

by Samira Chandwani Sun Staff Writer

The next time you peruse the produce aisles in your local supermarket, you may want to take another look at those brown, woody portabellas or those small, white button-like mushrooms. If mycologists, perhaps more aptly termed mushroom aficionados, are right, these oft-forgotten, lowly fungi may actually be on the cutting edge of cancer treatment, retroviral therapies and combating biological warfare. Scientists like Paul Stamets have spent years researching the medical and environmental benefits and features of mycelia; the medical community and even the U.S. government have just started to realize that mushrooms are a treasure trove. Stamets, designated this year to be a Cornell lecturer, gave a talk yesterday afternoon on the role of the mushroom in the greater scheme of the biosphere.

Prof. Kathy Hodge, plant pathology, who specializes in mycology, described Stamets as a champion of mushrooms, a guru, even ? known for his innovative edge. Stamets has published six books, owns several patents and founded [Fungi Perfecti](#), LLC twenty-five years ago. The company specializes in supplying mushroom-growth equipment, products to aid in the more efficient production of mushrooms and mushroom-based nutritional supplements.

In 1997, Stamets won the Bioneers Award from the Collective Heritage Institute for his ?ethic of sustainability and ideas that can save the planet instead of depleting it.

In his lecture entitled ?Mushrooms as Ecological Medicines for People and Planet, Stamets spoke about the intensive research that he has conducted on the medicinal benefits of mushrooms, and their application to society. Stamets began his talk with a brief ?history lesson? of the mushroom; he showed slides of engravings done almost 2,500 years ago that depicted the Greek goddess Demeter giving Persephone a mushroom. Stamets also spoke about the psychotropic mushroom brews that ancient philosophers Plato and Aristotle imbibed as part of the mysterious Elysian festivals. Stamets showed an amber stone from the Dominican Republic with the fossil of a fungi that lived 15 to 20 million years ago embedded within it and said that fungi have been around since the dawn of time.

Emphasizing the role that mycelia play in recycling carbon back into the food chain, Stamets said, Without mycelium, there is no life.

Stamets spoke of the important role of mushrooms in environmental conservation. He grafts mycelia on logs and wood chips which provide a conducive environment for their growth; as the mycelia grows it disintegrates the wood and turns it into soil.

Mycelia are grand molecular dissemblers, Stamets explained. ?They break down plant tissues into soil. The plants [then] grow larger, stronger; we need fungal allies for the creation of soil.?

Mycelia also have important antibacterial uses. Stamets has perfected the same technique of growing special mycelia on wood into a technique which he calls mycofiltration; introducing the wood chips into water that has been contaminated with agricultural runoff reduces the coliform count. Mushrooms were also key players in the decontamination of a diesel spill which occurred in Stamets' home state of Washington. The Department of Transportation asked for his advice in clearing up the petroleum spill, and Stamets recommended the use of oyster mushrooms. The mycelia of the mushroom absorbs oil, and the enzyme which it produces breaks the carbon-hydrogen bonds and hydrocarbon chains in petroleum products.

Twelve weeks after he was allowed to demonstrate this technique on an experimental plot of contaminated soil, the pile became an oasis of life. [Eventually] insects came, birds came and plants grew, Stamets described. Other piles treated with chemicals remained stinky and neutral while the mycelia lowered contamination levels from 20,000 ppm to 200 ppm. Mycelia caused a domino effect giving bloom to other life.

With the growing concern of biological and chemical warfare attacks, Stamets reported that certain species of mushrooms have been shown to have activity against chemical toxins, such as Dioxin, a feature which is of great interest to the U.S. Department of Defense.

Mushrooms have also been shown to have remarkable anti-carcinogenic benefits. A report in The Lancet claimed that, of 256 patients with Gastric cancer, those who received an extract of Turkey Tail mushroom as part of their therapy showed a 33 percent increase in post-treatment survival. Stamets said that many people do not realize the immune system is ravaged by chemotherapy and radiation, but mushrooms can boost the immune system.

According to Stamets, the button mushroom has been shown to inhibit aromatase, which can prove to be an effective therapy against breast cancer.

Mushrooms are undervalued, but they can have a huge affect on your ability to combat carcinogens, Stamets said.

He concluded his talk by emphasizing that Mushrooms are underappreciated, but inspiring. The field of mycology has risen to a new level of appreciation and status ... You have among you the greatest of mycologists and they [and the work they do] should be honored.

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