

Mold Glossary

***Absidia* sp.** – A zygomycete, which is considered common to the indoor environment. This organism is ubiquitous and therefore may be a contaminant in cultures. May cause Zygomycosis (mucormycosis) in immune compromised individuals. *Absidia* conidia can be an invasive infection agent.

***Acremonium* sp.** – Formally *Cephalosporium*. It can produce mycetomas, infections of the nails, onychomycosis, corneal ulcers, eumycotic mycetoma, endophthalmitis, meningitis, and endocarditis. Type I (hay fever & asthma) and Type III (hypersensitivity pneumonitis: Humidifier lung) allergens.

***Alternaria* sp.** – Commonly found in outdoor air. One of the most important of the fungal allergen sources. Type I (hay fever & asthma) and Type III (hypersensitivity pneumonitis) allergens. Occasionally causes phaeohyphomycosis most commonly in subcutaneous tissue. Majority of infections reported from persons with underlying disease or in those taking immunosuppressive drugs.

***Arthrinium* sp.** – One species, *Arthrinium sphaerospermum*, reported as an allergen. No reported toxic effects.

***Aspergillus* sp.** – Members of the genus *Aspergillus* cause a group of diseases known as aspergillosis; the disease may be in the form of invasive infection, colonization, toxicoses, or allergy. The organisms are opportunistic invaders, the most common molds to infect various sites in individuals with lowered resistance due to neutropenia and/or treatment with high-dose corticosteroids or cytotoxic drugs. *Aspergillus* spp. is widespread in the environment and is commonly found as contaminants in cultures. 187 species of *Aspergillus* are known, but only about 20 have been found to cause disease.

Aspergillus clavatus – No toxic or invasive diseases have been documented to date. Not common in indoor air. An agent of allergenic aspergillosis.

Aspergillus flavus – Isolated from plants and soil. Known to produce Aflatoxin. The production of the fungal toxin is dependent on the growth conditions. Involved in pulmonary, systemic, sinus, ear, and other infections.

Aspergillus fumigatus – Commonly found in house dust world wide. The most frequently isolated cause of Aspergillosis in humans, especially the immune-compromised patients. Frequent agent of sinusitis.

Aspergillus glaucus – Rarely involved in nail, ear, and systemic disease. No toxic diseases have been documented to date.

Aspergillus nidulans – Can cause infections at various sites; seen in patients with chronic granulomatous.

Aspergillus niger- The onion mold. Frequently found in house dust. Common in ear infections, frequently in aspergilloma; rarely disseminated.

Aspergillus terreus – Involved in nail, skin, eye, ear, and systemic infections.

Aspergillus versicolor – This is considered an indicator organism for moisture problems in houses. It is frequently isolated from water damaged building materials. It produces sterigmatocystin which is toxic and carcinogenic. Only occasionally involved in nail or invasive infections.

Ascospores – Found everywhere in nature, not toxic to humans.

Aureobasidium sp. - Relatively rare agent of Phaeohyphomycosis; reported cases include corneal, peritoneal, cutaneous, pulmonary, and systemic infections. May also be encountered as a contaminant in clinical specimens. This is a yeast like fungi which is commonly found on the silicon caulk used in bathrooms and kitchens, on damp window frames and in shower tracks. It starts out as a pale pink growth maturing to black in color, staining the material on which it is growing. It is seldom the cause of infections but can be allergenic.

Basidiospores/Basidiomycetes: Fungal spores which are from mushrooms. Rarely allergenic.

Beauveria sp. – Commonly considered a contaminant. Known to be pathogenic in insects and especially silkworms; very rarely involved in infection of humans. Can be a cause of a Type 1 allergen (hay fever and asthma). Rare isolations from corneal lesions, and lungs from an immunocompromised patient. No toxic diseases have been documented to date to be caused from *Beauveria*.

Bipolaris sp. - Bipolaris species are common, and are most closely related to Drechslera and Exserohilum. Our laboratory does not differentiate between the Bipolaris, Drechslera, and Exserohilum genera. This fungus can produce the mycotoxin - sterigmatocystin which has been shown to produce liver and kidney damage when ingested by laboratory animals. Most commonly cause allergic sinusitis and, in immunocompromised patients, may progress to invade bone and cause lesions in brain. Occasionally infect a variety of other sites, including the eye, skin, aorta, lung, and central nervous system, also, known to be present as contaminants in clinical specimens.

Botrytis sp. - Reported to be allergenic. It is parasitic on plants and soft fruits. Found in soil and vegetables. No toxic or invasive diseases have been documented to date. Commonly considered a contaminant.

Chaetomium sp. – Commonly considered a contaminant, occasionally allergenic.

Chrysosporium sp. – Considered a contaminant. Health effects have not been studied.

Cladosporium sp. – Most commonly identified outdoor fungus. Common cause of extrinsic asthma (immediate-type hypersensitivity: type I).

Coprinus sp. – Basidiospore, common, no allergenic properties.

Cunninghamella sp. – Commonly considered a contaminant; can cause disseminated and pulmonary infections in immune compromised hosts, occasional opportunistic pathogen.

Curvularia sp. – Common, opportunistic pathogen, cause of Type I allergies (hay fever, asthma). A relatively common cause of allergic fungal sinusitis. It may cause corneal infections, mycetoma and infections in immune compromised hosts.

Drechslera sp. - Found on grasses, grains and decaying food. It can occasionally cause a corneal infection of the eye. See *Bipolaris sp.*

Epicoccum nigrum – Common, no cases of infection have been reported in humans or animals.

Erysiphe/Oidium sp. - Erysiphe species are plant pathogens, one of the genera causing powdery mildews. Erysiphe is very common and is an obligate parasite on leaves, stems, flowers, and fruits of living higher plants. No information is available regarding health effects or toxicity. Allergenicity has not been studied. The asexual phase Oidium may be identified in air on spore trap samples.

Exophiala sp. – *Exophiala* species are common, and are closely related to *Wangiella* and *Phialophora*. This genus exhibits a black yeast phase. Health effects include occasional mycetomas, chromoblastomycosis, and other subcutaneous lesions. No information is available regarding toxicity. Allergenicity has not been studied.

Exserohilum sp. – Can cause phaeohyphomycosis, most commonly in nasal sinuses, skin, subcutaneous tissue, and cornea. Fatal disseminated infections have been reported to occur on rare occasions. See *Bipolaris sp.*

Fonsecaea sp. – Commonly Causes chromoblastomycosis (skin lesions). Rarely causes internal infections.

Fusarium sp. – Allergenic and toxic. It is found on a wide range of plants and found in humidifiers. Can produce trichothecene toxins, these toxins target the circulatory, alimentary, skin, and nervous systems. Frequently involved in eye, skin, and nail infections.

Ganoderma sp. – Basidiospore, not allergenic or toxic.

Geotrichum sp. - A common contaminant of grains, fruits, dairy products, paper, textiles, soil and water, and often present as part of the normal human flora. No information is available regarding toxicity. Allergenicity has not been well studied.

Gliocladium sp. - *Gliocladium* species are common and are most closely related to *Penicillium* and *Paecilomyces*. No cases of infection have been reported in humans or animals. It is reported to be allergenic

Malbranchea sp. – Not known to cause infection, and commonly considered a contaminant.

Microsporium sp. – Causes ringworm and other skin infections in humans. Usually does not invade living tissue, rather it colonizes the outermost layer. No toxic or invasive diseases documented to date.

Mitospores – General group of

Monila sitophila - No information is available regarding other health effects, or toxicity. Allergenicity has not been well studied. Commonly considered a contaminant; rarely involved in infections of the cornea.

Mucor sp. – Characterized by rapid growth. Rare infections in severely debilitated patients have occurred (Mucorosis).

Myxomycetes sp. – Occasionally found indoors. While a few are distinctive, many of the myxomycete spores are difficult to distinguish from the smuts. These spores are placed in our group "smuts, myxomycetes, Periconia," due to their similar "round, brown" morphology. No reports of human infection.

Nigrospora sphaerica. – Reported to be allergenic. Commonly considered a contaminant. Involvement in disease had been very rarely reported.

Non-sporulating fungi – Results from unfavorable growth conditions. No fruiting structures are produced. Other common names include: Hyaline mycelia and mycelia sterilia.

These are organisms that have not sporulated under the culture conditions provided. Most Never sporulate in culture (sterile mycelia). Some represent non-sporulating colonies of common fungi. Growth on a variety of substrates. Identification is not possible without sporulation.

Many Fungi do not adapt well to routine mycological media and growth conditions and therefore, may not sporulate. Specialized media, light-dark cycles, UV light, and low or high temperatures may be required to stimulate sporulation. Frequently non-sporulating colonies are produced by Basidiomycetes (mushrooms) which usually do not produce fruiting structures on lab media.

Paecilomyces sp. – Usually considered contaminants. Most deep infections have been in immunocompromised individuals. The species *P. variotti* can cause paecilomycosis.

Linked to wood-trimmers disease and humidifier associated illness. It may produce arsine gas if growing on arsenic substrate, i.e. wallpapers covered with paris green.

Penicillium sp. – Identification of this species can be difficult. Often found in aerosol samples. Commonly found in soil, food, cellulose, and grains. Some species can produce mycotoxins. Common cause of extrinsic asthma (immediate-type hypersensitivity: type 1).

Periconia sp. – Health effects have not been studied as of yet.

Pithomyces sp. – Commonly considered a contaminant.

Rhizomucor sp. – The Zygomycetous fungus is reported to be allergenic. It may cause mucorosis in immune compromised individuals. It occupies a biological niche similar to *Mucor sp.* An occasional etiologic agent of zygomycosis primarily in leukemic patients. Incidence in the clinical laboratory is uncertain.

Rhizopus sp. – This is frequently found in house dust, soil, fruits, nuts, and seeds. It is also often found in forgotten left over food or fruit and vegetable garbage. Exposure to large numbers of these spores has been reported to cause respiratory problems. *Rhizopus* can be an opportunistic pathogen in immune compromised patients. Those with diabetic ketoacidosis, malnutrition, severe burns, or other immune compromising situations are most likely to be affected.

Rhodotorula sp. – Reddish/Pink/Coral colored yeast, found in most environments such as carpeting, cooling coils, and drain pans. Commonly considered a contaminant. When isolated from specimens, the clinical significance is often uncertain. Positive skin tests have been reported. It has colonized in terminally ill patients.

Rusts – Not reported cases of infection in humans can cause Type I allergies for some individuals.

Scopulariopsis sp. – It may produce arsine gas if growing on arsenic substrate. This can occur on wallpapers covered with paris green. It has been found growing on a wide variety of materials including house dust. It is associated with type III allergy.

Scytalidium sp. – Known to commonly cause nail and skin infections; there are also rare reports of more deep-seated infections, e.g., subcutaneous abscess, sinusitis, endophthalmitis, lymphadenitis, and fungemia in immunocompromised patients. Infection is predominately in individuals who live in or have visited tropical or subtropical areas.

Serpula lacerymans – Cause of Dry Rot. Common cause of extrinsic asthma (immediate-type hypersensitivity: type I). Acute symptoms include edema and bronchospasms, chronic causes may develop pulmonary emphysema.

Smuts – Smuts do not usually grow indoors. They are parasitic plant pathogens that require a living host for the completion of their life cycle. No reports of human infection by the plant parasitic forms.

Sporotrichum sp. – Commonly considered a contaminant. This general does not cause sporotrichosis, there is taxonomic confusion between *Sporotrichum sp.* and *Sporothrix sp.*

Stachybotrys sp. – Several strains of this fungus (*S. atra*, *S. chartarum* and *S. alternans* are synonymous) may produce a trichothecene mycotoxin- Satratoxin H - which is a poisonous by inhalation. The toxins are present on the fungal spores. This is a slow growing fungus on media. It does not compete well with other rapidly growing fungi. The dark colored fungi grows on building material with high cellulose content and low nitrogen content. Areas with relative humidity above 55% and are subject to temperature fluctuations are ideal for toxin production.

Individuals with chronic exposure to the toxin produced by this fungus reported cold and flu symptoms, sore throats, diarrhea, headaches, fatigue, dermatitis, intermittent local hair loss and generalized malaise. The toxins produced by this fungus will suppress the immune system affecting the lymphoid tissue and the bone marrow. Animals injected with the toxin from this fungus exhibited the following symptoms, necrosis and hemorrhage within the brain, thymus, spleen, intestine, lung, heart, lymph node, liver, and kidney. Affects by absorption of the toxin in the human lung are known as pneumomycosis.

This organism is rarely found in outdoor samples. It is usually difficult to find in indoor air samples unless it is physically disturbed or if there is (speculation- a drop in the relative humidity). The spores are in a gelatinous mass. Appropriate media for the growth of this organism will have high cellulose content and low nitrogen content. The spores will die readily after release. The dead spores are still allergenic and toxicogenic. Percutaneous absorption has caused mild symptoms.

Stemphylium sp. – Commonly considered a contaminant. No toxic or invasive diseases documented to date.

Syncephalastrum racemosum – Commonly considered a contaminant. This species is a saprobe, rarely occurring in humans. A case of cutaneous infection in a human has been reported.

Torula herbarum – No reports of human infection. Can cause Type I allergic reactions.

Trichoderma sp. – It is commonly found in soil, dead tree, pine needles, paper, unglazed ceramics. It will often grow on other fungi. It produces antibiotics which are toxic to humans. It readily degrades cellulose.

Trichophyton sp. – Can cause ring worm, athlete’s foot, skin, nail, beard, and scalp infections. Reported to be allergenic. Found on soil and skin.

Trichosporon sp. – *Trichosporon beigelii* (old and common name) is the causal organism of superficial infections of hair shafts (white piedra) and nails (onychomycosis). Other health effects of this genus include reports of endocarditis, meningitis, pneumonia, ocular infections and peritoneal dialysis-associated peritonitis. Disseminated disease is recorded in immunosuppressed hosts. No information is available regarding toxicity. Allergenicity has not been well studied.

Ulocladium sp. – Commonly considered a contaminant, grows on wet wall board and particle board. This genus is allergenic and contributes to the allergy load in persons who are allergic to *Alternaria*. *Ulocladium* spp. may cause [phaeohyphomycosis](#) and particularly subcutaneous infections.

Ustilago sp. – Seldom implicated in human disease. May cause contamination in cultures.

Verticillium sp. – Commonly known as a contaminant. Found in decaying vegetation, on straw, soil and arthropods. Rarely causes inflammation of the cornea.

Wallemia sp. – Found world wide in house dust, air samples, dry food stuffs and solid. Found in sugary foods, salted meats, dairy products, textiles, soil, hay, and fruits. This fungi attacks materials with low water activity. Mycotoxins are produced by this fungus.

Yeast – Various yeasts are commonly identified on air samples. Some yeasts are reported to be allergenic. Health problems may be caused if a person has had repeated exposure to the organisms causing a hypersensitivity.

Other Suggested Glossaries/Mold Websites:

www.dehs.umn.edu/iaq/fungus/glossary.html

www.doctorfungus.com

www.botany.utoronto.ca/ResearchLabs/MallochLab/Malloch/Moulds/Moulds.html

