

Fundamentals of Clinical Mycology

Sharon Spec*

Department of Microbiology, Duke University Medical Center, North Carolina, USA

Description

Mycology is the branch of biology that studies the study of fungi, including their genetic and biochemical properties, their taxonomy and their human uses as a source of tinder, traditional medicine, food and entheogens, and their dangers such as toxicity or infection. A biologist who specializes in mycology is called a mycologist.

Mycology branches out into phytopathology, the study of plant diseases, and the two disciplines remain closely linked, as the vast majority of plant pathogens are fungi. Mycology also has important uses in the dairy, wine and bakery industries, as well as in the manufacture of dyes. Medical mycology is the study of fungal organisms that cause disease in humans.

Agricultural mycology focuses on the use and control of fungi in crops. Toxicologists examine fungi and fungi for compounds that adversely affect other organisms. Pharmaceutical companies are racing to extract beneficial compounds from mushrooms. The professions in mycology are as diverse and complex as the subject itself.

Mycology has developed far beyond its origins in agriculture. After realizing how wide and diverse the mushroom kingdom is, the various roles of mushrooms in society began to be better understood. Cheese, for example, is made from various mushrooms. Mycology can classify and understand these organisms, resulting in better and more efficiently produced cheese and dairy products. Yeast is also a form of fungus, and understanding the fermentation process that yeast undergoes is a science unto itself. Degrees in fermentation science can be earned at the undergraduate level, and graduates can work in the brewing and distilling industries, brewing beer, wine, and spirits. Yeast is also used in bread making, and microbiologists must care for crops to produce enough yeast for bread production.

Field of mycology

A special field of mycology is mycotoxicology or the study of toxins produced by fungi. Typically, a mycotoxicologist has a doctorate

in biochemistry or organic chemistry, or a doctorate in medicine with concentrations in mycology and toxins. Fungi produce a wide variety of chemicals that have toxic effects on all types of organisms. Humans have eaten mushrooms since the earliest hunters and gatherers, but many mushrooms are still highly toxic. Other compounds found in mushrooms have potentially beneficial properties that could be used in medicine. Many mycotoxicologists work for pharmaceutical companies trying to develop new drugs based on these compounds.

Zaleski, a plant pathologist, focused on mycology after seeing *penicillium* spp. in forest soils of Bielowieza, in the northeast of the country. He described 35 new species of *penicillium*. In their manual of the *penicillia*, Raper and Thom wrote that in 1941, when penicillin was first produced, only a few laboratories had examined *penicillia*.

Mycology has even more specializations and is an area in constant evolution. As research increases, mushrooms are becoming a large and complex kingdom. Research is expanding and focusing on many specialty areas, including interesting applications for certain fungi. Some of these uses include radioactive fungi, which appear to grow in the presence of radioactivity and could potentially alleviate radioactive waste, and fungi, which can break down complex organic substances into carbon dioxide. Many of these applications have enormous commercial value and researchers are needed in many institutions to study these aspects of mycology.

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*Address for Correspondence: Sharon Spec, Department of Microbiology, Duke University Medical Center, North Carolina, USA, E-mail: spec_sharon@umc.edu

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