SPORE CONNOISSEUR » GROWING SURVEILLANCE

For the love of mould

Pretty fungus? Yes, according to one expert who's devoted his life to all things rotten

BY SIOBHAN ROBERTS

A jar containing a fuzzy slice of black mould extracted from the leg ulcer of a 34-year-old woman sits with pride of place on fungi expert James Scott's desk.

Dr. Scott, an associate professor in the department of public health sciences at the University of Toronto, nabbed this sample from a medical lab where he has a consulting gig.

But he was drawn to the specimen purely for curiosity's sake – to analyze under a microscope and add to his herbarium, like a birder scoring a new sighting on his checklist.

"This is a very pretty fungus," says Dr. Scott, who founded a private-sector microbiology lab, Sporometrics Inc. "I didn't care that much about the patient," Dr. Scott says. "I was only interested in the fungus."

Dr. Scott is a fungus aficionado who fell in love with his kingdom of organisms while he was a botany student at U of T in the early nineties.

Since his student days, he has amassed a collection of fungus paraphernalia.

In his lab hangs a poster-sized photograph of a culture scraped from his university roommate's toe.

The Sporometrics boardroom is well-appointed with antique wax models of mushrooms that look real-life enough to eat (or kill – one, known as the Destroying Angel, would be especially poisonous).

The boardroom also houses a library full of vintage volumes on mycology history and nomenclature codes.

But Dr. Scott also puts his aesthetic passion to practical use.

At the moment, he is developing a prototype for a "mould sensor" to monitor how the average abode withstands invading fungi.

Mould, Dr. Scott explains, is a fast-growing microfungus that produces lots of asexual spores.

"It's the pesky version of a fungus – when it gets on things where you don't want it," he says.

Mould can move into houses, causing damage to both the structure and its human inhabitants.

It is known to cause headaches, exacerbate asthma and increase upper respiratory disease.

"Small bits of spores get in your lungs and interfere with aspects of lung biology," explains David Miller, a toxicologist and professor of biochemistry at Carleton University in Ottawa.

Common causes of mould growth in houses are leaky roofs, faulty plumbing and unusually high humidity, combined with the vulnerability of building materials.

"The materials we build with now are a lot more susceptible than the material we built with 100 years ago. We used to build primarily with stone and solid wood. Now we build with cheaper stuff – wood pulverized into dust and glued back together with adhesives and resins." The facing of gypsum wallboard, for example, is very porous.

"The material is basically designed to become waterlogged," Dr. Scott says.

Traditionally, investigators testing for mould in houses "autopsy the walls," tearing them apart to see what might be growing inside.

But this approach doesn't provide any information relating the mould growth to the causal sequence of events, such as when the water leak occurred.

Dr. Scott developed the technology with investigators at the University of Western Ontario's Three Little Pigs testing facility, where a full-scale, built-to-code house is being battered with simulated hurricane-force wind and rain.

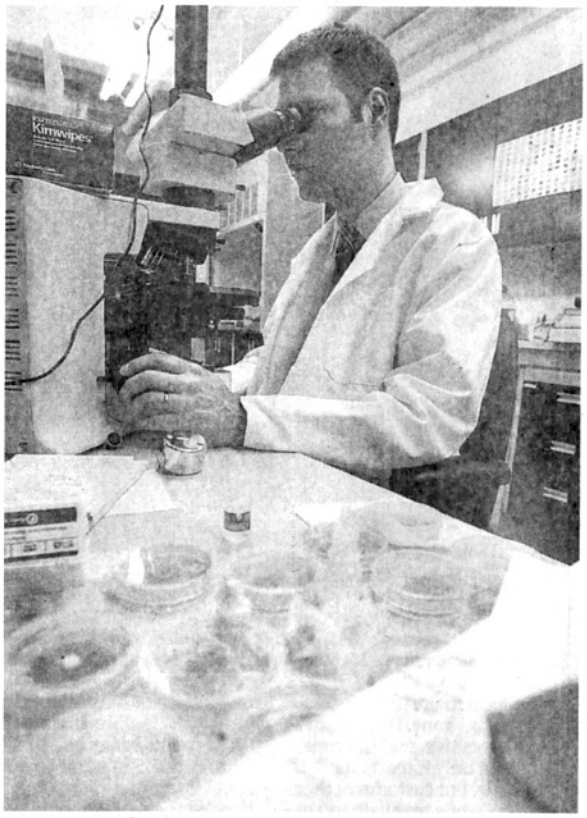
The mould sensor, a white disk of porous membrane about the size of a quarter, is seeded with 2,000 mould spores and rigged to a "reflectance densitometer" sensor.

The sensor measures how much light bounces off the white membrane.

So when black mould begins to grow – like a slow-motion seepage of pen ink into a pocket or piece of paper – the amount of light reflected off the white disk decreases (since the black mould attracts and absorbs light).

This information is transmitted by wireless technology to a central data acquisition unit.

Dr. Scott also consults on mushroom intoxication for the Ontario Regional Poison Information Centre.



James Scott is developing a prototype for a 'mould sensor' to monitor how homes resist fungi. J.P. MOCZULSKI FOR THE GLOBE AND MAIL

Last July, a Toronto man was on his way home from the grocery store and wandered through High Park. He encountered a fecund patch of mushrooms, which he concluded would go well with his steak.

He was in the hospital for weeks waiting for a liver transplant (but ultimately recovered).

Sporometrics' role was to identify the fungi, help chart a course of treatment, and determine measures that should be taken to prevent further poisonings.

Mould, according to Dr. Scott, is woefully misunderstood, and not just in terms of potential hazards.

For example, fungi are finicky and exist in very particular environments. "It is rare to encounter a mould that has broad taste," Dr. Scott says.

The mould caryospora lives only in the interior of a peach pit (nobody knows how it gets inside).

Eurotium prefers jam. "It looks a little bit like yellow caviar," Dr. Scott says. "It tends to like things that are really sweet or really salty."

"You've seen oranges turn blue? That's penicillium digitatum," he says. "That would never, ever grow on an apple. The mould that grows on apples is penicillium expansum. When people go to fall fairs, drink cider that's made in somebody's garage and get sick, they have ingested some cider made with mouldy apples."

Dr. Scott says he fell in love with fungi for their beauty.

Many are rather erotically endowed, while others have more modest morphologies, but are still whimsically curvaceous, like creatures you might expect to find after a tumble down the rabbit hole in *Alice in Wonderland*.

"Some fungi when you look at them are like old friends when you find them," he says. "Ahhh! Such a nice fungus."

"You see these things and you can't pass them up."

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