SPORE PRINTS

BULLETIN OF THE PUGET SOUND MYCOLOGICAL SOCIETY
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Happy Holidays

May All Your Dreams Come True

Spore Prints

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PUGET SOUND MYCOLOGICAL SOCIETY

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Annual dues $25; full-time students $15

CALENDAR

Dec. 11 Membership Meeting and Holiday Cookie Bash, 7:30 PM, CUH

Dec. 17 Board Meeting, 7:30 PM, CUH

Dec. 18 *Spore Prints* deadline (early)

MUSHROOM FLOAT

Heather Tullius

Calling all mushroom enthusiasts who would like to flex their creative gills!

If you would like to participate in building a mushroom float for the Fremont Solstice Parade, contact Heather Tullius at (206) 902–6962. We're thinking of a float and a cluster of species (people in costumes) performing short skits about different aspects of the fungus world. The parade is in June. Planning meetings to start soon!

SICK CALL

Patrice Benson

Charter member and founding PSMS president **Ben Woo** had a heart attack in November in France. He is recovering, and by the time you read we hope he will be back home in Seattle and feeling much better.

MEMBERSHIP MEETING

Tuesday, December 11, 2007, at 7:30 PM at the Center for Urban Horticulture, 3501 NE 41th Street, Seattle

The December membership meeting will showcase the culinary and creative talents of our PSMS members. First, please bring a dish of finger food or baked goods to share at what is now called our annual "Cookie Bash." Not only cookies, but other delightful hors d'oeuvres and treats are welcomed. Beverages will be provided. Please wear any fungal-themed attire or jewelry you may have and be prepared to have a good time.

Then, you are encouraged to participate in the traditional art contest! Please bring some form of fungal art to be judged by popular vote. Your entry may be edible, but this is not a requirement. There will be prizes for the best of several categories. Members of all ages are encouraged to enter a work of art.

You are also welcome to share 10–12 digital photos from your mushrooming, travel, or other experiences from this past year. Your pictures need not be mushroom related; they can be about anything that you think that others would appreciate seeing. You can also tell us about them if you wish—the microphone will be switched on. Please put your pictures on a compact disc (CD) or USB flash drive and give them to Milton Tam at least 15 minutes before the meeting, or you can e-mail them to Milt at miltontam@aol.com until the day before the meeting. If your photos are in a 35-mm slide format, please let Milt know. If we have enough slides, a separate projector can be set up.

As usual, you are welcome to visit the club library located in the PSMS office, which will be open before and during the meeting.

At 7 PM, before the membership meeting, Hildegard Hendrickson will present a 30-minute program for new members. She will offer tips on hunting and identifying mushrooms and answer questions.

goodies

artwork

slides

DECEPTION PASS FIELD TRIP, OCT. 27

Brian Luther

Imagine pulling up to a beautiful woodland shelter overlooking a scenic, pristine lake early in the morning and finding your necessary wakeup coffee, a whole picnic table full of a deli-like spread of appetizing delectables, a large pot of hot hearty homemade soup to warm you up inside, and a huge fire in the fireplace to warm you up outside, along with two attendants eager to greet you with a "good morning." With service like that it sounds to me like one of the better restaurants I've been to, but guess again. It was our very own John and Ruth Haines, who you could clearly tell took great pride in the hosting job they volunteered for on this extremely pleasant day at the end of October. For those of you who attended this outing, please stop for a moment and reflect on how much effort John and Ruth went to for our enjoyment

and realize that these events don't just take place, but rather are orchestrated by dedicated PSMS members and their time is all unselfishly offered. Thank you, Ruth and John. As an all-volunteer organization, we function only because of personal dedication by our members and we would love to hear from you if you'd like to contribute anytime in the future. I was very fortunate to have the manager of the park (head ranger) Jack Hartt reserve the shelter for us, because normally it's first come, first served. Thank you, Jack, for authorizing our use of the shelter for this educational field trip open to the public.

I was lucky to have the help of my wife, Pam, who only occasionally is able to break away and come with me to a field trip.

With the help of several others, we rearranged some picnic tables for a slightly better display. Then people starting coming in. I delivered another lecture on collecting within the Washington State Parks and passed out a two-page handout and the required collection slips. Then it was off to the woods we all went.

Thirty-nine people signed in, and I was pretty much talking, nonstop, all day helping folks with the treasures they had found. By late afternoon several picnic tables were covered with fungi, and thanks to Josh Birkebak, I got some ID help during the day. A smattering of some good edibles showed up, but many of the chanterelles were going downhill. Edibles were not found in any significant quantity, but a fine selection came in. Notable were nice collections of *Boletus mirabilis* and the Woods Blewit (*Clitocybe nuda*)**,** which is a cold weather fungus and just begins to come out starting around the end of October. I have not yet tabulated the number of species, but we had an excellent diversity of fungi and more than enough for me to talk about all day. Interesting or unusual finds included a beautiful orange resupinate polypore collected and photographed by Jamie and Dennis Notman, which I'm working on microscopically, *Spathularia flavida*, a bright yellow earth tongue, *Neolentinus kauffmanii*, found almost exclusively on decaying Sitka Spruce, and a lovely collection of the unique and intriguing *Cantharellula umbonata*. A vast array of fungi with every color under the rainbow was found, but notable eye catchers were the brilliant orange *Omphalina luteicolor* (*Chrysomphalina aurantiaca*), the super slippery *Cortinarius vanduzerensis* with purple slime covering the white stems, and lots of stunning deep amethyst specimens of *Laccaria amethysteooccidentalis*, a color so striking that I could stare at it for a long time.

Although a potluck was scheduled, everybody munched throughout the day, so dinner didn't end up being organized.

Thanks to all who stayed to help clean up. After leaving, Pam and I decided to go to the LaConner Pub and Brewery for dinner where we enjoyed a couple of individual pizzas and some terrific local brew.

November should be a good month for Blewits, so be sure to take a hike in some nearby woods during this mild weather we're having and see what you can find. I'm always glad to ID specimens sent to me or brought to me, and am always happy to receive on-line photos sent to me, as long as a top view and a view of the hymenium (gills, pores, tubes, teeth, etc.) is included.

So, another enjoyable and successful mushroom season is coming to an end, and as always, good collecting to you!

BETTER DECLARE THOSE TRUFFLES!

chinapost.com, 27 October 2007

Taipei, Taiwan - Chang Chen-min, deemed the top French chef in Taiwan, may face a fine of over $3 million (New Taiwan dollars)—$92,421.44 in US dollars—for smuggling some 3 kilograms of white truffles (*Tuber magnatum*) into Taiwan.

Chang allegedly brought the truffles in when returning from a trip to Italy in late September, without reporting the precious product to the customs office.

Chang will see the truffles confiscated and face a fine of some 3 to 5 times the net value, estimated at NT $1 million, of the inbound truffles, Taipei customs office said.

Along with the appreciation of the euro, the price of white truffles has been soaring to around NT $230,000 per 500 grams, or $7,000 per pound USD.

MYCOPHAGY: IT'S DIFFERENT IN MEXICO

Lorraine Brown

Mycelium, Myco. Soc. of Toronto, Jan.–Mar., 2007

My husband, Andrew, and I recently took part in a Mexican Mushroom eco-adventure led by MST [Mycological Society of Toronto] members Gundi Jeffery and Erik Purre. We ventured high into the Sierra Juarez mountains of Oaxaca, where we found mushrooms superb in both quantity and diversity and indigenous Zapotec locals for whom mushrooms are a passion as well as a major part of their diet.

Local people prepared mushrooms for us in their homes and small restaurants called comedors. To our surprise, we found that some of the most popular mushrooms in Oaxaca are species our books advise us not to eat. We found ourselves eating mushrooms we never thought we would. [*Mycelium Ed. note: But not without the advice of a local expert*.]

Our technical leader, mycologist Dr. Arturo Estrada, loves *Helvella lacunosa.* And I have to admit, his helvellas with spinach, bread crumbs, and cheese were divine. But Lincoff recommends avoiding this mushroom because it is closely related to the false morels that contain some fairly serious toxins.

Arturo and other guides who accompanied us are also big fans of *Ramaria.* I have always avoided eating this complex genus because it includes many species with cathartic or laxative properties (not something one usually needs in Mexico!). We made a soup with *Ramaria aurea* in Mexico, and found it to be rather bland.

At a small comedor in the high mountain Zapotec village of Cuajimoloyas, we saw buckets of *Gomphus floccosus* waiting to go into people's meals. We didn't eat it, mostly because of all the prep work, but the local people scrape all the skin and gills off, boil it, and then fry it. Lincoff doesn't recommend eating *Gomphus;* he says it contains "an indigestible acid."

Are the mushrooms different in their chemical makeup in Mexico? Or are these taste preferences mainly cultural?

Certainly no one had any quibbles about the gastronomic properties of *Armillaria ponderosa, Boletus edulis,* and *Amanita caesarea* which we also found in large numbers, nor with any of the five colors of *Cantharellus* that we came across.

AMANITA SMITHIANA POISONING **Jan Lindgren**

MushRumors, Ore. Myco. Soc., Nov./Dec. 2007

On October 9, Judy Roger of the Oregon Mycological Society was called by the Oregon Poison Center to identify pieces of two stipe bases left from a breakfast meal that made a man ill. He ate three mushrooms that he misidentified and is in the hospital with acute renal failure and hepatic involvement. Judy used her microscope, a few chemicals, and years of experience to determine that one piece came from an *Amanita smithiana,* and the other most likely was from a *Tricholoma focale (zelleri)*. The man had used one field guide to make his identification and thought he was eating matsutake, *Tricholoma magnivelare.*

It happens far too frequently here in the Pacific Northwest that people mistake *Amanita smithiana* for a matsutake. Actually, there are several other mushrooms that look similar to matsutake, but fortunately they do not contain the toxins found in *A. smithiana* and don't cause serious poisoning. To be on the safe side always use several reference books when you are identifying mushrooms for eating and get help from an experienced member if you aren't sure of what you have. A matsutake has several unique features that make identification easy, **if** you know what to look for: the odor, texture, color, shape, and characteristic of the stipe base. You must harvest the complete mushroom to see this characteristic; do not cut it off at soil level.

Amanita smithiana

Please be careful and eat only those mushrooms you can identify with certainty. Mushrooms found here may look like ones you know from other parts of the world, but they are probably different and you must be sure of what you eat.

CHANTERELLES AND APPLES: MISTAKEN CORRELATION, IDIOSYNCRATIC REACTION, OR CRYPTIC VARIABLE **David Pilz**

MushRumors, Oregon Myco. Soc., Nov./Dec. 2007

A couple of autumns ago a friend called me with a strange tale. He lives and collects chanterelles in the Oregon Coast range near the Nestucca River. He had collected a bunch of chanterelles and had some apples, so he made a dish that combined the two. After enjoying it immensely, he went to bed and had an extremely unpleasant night. He said he felt a if he was all revved up and had bad insomnia that night. Puzzled, he did not immediately associate the reaction with chanterelles or apples, each of which he eats normally without ill effect. After eating some leftovers of the dish he had prepared, he suffered another unpleasant sleepless night. That is when he postulated that somehow the combination of apples and chanterelles had caused the reaction, and he called to ask if I had ever heard of such a thing.

I listened politely, but I never had, so I did not lend his hypothesis much credence. Over the subsequent years, I forgot about his story.

Last Saturday I went to my favorite spot for chanterelles in the coast range (near Summit) and collected some. The previous week I had bought a gallon of organic apple cider and was enjoying a glass or two each day. Sunday morning I cooked chanterelles for a breakfast omelet and that evening made spaghetti with chanterelles. I also had a couple of glasses of cider that afternoon. That evening I felt uneasy and restless and could not get to sleep, tossing and turning until 4 AM. I have plenty on my mind right now and just wrote it off to anxiety. Monday, I had more chanterelles for breakfast and leftover spaghetti for dinner, along with more cider during the day. In spite of being utterly exhausted from the night before, I was again unable to fall asleep until 4 AM. Insomnia two nights in a row is exceedingly unusual for me.

Sometime in the wee hours I put two and two together (literally, his combination of two ingredients and my combination) and remembered what he had told me.

I am still skeptical, but I tossed the remainder of my cider and am waiting to eat the rest of the chanterelles for another day or two. A web search shows plenty of recipes for chanterelles and apples, naturally so, as the fruity flavor of chanterelles pairs nicely with apples. I did not, however, find any reports of such reactions.

Did both my friend and I experience some other malady and mistakenly correlate the restlessness and insomnia with the combined consumption of chanterelles and apples? Did we each, perhaps, have similar idiosyncratic reactions to the combination? Or, is there some cryptic reason that coast range populations of *Cantharellus formosus*, or the soils they grow in, will precipitate this strange reaction in people? The truth is out there. Be careful staying up late in your search for it!

I look forward to hearing reader reactions to my peculiar autumnal tale. You may contact me directly at shroom@peak.org.

HOW POISONOUS MUSHROOMS COOK UP TOXINS ***ScienceDaily,* Nov. 14, 2007**

Heather Hallen spent eight years looking for poison in all the wrong places.

Alpha-amanitin is the poison of the death cap mushroom, *Amanita phalloides*. The Michigan State University plant biology research associate was looking for a big gene that makes a big enzyme that produces alpha-amanitin, since that's how other fungi produce similar compounds. But after years of defeat, she and her team called in the big guns—new technology that sequences DNA about as fast as a death cap mushroom can kill.

The results: The discovery of remarkably small genes that produce the toxin—a unique pathway previously unknown in fungi.

The discovery is reported in today's *Proceedings of the National Academy of Sciences*. It is work that not only solves a mystery of how some mushrooms make the toxin—but also sheds light on the underlying biochemical machinery. It might be possible one day to harness the mushroom genes to make novel chemicals that would be useful as new drugs.

"We think we have a factory that spits out lots of little sequences to make chemicals in *Amanita* mushrooms," said Jonathan Walton, the MSU plant biology professor who leads Hallen's team. "Our work indicates that these mushrooms have evolved a mechanism to make dozens or even hundreds of new, previously unknown chemicals, besides the toxins that we know about."

Of the thousands of species of mushrooms, only about 30 produce alpha-amanitin. Most of them look much like their edible

cousins. But poisonous mushrooms are powerful in folklore and in history. In 54 A.D., Emperor Tiberius Claudius was fed a death cap mushroom by his wife Agrippina to put her son Nero on the throne of Rome.

Alpha-amanitin kills people by inhibiting an enzyme necessary for expression of most genes. Without the ability to synthesize new proteins, cells quickly grind to a halt. The intestinal tract and the liver are the hardest hit as they come into first contact with the toxin. By the time symptoms show up, a liver transplant is often the only hope.

Hallen, a mycologist, gathers mushrooms in the Michigan woods and often is called upon to help identify mushroom species for veterinarians, parents of small children, and local hospitals—often in a desperate race to beat alpha-amanitin's effects.

Walton's lab works to understand the biochemical pathways by which natural products are synthesized in fungi. Natural fungal products that benefit human health include penicillin and the immunosuppressant drug cyclosporin. Studying their biosynthesis could lead to the discovery and development of new medicines.

To find the elusive gene for alpha-amanitin, they used what they term "brute force"—a new machine at MSU that can sequence immense quantities of DNA quickly. The 454 LifeSciences pyrosequencer generates a 100 Mb DNA sequence in one overnight run—twice the size of a fungal genome. Traditional sequencing methods require months to yield the same quantities. What they found was a gene that encodes the toxin directly—with no need to first synthesize an enzyme that in turn would make the toxin.

"The RNA goes in, and out comes the backbone of the toxin," Hallen said. After its initial synthesis, the toxin is then modified in several ways by the mushroom to make it exceptionally poisonous.

Walton said the discovery poses some interesting evolutionary questions. For example, why do only some mushrooms produce this toxin. And how did a handful of other, unrelated mushrooms evolve the same trait. Finding the genes points to how the trait could appear in one mushroom, but not how it evolved in mushrooms that aren't related to *Amanita*.

Hallen and Walton also see the doors opening to a diagnostic test that could use DNA to determine if a mushroom is toxic or not. Identifying a mushroom by shape and color alone is often impossible if the mushroom has been cooked or partially digested, yet rapid and accurate identification in an emergency room situation is critical.

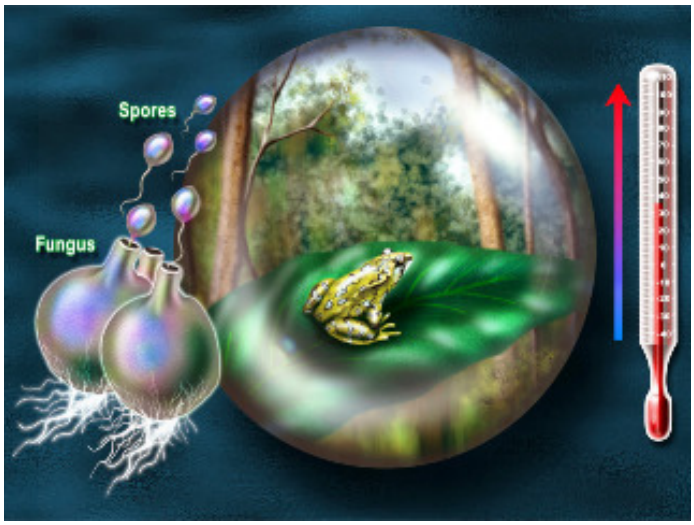
The work was funded by a grant from the U.S. Department of Energy to the Plant Research Lab, the MSU Michigan Agricultural Experiment Station and a Strategic Partnership Grant from the MSU Foundation. *Adapted from materials provided by Michigan State University.*

CHYTRIDS

Nina Burghardt

NJMA News, N. Jersey Myco. Assn., Nov./Dec. 2007

When I was at the Northeast Mycological Federation conference this summer, I attended a very interesting workshop on chytrids. I had never heard of chytrids, but it appears that these microscopic fungi are making big news. The chytrid *Batrahochytrium dendrobatidis* is apparently responsible for the dying off of frogs around



the world. Workshop leader Joyce Longcore is the scientist who discovered the dying-frog / chytrid connection.

Chytrids are microscopic fungi which live in wet environments. Like all fungi, they are composed of chitin and reproduce by spores. They reproduce asexually. Unlike most fungi, they are mobile. The spores develop a flagellum (a whip-like tail) which allows them to navigate in water and to attach themselves to a food source. The food source can be chitin, keratin, or cellulose. Once they are attached, they develop into a ball. This fills up with spores. When the spores are ready, they leave through pores and the whole process starts over. The whole cycle takes four days.

Chytrids are everywhere there is water: ponds, puddles, and the forest canopy. Frogs also like wet areas, which puts them at risk. The chytrids consume keratin that covers the frog's skin. Frogs breathe through their skin; the skin also keeps the frog from drying out.

DANDRUFF FUNGUS' DNA CRACKED

The Spore Print, L.A. Myco. Soc., Nov. 2007

(Reuters) - First, researchers grew enough of the fungus to give dandruff to 10 million people. Next, they sequenced its genes. Then they found out that not only does an icky fungus live on your head and cause dandruff, but it could be having sex. On your head. Right now.

A team at Proctor & Gamble Beauty said they had sequenced the genome of *Malassezia globosa,* a fungus that grows on the skin of between 50 and 90 percent of the population. It causes dandruff and a range of other skin conditions.

Writing in the *Proceedings of the National Academy of Sciences,* the researchers said their study can shed light on ways to fight not only dandruff but an infection that can threaten the lives of newborns.

"A complete genomic sequencing of a *Malassezia* genome opens tremendous opportunities for researchers to understand the interactions of fungi and humans," said Thomas Dawson, a scientist at P&G Beauty who led the study.

"It's amazing that the understanding of the genetic makeup of a microscopic organism can have broad implications ranging from human health to agricultural science."

Cont. on page 6

Dandruff, *cont. from page 5*

The team at P&G Beauty, a subsidiary of the company that makes household products raging from toilet tissue to shampoo, said that *M. globosa* is capable of excreting more than 50 different enzymes that help digest and break down compounds in the hair and scalp.

"The *M. globosa* genome sequence also revealed the presence of mating-type genes, providing an indication that *Malassezia* may be capable of sex," they wrote in their report. Other fungi can reproduce sexually, but this particular kind had not been known to, Dr. Dawson's team said. This means it could find a way to evade dandruff shampoo.

They said dandruff could affect up to 90 percent of people, and that it had been known for more than 100 years that *Malassezia* could cause dandruff and eczema. *Malassezia* fungi also caused systemic infections in newborns, and were related to some fungi that affected plants such as corn.

Those who may ultimately benefit include Gordon Brown, the prime minister, who has reportedly been among dandruff sufferers. Others afflicted have included John Lennon and Bill Gates, the Microsoft tycoon.

FUNGUS MAY HALT ADVANCE OF INVASIVE WEED

***The Spore Print*,** L.A. Myco. Soc., Nov., 2007

Spokane, Wash. (AP) - A fungus scientists have dubbed "Black Fingers of Death" may turn out to be the first long-range weapon in efforts to halt the advance of cheatgrass, a destructive invasive weed, scientists say.

Gonzaga University biology professors Julie Beckstead and David L. Boose were recently awarded $247,000 in federal grants for a three-year study on *Pyrenophora semeniperda,* a tiny, naturally occurring soil fungus that attacks the seeds of cheatgrass, *Bromus tectorum*.

Working with colleagues at Brigham Young University and the U.S. Forest Service's Rocky Mountain Research Station in Provo, Utah, Boose and Beckstead hope to gain a better understanding of the fungus, including its effect on native plants. "We're really excited about the potential of this organism," Beckstead said.

"The need to replant burns and replace cheatgrass is huge," she said. "If we don't do something, there will be more and more cheatgrass and more and more fires."

Cheatgrass, native to the steppes of Russia, infests about 100 million acres of the American West. Its prickly seeds get stuck in socks and animal fur, but the invasive weed does much greater damage by crowding out native grasses, shrubs, and flowers and providing explosively dry fuel for massive wildfires.

The sagebrush grasslands of the Columbia River plateau were swept by fire every 40 to 120 years, but the advent of cheatgrass, which begins growing early in the spring and is the first to dry out in the summer, has increased the wildfire frequency to about every 5 years, said Pamela Camp, a Bureau of Land Management botanist in Wenatchee.

The fires, in turn, clear more space for cheatgrass to spread in following years. Camp said 2 percent to 12 percent of the state's native Columbia shrub-steppe grassland remains intact, and restoring cheatgrass-infested areas costs $500 to $1,000 an acre.

"It has a serious impact on grazing and forage production for wildlife," said Robert Troiano, a BLM natural resource specialist in Spokane.

Herbicides attack only the plant, not the dormant cheatgrass seeds in the soil, and can drift and cause damage to nearby crops and range land, Troiano noted.

In 1992 Beckstead noticed a dark, fingerlike fungus poking out of cheatgrass seeds. She discovered that it kills the seeds, then sends out black, stubby tendrils loaded with spores, hence the nickname.

Cheatgrass (Downy Brome), Bromus tectorum.

"We had to call it something," she said.

The fungus is found on cheatgrass seeds across the West but is more common in some areas than others. Within 10 years it may be possible to grow large quantities of the fungus to spread across infested sites, Beckstead said.

FAKE ITALIAN POLICE STAGE HIGHWAY TRUFFLE ROBBERY

spiegel.de

The Spore Print, L.A. Myco. Soc., Nov. 2007

The price of white truffles is surging because fewer of them are being found after an unusually hot summer in northern Italy this year. That may explain why robbers went to the trouble of dressing up as policemen to steal 400 grams—worth €2,000—of the cherished delicacy from a collector.

Dario Pastrone, 58, had spent Friday and Saturday night in the wooded valleys around Chiusano collecting the prized delicacy and was driving to a truffle market in Asti when another car forced him off the road, the *Guardian* newspaper reported.

Three men dressed as police officers jumped out, opened his trunk and stole the truffles. The price of truffles has risen to as much as €5,400/kilogram ($7000/lb) this year, almost half the price of gold.

The long dry summer in the Piedmont region of Italy where white truffles grow has dried up the soil, and collectors say the number of truffles found this year is likely to be down to less than half the 2006 level.

SCORPION TOXIN MAKES FUNGUS DEADLY TO INSECT PESTS

Physorg.com, Nov. 12, 2007

University of Maryland entomology professor Raymond St. Leger has discovered how to use scorpion genes to create a hypervirulent fungus that can kill specific insect pests, including mosquitoes that carry malaria and a beetle that destroys coffee crops, but that does not contaminate the environment as chemical pesticides do.

In the November issue of the journal *Nature Biotechnology*, St. Leger and Chengshu Wang, a colleague from the Chinese Academy of Sciences, describe how they were able to bioengineer a new version of the fungus *Metarhizium anisopliae* to inject specific insects with the scorpion toxin *Androctonus australis* insect neurotoxin (AaIT), and kill them within a few days.

"Scorpions have toxins that are superbly adapted to killing insects," says St. Leger. "A scorpion kills by stabbing its prey, so we were looking for a way to get the toxin into the insect without the scorpion.

"Fungi are really good at that because they are naturally infective. They land on the insect's outer surface, insert little tubes called hyphae, and grow within the insect. Think of them as tiny hypodermic needles. If you can get the fungus to insert a toxin into the insect, you can kill the insect very quickly. This is what we did."

Speeding up the Process

Naturally occurring *M. anisopliae* fungi and other strains like them are already being used to control agricultural pests and mosquitoes, but their effectiveness has been limited in comparison to chemical pesticides. Unlike chemical pesticides, these altered fungi can be used to target specific insects and do not pose a threat to the environment.

In Australia, the fungus is sprayed from airplanes to target locusts and grasshoppers that decimate food crops. In Africa, the spores of the *M. anisopliae* fungus are put on sheets and hung inside houses to kill mosquitoes. "The problem is it takes quite a few fungal spores to kill the mosquito, and it is slow," says St. Leger. "It reduces the number of mosquito bites that people get, but it doesn't keep people from getting malaria or dengue. We're trying to get a supercharged, hypervirulent fungus that will take out the mosquitoes quickly."

St. Leger also is looking at the possibility of using the enhanced fungus to attack the coffee berry borer, an invasive beetle that causes severe damage to organic coffee crops in Colombia and other parts of Latin America. After oil, coffee is the largest legally traded commodity in the world, so the industry is eager to develop biopesticides that will protect the crop.

Synthetic Gene

To produce the insect-killing fungus, St. Leger created a synthetic scorpion gene which he inserted into the *M. anisopliae* fungus. "You can't just take out the scorpion gene and put it into the fungus. You have to turn that piece of DNA into something that the *M. anisopliae* can use properly," he explains.

He also had to create what he calls an "on/off switch" in front of the gene so the fungus will produce the scorpion toxin only when it is in the blood of the insect. "The fungus will never produce it under any other circumstances."

St. Leger tested the infectivity of the transgenic fungus against mosquitoes, caterpillars, and the coffee borer beetle. It was nine times more virulent than the wild *M. anisopliae* in killing mosquitoes, 22 times more virulent in killing caterpillars, and 30 times more virulent in killing the coffee borer beetle.

St. Leger believes this supercharged, pathogenic fungus has great potential to become a cost effective biopesticide that can kill using far fewer spores than the wild *M. anisopliae* fungus. He is currently using a range of genes, including scorpion toxins, to create additional biocontrol agents that are also highly specific to important pest species. *Source: University of Maryland*

HAVE WHITE TRUFFLES FINALLY GONE TOO FAR?

Jessica Coen

http://nymag.com/daily/food/2007/11/have_white_truffles_jumped_the.html, Nov. 8, 2007

We have some bad news. The bagel, that beloved, affordable symbol of New York cuisine, has gentrified. Chef Frank Tujague of the Westin hotel in Times Square (where else?) has unveiled the $1,000 white-truffle bagel, "topped with white truffle cream cheese and goji berry infused Riesling jelly with golden leaves." Now we love all truffles, far too much to ever be so rash as to declare them to be *so over*, and there may not be a thing on earth that's not improved by them (we've even considered using truffle oil as conditioner—it probably works wonders for split ends). But now that truffles are toying with the doughy purity of simple bagels, we have to wonder: Is this white-truffle thing not getting just a bit too precious?

First, the Waverly Inn started offering its truffle-laced macaroni and cheese for $55—an amount that, at the time, was relatively shocking. But that price seemed almost modest once Le Cirque owner Sirio Maccioni came back from Italy lugging a giant one-pound truffle, a beastly thing for which he bid $7,000. Then the news broke that this year's truffle season was shaping up to be less than stellar, leading to a citywide truffle shortage—and just as we'd finally (somewhat shamefully) grown used to a $55 plate of truffley mac 'n' cheese, the Waverly jacked up the price to $85. And now, we have the $1,000 white-truffle bagel, an edible status symbol so special that you have to order it 24 hours in advance. *Deep breaths*.

Before we get too rage-y about this thing, we'll note that it's for a good cause—a portion of the proceeds will go toward Les Amis d'Escoffier Scholarship for culinary students. Presumably so that all aspiring chefs may go on to someday create their own wallet-smashing, truffle-tastic creations.

uk.reuters.com

You can either have the bagel, or pay your rent.

TRUFFLE TIDBITS

The origin of the word truffle appears to lie in the Latin term "tuber," meaning "lump."

The world's most expensive truffle was a 1.51 kilogram rare white Alba truffle which sold for about £86,250.

Despite people realizing that truffles grew at the roots of trees, they long eluded domestication, with the first recorded attempts in Southern France, known as "trufficulture," in the early 1800s.

Many secrets of cultivating truffles were lost after the First World War killed more than 20 percent of the France's male work force.

cont. on page 8

Truffle Tidbits, *cont. from page 7*

It is estimated that the world market could absorb 50 times more truffles than France currently produces.

There are now truffle-growing areas in Spain, Sweden, New Zealand, Australia, Oregon, North Carolina, Tennessee, and the UK.

The flavor of black truffles is far less pungent and more refined than that of white truffles. It is reminiscent of fresh earth and mushrooms, and when fresh, their scent fills a room almost instantly.

The inhabitants of ancient Greece and Rome are said to have used truffles as an aphrodisiac, and poet Lord Byron kept one on his desk for inspiration.

WALNUT MUSHROOM STUFFING

Stacy Finz

San Francisco Chronicle, November 15, 2006

We like the chunkiness of the stuffing when the bread is in 1-inch pieces; for a more uniform texture, cut into smaller pieces. Use quality walnut bread and country French bread from the fresh bread section of specialty markets. Serves 10.

Ingredients

1 pound walnut bread, cut into 1-inch cubes
½ pound sweet French country bread,
crusts removed and cut into 1-inch cubes
5 tablespoons unsalted butter + butter to grease pan
3 cups chopped onion, in ½-inch pieces
3 celery stalks, cut into ½-inch pieces
½ pound shiitake or wild mushrooms,
stemmed and quartered
½ pound brown or button mushrooms, quartered (or pre-sliced)
Kosher salt to taste
1 tablespoon finely chopped fresh thyme, or 1 teaspoon dried
1½ teaspoons finely chopped fresh sage, or ½ teaspoon dried
½ teaspoon finely chopped fresh rosemary, or ¼ teaspoon dried
Freshly ground black pepper
¾ cup currants or raisins
3 cups low-sodium chicken, turkey, or vegetable broth

Instructions

Place the bread cubes in a single layer on baking sheets and let dry overnight. Or, place in a 200°F oven until very dry but not crispy, about 40 minutes. Let cool slightly.

Preheat the oven to 350°F.

Butter a Dutch oven, deep casserole, or a 13 × 9-inch glass baking pan. (A deeper casserole yields a moister stuffing.)

Put the bread in a very large bowl.

Melt 2 tablespoons of the butter in a large skillet over medium heat. Add the onion and celery and sauté until tender but not browned, about 10 minutes, stirring occasionally. Pour the vegetables over the bread.

Melt 2 more tablespoons butter in the skillet and add the shiitake and brown mushrooms.

Sprinkle with a little salt and the thyme, sage, and rosemary. Cook for about 2–3 minutes, until the mushrooms brown slightly, but don't cook long enough for them to begin releasing liquid. Scrape the contents of the pan into the bowl.

Sprinkle the 2 teaspoons salt, lots of black pepper, and the currants over the stuffing. Toss together, then slowly drizzle in the broth, tossing well to moisten all of the bread in the bowl. If needed, add enough water so the bread is saturated with liquid.

Place in the prepared pan, dot with remaining butter and cover the pan with foil.

Bake for 30 minutes. Uncover, increase oven temperature to 400°F, and bake until crusty on top, 15–20 minutes.

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