

SPORE PRINTS

BULLETIN OF THE PUGET SOUND MYCOLOGICAL SOCIETY
Number 566 November 2020



2020 VIRTUAL WILD MUSHROOM SHOW

Derek Hevel



On October 17 and 18, PSMS held its first-ever virtual Wild Mushroom Show! Early in 2020 as COVID-19 hit, it became clear that the 2020 fall show would be very different. After PSMS

canceled spring's Mushroom Maynia, we wondered if this year's fall show would suffer the same fate. All year we considered the possibilities, but finally decided to play it safe with an all-virtual show to satisfy members' mycological cravings. Picking up on the successes of our Zoom-based monthly meetings, we knew that offering speakers remotely would be easy and popular, but we also took on a wide range of video production efforts to substitute for live activities like cooking, dyeing, and cultivation.

Our four lectures went splendidly, attracting between 100 and 200 guests each. On Saturday, Daniel Winkler spoke first with a talk called "Choice Edible Mushrooms of the Pacific Northwest," followed by Alana McGee who spoke about truffles with "Growing and Harvesting Native and European Truffles in the Pacific Northwest." On Sunday, Noah Siegel gave a talk titled "Exploring the Unknown: Cryptic Mushroom Diversity in your Back Yard," followed by Danny Miller presenting "Families of Mushrooms in the Pacific Northwest: Solving Mysteries with DNA." Aside from a few technical glitches, everything went great. Our usual in-person lecture spaces accommodate only about 100 guests, so we were happy that more people than usual got to sit in on these great talks.

Our video production team did something PSMS has never done before: It produced a set of fun, educational videos presented completely online. Not only did we try to cover a range of activities we would normally present at a live show, but we learned how to film, edit, and present all this material with varying amounts of technological and Internet know-how. I didn't know what to expect, but I am so impressed by the effort and commitment so many people gave to expand our video archive. In all, we produced and hosted twenty-five videos! I heard back that some of the most-viewed ones were the cooking, dyeing, and safety videos, and I especially loved the "I'm a Mushroom" song at the end.

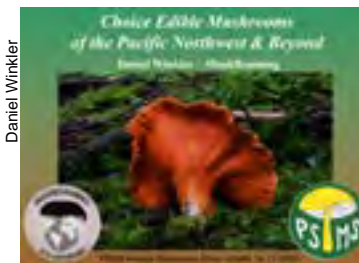
Unfortunately the lectures were not recorded, since the information is proprietary material, so the virtual show was your one chance to hear them. However, all of the show videos will continue to remain available to members for the foreseeable future! The emailed video links have been disabled, but the links in the "Videos" area of the member's page (at the bottom right of the page) will take you to our new video archive.

While there were fewer volunteer needs this year, there are still so many people to thank for helping put on the show. Thanks to

Daniel, Alana, Noah, and Danny for their terrific lectures. Milton Tam and Molly Swesey-Watts helped me co-chair the show. Marion Richards gave countless hours organizing and hosting the lectures and making and hosting videos. Marian Maxwell also put in countless hours handling registration and membership issues. Hugh Timmons managed our video links to the website. PSMS video presenters included Jamie Notman, Milton Tam, Wren Hudgins, Marion Richards, Paul Hill, and Larry Martin. Marcus Sarracino and Bridget Egan contributed tremendous technical and editing assistance. Short videos were produced and submitted by Daniel Winkler, Molly Swesey-Watts, Pei Pei Sung, and Gabriela D'Elia. Randy Richardson relayed important info here and there to tighten up some of the loose bows. Many members helped to publicize the show, but special thanks to Lisa Page Ramey for creating the digital show banners and Shannon Adams for promoting us on social media.

Thanks to everyone for joining the virtual show this fall and hanging in with PSMS this year. We are all looking forward to returning to a live show next year, so let's all do our parts to stay safe and healthy to make that happen!

2020 PSMS Virtual Wild Mushroom Show



Daniel Winkler



Jared Perkin



Daniel Winkler



Marion Richards



Ben Woo



Daniel Winkler

Miscellaneous screen shots from the mushroom show videos.

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MEMBERSHIP MEETING

Marion Richards

The November meeting will be held Tuesday, November 10, 2020, at 7:30 pm. As in previous months, it will be via Zoom (online). The link will be available on the main page at psms.org.

Our speaker for November is Erica Cline, and the topic will be "Connections: How Mycorrhizal Fungi Weave Together and Protect Our Forests." The COVID-19 pandemic has triggered a radical restructuring of our lives. Amidst the disconnection of social distancing, we're reexamining what it means to be connected to our family, to our friends, to our community, and to our country. As we as a culture explore these new modes of connection (for example, by attending this virtual presentation!), Erica will guide you in exploring how mycorrhizal fungi also serve to connect forest trees into a dynamic ecosystem, with new emergent properties that could not be achieved by isolated individual trees.



Dr. Erica Cline

Dr. Cline is an associate professor at the University of Washington-Tacoma, where she works with undergraduate research students to study metals in mushrooms, the role of mycorrhizal fungi in revegetation of the Elwha dam restoration site, and the recolonization of pumice plains at Mt. St. Helens decades after the eruption, among other topics. She is also the director of the UWT ACCESS in STEM program and works toward broadening participation in sciences and mathematics.



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that information was posted on the PSMS website and that the links were functioning appropriately. After the show the videos were removed from public view. Some, as approved by presenters, will be made accessible for our members' enjoyment.

There will be no live meetings at CUH through the end of this year. The usual Holiday Extravaganza has also fallen victim to COVID. Marion Richards is working to provide a speaker for the December meeting. More classes are in the works for early 2021.

A change in the enrollment process was approved by the board. Some of the difficulty members had registering for the show, as well as for previous events and forays, stems from members checking "do not share my information." This creates extra work and sometimes extra costs. The PSMS Board values members' privacy and absolutely does not share our lists. We ask that renewing and enrolling members understand this is a volunteer organization and agree to share minimal information to event organizers.

PRESIDENT'S MESSAGE

Randy Richardson

This has indeed been a strange year. It has hurt our club in terms of both outreach and inclusion, as well as delivering us a noticeable financial hit. Things started to go awry in March, when we had to cancel our much-loved Survivor's Banquet, followed in quick order by cancellations of field trips, ID clinics, Mushroom Maynia, classes, and all in-person events like monthly meetings. I applaud our board and volunteers for moving us online, a learning curve for all of us. As was experienced with our recent first-ever all-virtual fall mushroom show, members have proven that we can still do something, both for the public and for our membership. A big hurrah for all those who helped put on a generally highly-appreciated and successful event. Monthly virtual speakers continue, as they have since spring.



Elsewhere we mention that we also added our first-ever virtual beginner classes. We have not yet found a good virtual substitute for field trips. And many of us are missing the in-person interactions of a normal year.

We are grateful to those who make it possible to have online connection and events, and we send our wishes for everyone to stay well, looking forward together to an easier time to join socially.

REPORT ON THE PSMS BEGINNER CLASSES OFFERED ONLINE

Wren Hudgins

Doing our best to adapt to the times and still offer PSMS members some value for their membership, the Education Committee managed to present two classes online this October. Each class had four sessions, and we experimented with format. One class ran four nights in a row while the following class ran twice a week for two weeks, also in the evenings. There was no discernible difference, as each class attracted a little over 40 students and no one was left on a waiting list. The class with four successive sessions did fill slightly faster. Some changes were necessary. We made minor alterations to the slide decks, but perhaps the biggest change was making videos to substitute for in-person demonstrations of cooking and assembling cultivation kits. We also added a video for fabric dyeing, which formerly only had a few slides and no demo.

As with any experiment, there seem to be advantages and disadvantages. Class session 4 focuses on mushroom hobbies and we have instructors who specialize in some of these topics, so we tend to rely on them every class. Having videos now may enable us to give them a rest or to present a class when they aren't available. Also, the virtual format will allow us to use instructors who might be out of town but still have an Internet connection and can be available to teach from an alternate location. Formerly, live classes were offered only during mushroom season so we could have live specimens to consider. The virtual format will allow classes at other times of the year.

But there are notable disadvantages as well. Interaction is always a challenge in virtual classes, and the back-and-forth flow of lecture and questions and answers in a live format remains vastly superior to entering questions via chat. Finally, one of the highlights of each live class has always been the chance for students to get

their hands dirty and actually make a mushroom cultivation kit. That lack is perhaps one of the biggest differences between virtual and live formats.

All things considered, however, the classes got excellent student reviews, and given that we aren't yet exiting this crisis, we may have to stick to the virtual format for a while. Still, it feels good to accomplish something, and we all need a sense of accomplishment right now.

A FUNGUS AMONG US: 8-YEAR-OLD MOLDY TWINKIE BECOMES REAL-LIFE SCIENCE EXPERIMENT

Kerry Breen
TODAY, Oct. 16, 2020

A mummified Twinkie has become tasty Twitter fare after a pair of scientists shared a detailed thread about their research onto the snack.



Matt Kasson

First reported by NPR, the snack experiment began on Oct. 8 after a man named Colin Purrington discovered an eight-year-old box of Twinkies in his basement. Purrington said on Twitter that some of the cakes in the box appeared untouched, one had clearly aged and appeared to have sucked in air from its packaging, and another had a brownish spot that looked like mold. Purrington said that he was sending the snack cakes off to a scientific lab for closer analysis.

For eight years, a box of Twinkies sat in Colin Purrington's basement until last week when he finally opened them. Varying levels of mold had developed on the snack cakes, and he eventually sent them to two West Virginia University scientists to study the kind of fungus growing on them.

That analysis process was detailed in a long thread written by Matt Kasson, Ph.D., an associate professor of forest pathology at West Virginia University in Morgantown. Kasson's research focuses on various types of fungi.

The thread started with a sample of the worst-looking cake. Kasson said that cake, which was gnarled and gray and barely resembled a Twinkie at all, was "challenging" to work with, but he and Brian Lovett, who also studies fungi at West Virginia University, were able to use a bone marrow biopsy tool to take a sample.

A second Twinkie, this one with just a slight growth on it, was also sampled. Kasson told NPR that from the second Twinkie, the pair was able to grow a species of mold called *Cladosporium*, which, Kasson says, is "one of the most common, airborne, indoor molds worldwide." However, the more mummified sample has yet to grow anything.

"It may be that we don't have any living spores despite this wonderful, rare event that we've witnessed," Lovett told NPR. "Spores certainly die, and depending on the fungus, they can die very quickly."

While the experiment may not have yielded any results or information about the malformed Twinkie, Kasson shared plenty of

8-Year-Old Twinkie, *cont. from page 3*

close-up photos on Twitter. In one picture, it appeared that the snack cake still had a slightly soft center.

In a video, Lovett and Kasson cut into the less-damaged Twinkie and found that the creamy interior was perfectly preserved.

TODAY Food reached out to Hostess for a comment about the phenomenon, but has not received a response.

LOST FORKS MUSHROOM PICKER FOUND

Michael Carman

Peninsula Daily News, Oct. 14, 2020

FORKS - A Forks woman who became lost in the woods near the Calawah River was rescued after her calls for help were reported to law enforcement.

The woman, whom Clallam County Sheriff's Office personnel declined to identify due to potential embarrassment, got lost while picking mushrooms Saturday evening north of Forks and didn't have a light or other survival supplies, said Sgt. John Keegan of the Clallam County Sheriff's Office.

"She had gone out earlier in the day, got stuck, wandered around, and found the river," Keegan said. "From the river, she could see lights from houses and she started to yell to try and get somebody to hear her."

The strategy worked. The woman was rescued early Sunday morning after the Sheriff's Office received a 9:30 pm Saturday call from a Riviera Drive residence reporting calls for help coming from the opposite side of the river.

A multi-agency response followed as a Forks Police Department officer staffed a position near the woman's location on the south side of the river, and a search team made up of members of the La Push Police Department, the Sheriff's Office, and the Clallam County Volunteer Search and Rescue Team began to clear a path to the woman.

A river-crossing rescue was ruled out due to darkness and river conditions after heavy rains.

"We tried to mitigate all the circumstances that would make the situation go from bad to worse, and it was easier to go into the woods to find her than to introduce water into the rescue. The Forks police officer on the other side could see and hear her at all times if conditions changed."

Due to the dense forest, the search team had to use machetes to clear a 1-mile-long trail to the woman. The search team made verbal contact with the woman around 2:10 am and located her about 10 minutes later.

After being provided with warm clothes, a blanket, and some warm liquids, the woman was transported to her vehicle parked near the 3000 block of Sitkum-Sol Duc Road.

Keegan said the incident was a good reminder to be more cautious when recreating in the wilderness.

THOSE FUNKY CHEESE SMELLS ALLOW MICROBES TO "TALK" TO AND FEED EACH OTHER

<https://www.eurekalert.org/>, Oct. 16, 2020

MEDFORD/SOMERVILLE, Mass. - Researchers at Tufts University have found that those distinctly funky smells from cheese are one way that fungi communicate with bacteria, and what they are saying has a lot to do with the delicious variety of flavors that cheese has to offer. The research team found that common bacteria essential to ripening cheese can sense and respond to compounds produced by fungi in the rind and released into the air, enhancing the growth of some species of bacteria over others. The composition of bacteria, yeast, and fungi that make up the cheese microbiome is critical to flavor and quality of the cheese, so figuring out how that can be controlled or modified adds science to the art of cheese making.



Adam Darour

Fungi and bacteria key to ripening cheese communicate with and feed each other using volatile compounds.

The discovery, published in *Environmental Microbiology*, also provides a model for the understanding and modification of other economically and clinically important microbiomes, such as [those] in soil or the gastrointestinal tract.

"Humans have appreciated the diverse aromas of cheeses for hundreds of years, but how these aromas impact the biology of the cheese microbiome had not been studied," said Benjamin Wolfe, professor of biology in the School of Arts and Science at Tufts University and corresponding author of the study. "Our latest findings show that cheese microbes can use these aromas to dramatically change their biology, and the findings' importance extends beyond cheese making to other fields as well."

Many microbes produce airborne chemical compounds called volatile organic compounds, or VOCs, as they interact with their environment. A widely recognized microbial VOC is geosmin, which is emitted by soil microbes and can often be smelled after a heavy rain in forests. As bacteria and fungi grow on ripening cheeses, they secrete enzymes that break down amino acids to produce acids, alcohols, aldehydes, amines, and various sulfur compounds, while other enzymes break down fatty acids to produce esters, methyl ketones, and secondary alcohols. All of those biological products contribute to the flavor and aroma of cheese and they are the reason why Camembert, Blue cheese, and Limburger have their signature smells.

The Tufts researchers found that VOCs don't just contribute to the sensory experience of cheese, but also provide a way for fungi to communicate with and "feed" bacteria in the cheese microbiome. By pairing 16 different common cheese bacteria with five common cheese rind fungi, the researchers found that the fungi caused responses in the bacteria ranging from strong stimulation to strong inhibition. One bacteria species, *Vibrio casei*, responded by growing rapidly in the presence of VOCs emitted by all five of the fungi. Other bacteria, such as *Psychrobacter*, only grew in response to one of the fungi (*Galactomyces*), and two common cheese bacteria decreased significantly in number when exposed to VOCs produced by *Galactomyces*.

The researchers found that the VOCs altered the expression of many genes in the bacteria, including genes that affect the way they metabolize nutrients. One metabolic mechanism that was enhanced, called the glyoxylate shunt, allows the bacteria to utilize more simple compounds as "food" when more complex sources such as glucose are unavailable. In effect, they enabled the bacteria to better "eat" some of the VOCs and use them as sources for energy and growth.

"The bacteria are able to actually eat what we perceive as smells," said Casey Cosetta, post-doctoral scholar in the department of biology at Tufts University and first author of the study. "That's important because the cheese itself provides little in the way of easily metabolized sugars such as glucose. With VOCs, the fungi are really providing a useful assist to the bacteria to help them thrive."

There are direct implications of this research for cheese producers around the world. When you walk into a cheese cave there are many VOCs released into the air as the cheeses age. These VOCs may impact how neighboring cheeses develop by promoting or inhibiting the growth of specific microbes, or by changing how the bacteria produce other biological products that add to the flavor. A better understanding of this process could enable cheese producers to manipulate the VOC environment to improve the quality and variety of flavors.

The implications of the research can even extend much further. "Now that we know that airborne chemicals can control the composition of microbiomes, we can start to think about how to control the composition of other microbiomes, for example in agriculture to improve soil quality and crop production and in medicine to help manage diseases affected by the hundreds of species of bacteria in the body," said Wolfe.

A PUDELPOINTER AND MUSHROOMS: A DIFFERENT PATH TO EARNING MUSHROOM OF THE WEEK

Dale Bowman

<https://chicago.suntimes.com/>, Oct. 14, 2020

Bodo, a mushroom-hunting Pudelpointer, helped Sean Porter to earn *Sun-Times* "Mushroom of the Week" honors. "He loves a good hike in the woods," Porter messaged.

That's something a little different. The American Kennel Club describes Pudelpointers, a cross between a poodle and a pointer, as "a calm, self-controlled, versatile gun dog with a distinct hunting instinct."

Normally, Mushroom of the Week, the celebration of mushrooms around Chicago outdoors, runs in the special two-page outdoors section in the *Sun-Times* Sports Saturday. But so many interesting submissions have been coming this fall that I added a special Wednesday edition, at least for this week or so.



Sean Porter

Bodo, the mushroom-hunting Pudelpointer, and his find.

PLANT ROOTS GROW TOWARD SOIL FUNGI

<https://www.miragenews.com/>, Oct. 14, 2020

Plant roots not only release odors themselves, but also appear to react to odors that beneficial and harmful fungi in the soil release. They do this by actively growing towards fungi or ignoring them. This "sense of smell" has a positive influence on the eventual health of the plant. Exposing plants to the right fungi could even offer protection against insect pests and worms that feed on plants and their roots. This is evident from Kay Moisan's PhD dissertation, which she will defend on Oct. 16, 2020.

Plant roots are fascinating organs because they are so essential to plant health. However, we do not yet know how they interact with soil microbes and which factors influence their growth. Recent studies have found that roots themselves perceive odors from soil microbes, which in turn can affect plant growth. For instance, odors that are released by bacteria and fungi can increase the branching and the size of plant roots. Therefore, perception of these odors can significantly affect plant growth.

Growth Direction



Roots were "given the choice" to grow toward or away from odors of four different soil fungi.

However, it is as yet surprisingly unknown whether microbial odors can also affect the direction in which plant roots grow. In her dissertation and the accompanying publication in *Plant, Cell and Environment*, Kay Moisan and her co-authors from the Netherlands Institute for Ecology (NIOO-KNAW) and the laboratory of Entomology of Wageningen University & Research (WUR) demonstrate that this is the case. It appears that plants perceive the odors produced by soil fungi and react to them before they come into contact with the fungi.

To demonstrate this, the researchers developed a unique test set-up in which they grew turnip rape (*Brassica rapa*) seedlings in soil and the roots were "given the choice" to grow toward or away from odors of four different soil fungi. The results showed that the roots ignored the odors emitted by certain fungi but were attracted to the odors emitted by other fungi. Interestingly, plants appeared to be particularly attracted to odors emitted by a harmful fungus.

Exposure of plant roots to these fungal odors influenced plant interactions with leaf-eating caterpillars and root-eating insects and nematodes (little worms), sometimes making plants less suitable food to these attackers.

Opportunities For Plant Protection And Growth Promotion

In the search for sustainable agricultural practices, odors from soil microbes are therefore promising candidates for plant protection and promotion. The findings also raise new follow-up questions about whether plants can actively "decide" what direction they grow and with which micro-organisms they should interact, or whether it is actually the fungus that attracts roots for its own benefit.

Plant Roots Grow Toward Fungi, cont. from page 5

New Research Method

Moreover, the design of the research is a proof-of-concept that roots do respond to microbial odors. “The research has provided a new method for studying the chemical interaction between roots and soil fungi, and its influence on root growth. This innovative set-up can also be used by other laboratories to further investigate these interactions,” says Moisan’s promoter Prof. Marcel Dicke.

THAI MUSHROOM HUNTER LOSES LEG IN LANDMINE EXPLOSION

Bangkok Post, Oct. 18, 2020

SI SA KET - A villager lost his right leg in a landmine explosion on the border with Cambodia in Kantharalak district on Sunday while foraging for mushrooms, a military source said.

The incident occurred at about 10 am while Thanat Khamphidchu, 25, from Moo 5 village in tambon Khanun and his relatives were picking mushrooms in a forest near the Thai-Cambodian border in tambon Sao Thong Chai.

Thanat accidentally stepped on a landmine, and the blast severed the lower part of his right leg.

Soldiers from the 12th Infantry Battalion of the Suranaree Force and rangers from the 23rd Ranger Regiment rushed to the spot on hearing the loud explosion.

They performed first aid treatment on Thanat to stop the bleeding before taking him to Kantharalak Hospital in an ambulance.

People living along the Thai-Cambodian border, particularly in an area near the Khao Phra Viharn ruins, have been warned by authorities to be extremely careful to avoid landmines missed by earlier mine-clearing operations. Warning signs have been erected in areas where previous explosions have taken place.

The areas bordering Thailand and Cambodia were battlefields between warring Khmer factions in the 1990s, when thousands of landmines were planted.

INFECTED BY A VIRUS, A KILLER FUNGUS TURNS INTO A FRIEND

Katherine J. Wu

<https://www.independent.co.uk/>, Oct. 7, 2020

When crops have nightmares, they dream of *Sclerotinia sclerotiorum*. The fungus, known by stomach-turning names such as “white mold” and “watery soft rot,” manifests as a cottony, cream-colored fuzz that attaches to stems, where it gouges wound-like lesions. Within days, the plant is dead.

“It really is a deadly fungus,” says Daohong Jiang, an agricultural microbiologist at Huazhong Agricultural University in Hubei, China.



Sclerotinia sclerotiorum.

Some 400 species of plants are thought to be susceptible to the pathogen, including soybeans, which fell in droves to the fungus in 2009, costing farmers \$560 million. The fungus also goes dormant in soil for years, seeding new infections that can raze entire fields of crops.

Jiang has spent 10 years hot on *Sclerotinia*’s trail in the hopes of bringing the blight to heel. He and his colleagues now think they’ve found an answer: a treatment that doesn’t just stop the fungus from killing but transforms it into a probiotic that can boost plant growth and enhance resilience to future disease. They reported their findings Sept. 29 in the journal *Molecular Plant*.

Their horticultural hero is a virus called SsHADV-1. Typically, it rides around on a fungus-munching insect called a mushroom fly. And it’s able to fully domesticate *Sclerotinia* over the course of a single encounter, turning a wolf into a watchdog.

“There have been some reports about how viruses are able to manipulate hosts, but this one is so unique,” says Aurelie Rakotondrafara, a plant pathologist at the University of Wisconsin, Madison, who was not involved in the study. “You can’t help but ask: “How is this possible?”

Jiang’s team first noticed the virus’s unusual sway over *Sclerotinia* over a decade ago when they discovered that rapeseed plants were able to coexist with virus-infected strains of the fungus, despite being felled in droves by their virus-free counterparts.

Their latest work showed that the virus hijacked its host’s cells on a global scale, controlling which genes the fungus shut on and off as it infiltrated rapeseed plants.

Virus-infected fungi, for instance, no longer flooded plants with tissue-macerating juices. And while they still forced their way into a host’s cells, the virus-infected fungi were far more gracious tenants and left the rapeseed mostly intact.

The virus had, in effect, compelled the fungus into sheathing its plant-impairing weapons, Rakotondrafara says: “A mean pathogen turned into a gentle microbe.”

COMPOUND FOUND IN MEDICINAL FUNGUS CAN "RAPIDLY" RESET THE BODY CLOCK

<https://www.inverse.com/>, Oct. 9, 2020

In the future, people getting ready for a flight—and fearing impending jet lag—might fit an assortment of additions into their carry on: masks, gloves, and maybe a medicinal mushroom hailed for delivering animalistic sex drive.

That’s because a new study suggests that a synthetic form of cordycepin, a compound found in a medicinal fungus with a reputation for keeping bedroom doors closed, may help ease the pain of jet lag.

Cordycepin is the active ingredient in a fungus called *Cordyceps militaris*. This fungus gets its sexy reputation because it’s similar to a rare fungus called *C. sinensis*, which is found protruding from the corpse of dead caterpillars high in the Tibetan Himalayas. The difference is that *C. militaris* is much cheaper and, in turn, much easier to get. (*C. sinensis* has memorably been described as “Himalayan Viagra” and sells for about \$35,000 per pound in China.)



Cordyceps militaris can be grown in the lab, though it differs slightly from the *Cordyceps sinensis* harvested from dead caterpillars in the Himalayas.

In this study, a synthetic form of cordycepin was evaluated to see if it could be curative for something else: jet lag.

The results were positive. In mice, scientists found that synthetic cordycepin drastically helped the animals adjust to time change. Normally when mice are exposed to an 8 hour time change—imagine flying from New York to Abu Dhabi—it would take them 10 days to adjust. The mice on cordycepin took only four days.

Erquan Zhang, the study’s senior author and an assistant investigator at The National Institute of Sciences Beijing, tells *Inverse* that these results suggest that cordycepin can help reset our circadian rhythm. That’s the cycle of hormone release that governs our sleep and wake cycles as well as other processes. It’s also known as the biological clock and the body clock.

“We want to let people know that drastic and quick changes for our body clock are possible,” Zhang says.

The study was published Wednesday in *Science Translational Medicine*.

“MOLDY MARY”: The American Who Enabled the Commercial Development of Penicillin

Risë Rafferty

The Spore Print, L.A. Myco. Soc., Oct. 2020

[abridged] Mary Hunt worked for the Department of Agriculture’s Northern Regional Research Laboratory (NRRL) in Peoria, Illinois, in the early 1940s. She had been assigned the task of grocery shopping for the lab with a shopping list that probably surprised the businesses she frequented. She scoured markets and shops looking for moldy fruits, vegetables, cheese, and bread. She was in search of a mold that would provide a strain of *Penicillium* that could be used to mass produce penicillin. She was nicknamed “Moldy Mary.”

Years before in 1928, a British laboratory scientist, by the name of Alexander Fleming, had returned from his vacation to find mold growing on one of his agar dishes. An obvious area surrounding the mold was clean of the staph bacteria that had been swathed on it. The mold had produced a substance that had killed the staph bacteria. Other British medical research scientists would later build on to his observations and experiment with the mold *Penicillium* in an effort to produce the first modern antibiotic medication.

Apparently, the “antibacterial effects of *Penicillium* molds had been known since the seventeenth century, but not to Fleming or any of his contemporary physicians. Ancient Egyptians, Chinese, and Central American Indians had all used molds to treat infected wounds.” With the threats of WWII howling like expectant coyotes in the not-far-off distance, the British scientists were eager to interest America in aiding them in the project of producing an antibiotic that could be used to save the lives of wounded soldiers. The NRRL had experimented with various molds, but they were either not the right strain or were not prolific. Hence, with the new enterprise before them, Mary was given the specific task of finding particular molds, in search of better-producing penicillin strains.

It ended up being a solitary cantaloupe that provided the fungus *Penicillium chrysogenum*, which yielded 200 times the amount of penicillin as the species that Fleming had discovered. After being enhanced with mutation-causing X-rays and filtration, the species yielded 1,000 times the amount of penicillin as the first batch from *Penicillium notatum*.

Penicillin began being produced in mass quantities, saving the lives of many toward the end of the war. That lowly, moldy cantaloupe provided a substance that would transform modern medicine. “All strains of penicillin today are descendants from that 1943 mold.”

WOMAN IS STUNNED TO SEE FUNGUS GROWING OUT OF HER FERTILIZER PARCEL AFTER FORGETTING IT FOR 11 DAYS

Billie Thomson

<https://www.dailymail.co.uk/>, Oct. 22, 2020



Ms. Dai holding her mushroom parcel.

A Chinese woman who forgot to open her parcel for a week and a half has been amazed to see mushrooms growing out of the it.

The woman, who had purchased the box of flower fertilizer online, thought the incident was “so rare” she eventually decided not to open the delivery.

Ms. Dai from southwestern China’s Sichuan Province joked that she could even cook a pot of delicious soup with the fungus sprouting from a corner of the package.

DRIED FUNGUS RECALLED

James Limbach

<https://www.consumeraffairs.com/>, Oct. 8, 2020

Wismettac Asian Foods of Santa Fe Springs, Calif., is recalling 5-lb packages of Shirakiku-brand imported Dried Fungus (also known as Black Fungus or Kikurage) because the product may be contaminated with *Salmonella*.

The recall applies to, item #60403 with UPC code 00074410604035.

The recalled product was sold to restaurants in Arkansas, California, Colorado, Connecticut, Delaware, Washington DC, Florida, Georgia, Hawaii, Iowa, Illinois, Indiana, Louisiana, Massachusetts, Maryland, Michigan, Minnesota, Missouri, Mississippi, North Carolina, Nevada, New Jersey, New York, Ohio, Oregon, Pennsylvania, South Carolina, Tennessee, Texas, Virginia, Washington, Wisconsin, and British Columbia in Canada.

Consumers with any questions may contact the company at recall@wismettacusa.com.



CRAB FLORENTINE

Wren Hudgins

The Puget Sound Mycological Society Cookbook, 2019©

Ingredients

- 4 TBs butter
- 4 TBs flour
- 1 cup milk
- 1/3 cup dry white wine or white vermouth
- 1 to 2 cloves garlic, minced
- Paprika
- 1 cup Gruyère cheese, grated
- 3 to 4 oz spinach or arugula
- 6 oz hedgehog, chanterelle, cauliflower, or porcini* mushrooms, sliced
- 2 shallots, chopped
- 4 TBs butter
- 6 oz Dungeness crab meat
- 1 lemon or lime



Instructions

1. To make the cheese sauce, melt the butter in a saucepan, add the flour, and then stir to make a roux. Add the milk and heat while stirring until thick. Add the white wine or vermouth, continuing to stir until mixed and hot. Stir in the garlic and paprika. Remove from heat and stir in the cheese.
2. Wilt the spinach or arugula in a glass bowl in a microwave, 1 minute per ounce. Divide in half and place in the bottom of two gratin dishes.
3. Sauté the mushrooms and shallots in the butter. Spoon evenly over the spinach or arugula.
4. Mound the crab over the mushrooms. Top with the cheese sauce and sprinkle with more paprika.
5. Bake in a 425°F oven until bubbling and lightly browned, perhaps 20 minutes.
6. Serve with a lemon wedge.

Serves 2

*Recipe on page 166 says *and*, not *or*. PSMS Cookbook owners, please make the correction.

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