

Are Fungi The Earth's Natural Internet?



"I believe that mycelium is the neurological network of nature. Interlacing mosaics of mycelium infuse habitats with information-sharing membranes. These membranes are aware, react to change, and collectively have the long-term health of the host environment in mind. The mycelium stays in constant molecular communication with its environment, devising diverse enzymatic and chemical responses to complex challenges." – Paul Stamets, *Mycelium Running: How Mushrooms Can Help Save the World*

The mycelium is the part of the mushroom you usually do not see. Most of it is found distributed throughout the soil, consisting of a mass of branching, thread-like structures (known as hyphae) which absorb nutrients and decompose organic materials. The mycelium can be exceedingly small or may form a colony of massive proportions.

Is this the largest organism in the world? This 2,400-acre (9.7 km²) site in eastern Oregon had a contiguous growth of mycelium before logging roads cut through it. Estimated at 1,665 football fields in size and 2,200 years old, this one fungus has killed the forest above it several

times over, and in so doing has built deeper soil layers that allow the growth of ever-larger stands of trees. Mushroom-forming forest fungi are unique in that their mycelial mats can achieve such massive proportions."

Paul Stamets, *Mycelium Running*

The mycelium has extraordinary properties suitable for bioremediation. It is capable of degrading pesticides and plastics, and has been shown to [break down petroleum in a matter of weeks](#). This, however, is only the physiochemical dimension of the mycelium; according to Paul Stamets, it also has information/consciousness associated properties:

"I see the mycelium as the Earth's natural Internet, a consciousness with which we might be able to communicate. Through cross-species interfacing, we may one day exchange information with these sentient cellular networks. Because these externalized neurological nets sense any impression upon them, from footsteps to falling tree branches, they could relay enormous amounts of data regarding the movements of all organisms through the landscape."

Paul Stamets, *Mycelium Running*

The notion that fungi may participate in some form of planetary interspecies communication and/or consciousness through their mycelium may seem a bit 'far out,' but consider that psychedelic mushrooms have been used to expand consciousness for countless millennia. Even beyond the well-known psychedelic (literally "soul showing") properties of some species (particularly [Lion's Mane](#)) are their neurotogenic properties; that is, their ability to promote new neural cell growth and the enhancement of communication between them. The resemblance between the filamentous structures within the brain (axons; dendrites) and the fungi within the soil (mycelium) may therefore be more than accidental.

Our relationship to fungi is in fact closer than most think. According to David McLaughlin, professor of plant biology at the University of Minnesota in the College of Biological Sciences, human cells are surprisingly similar to fungal cells. In a 2006 Science Daily article the topic is explored further:

In 1998 scientists discovered that fungi split from animals about 1.538 billion years ago, whereas plants split from animals about 1.547 billion years ago. This means fungi split from animals 9 million years after plants did, in which case fungi are actually more closely related to animals than to plants. The fact that fungi had motile cells propelled by flagella that are more like those in animals than those in plants, supports that." -- [Science Daily](#)

Could this filial bond also be why many species of fungi have such profound medicinal properties in humans? Mushrooms, and their components, have in fact been some of the most extensively studied natural medicines in existence, with a number of human clinical trials proving the [anti-cancer](#) properties.

For research indicating the medicinal value of mushrooms in over 150 conditions, visit our research page on [medicinal mushrooms](#).

Also, prepare yourself for an intellectual 'trip' into the profound potential that mushrooms have to 'save the world' in Paul Stamet's inspiring video below.