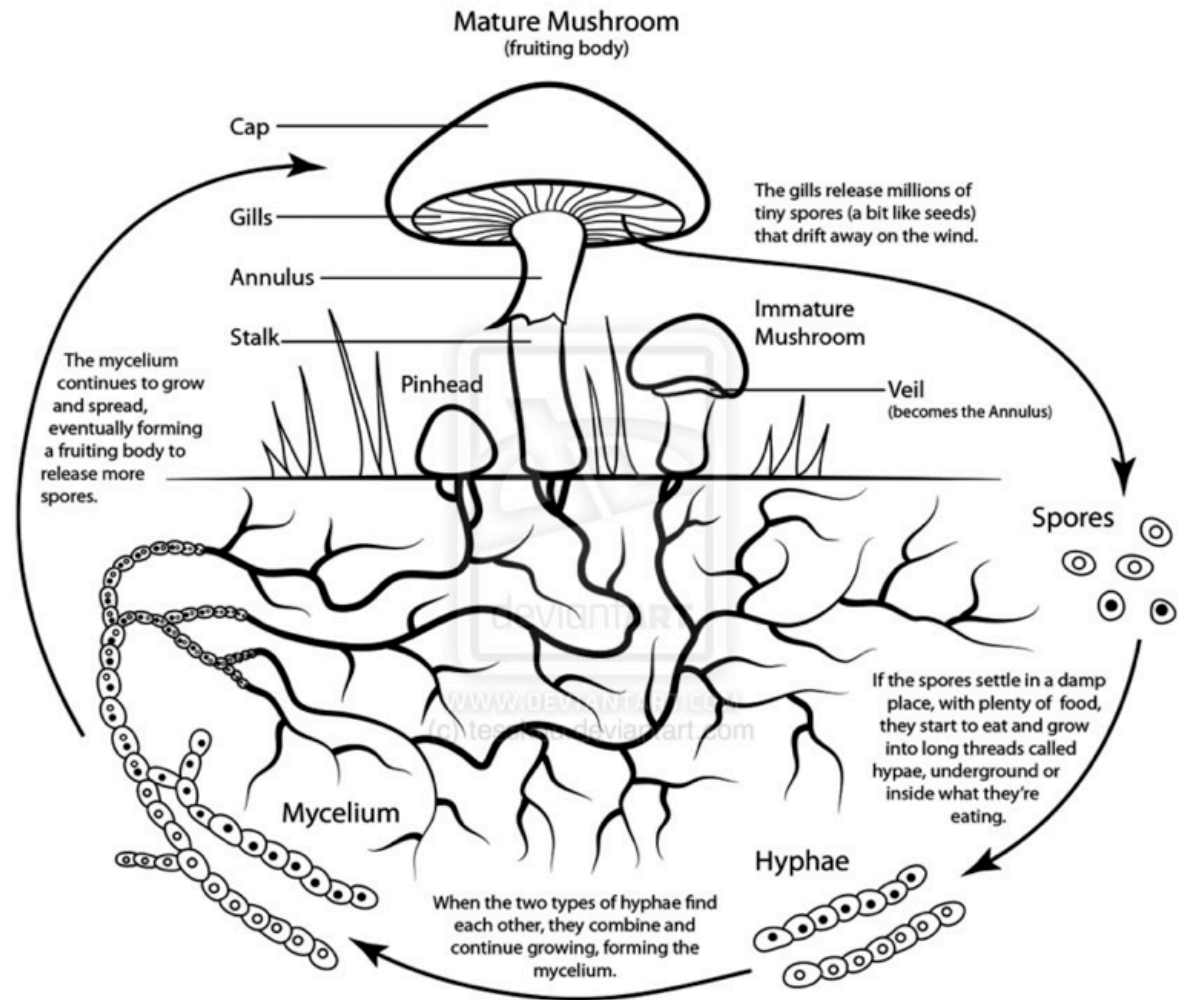
Reproductive cells, sperm and egg have only half a set...or $1n$

When sperm meets egg $1n + 1n = 2n$

On the right we have a karyotype, which is an arrangement of all the chromosomes of a single human cell from large to small except for the sex chromosomes...in this case a female having 2 X chromosomes.
A male would have a single X and a single Y.



Mushroom Life



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In the mushroom cap 1n or haploid spores are produced by in the gills of the mushroom cap and are released into the surrounding environment. The spores divide and grow into mycelium which is a white network of threadlike structures called hyphae. Hyphae are root-like threads composed of haploid (haploid means they have only $\frac{1}{2}$ of the normal number of chromosomes). cells. When two hyphae come into contact, the two cell types fuse to create one cell with two nuclei. This fused cell grows into the fruiting body, also known as the mushroom. In the gills of the mushroom cap, haploid nuclei fuse to form a zygote with 2 copies of each chromosome or a diploid cell. Meiosis occurs in the cells of the mushroom cap and produce haploid spores which complete the lifecycle.