

SPORE PRINTS

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INTRODUCING THE “TEXAS STAR,” THE NEW OFFICIAL TEXAS STATE FUNGUS

Camille Sauers

<https://www.mysanantonio.com/>, Aug. 5, 2021
via *The Spore Print*, L.A. Myco. Soc., Oct. 2021

The rare fungus can only be found in Texas and Japan.



Jared McRae/Mushroom Observer

Chorioactis geaster, the “Texas Star.”

The diffusion of *Chorioactis geaster*, more commonly known as the “Texas star,” tends to puzzle scientists. The fungus is entirely unique to Texas, with the exception of the odd sighting around Kyushu, Japan, making it one of the rarest mushrooms in the world.

To the delight of the local mushroom enthusiasts, on June 22, Gov. Abbott finally signed legislation declaring the mushroom as Texas’ first official state fungus.

For the regionally minded, the Texas Star mushroom is a bit of local flora that Texans can claim proudly (while tipping their hats toward the Western Pacific Ocean). The Central Texas Mycological Society, which seeks to “strengthen fungal understanding” is even working to raise enough money to slap its likeness on a license plate. I’m not in the business of trend forecasting, but you heard it here first: the Texas Star is shooting toward Texas bluebonnet status. Whether or not ritualistic family photos will ensue near damp mushroom enclaves is too soon to tell.

The fungus approaching fame is appropriately named for its leathery, star-like characteristics, visible only once it blooms. While otherwise absent across the world, the fungus is not entirely uncommon in Texas when the conditions are ripe. If you see a cluster of them pre-bloom, the bunch might cloak itself as the smoky, rolled offerings resting inside of your humidifier. This deception has earned it the seductive nickname, “the devil’s cigar.” It is said that when the devil’s cigar unfurls, it releases a strange hissing noise and hazy cloud of spores. If you take a mushroom walk through the Austin Nature Center on a damp December day, like Angel Schatz, a member of the Austin-based mycological organization often does, you might find yourself having a fungus run-in.

“It’s rare in that its only found in very geographic specific spaces, but in the correct season it can be found fairly easily,” Schatz says.



<https://blog.goo.ne.jp/>

FOODS THAT CLAIM TO HAVE “WILD MUSHROOMS” RARELY DO

Peer J Life & Environment, Aug. 2, 2021
via *The Spore Print*, L.A. Myco. Soc., Oct. 2021

A new study of 16 products whose label claims to contain wild mushrooms showed that nearly all consisted of cultivated species.

Harvesting wild mushrooms requires an expert eye to distinguish between the delicious and the inedible. Misidentification can have a range of consequences, from a disgusting taste and mild illness to organ failure and even death. Culinary wild mushrooms staples, such as truffles or porcini, require symbiotic relationships with specific plants in the ecosystem that make it impractical or impossible to produce them commercially. This means they can only be harvested from their natural habitat, which is why porcini and truffles are often so expensive. Many food producers opt for common fungi that can be cultivated easily and grown in large quantities, such as oyster, shiitake, and portobella mushrooms.

The United States has minimal regulations around the harvest and sale of wild fungi. Food products that tout “wild mushrooms” as ingredients are often vague and nonspecific, making it impossible to know if the products are truly wild or just cultivated varieties, or even if they contain poisonous mushrooms harmful to humans.

In a new study, researchers from the University of Utah and the Natural History Museum of Utah used DNA bar-coding techniques to test what mushroom species made up 16 food products that listed “wild mushrooms” on their labels. The authors sourced soups, dried mushrooms, powdered mushrooms, pasta sauces, and flavor enhancers from local grocery stores around Salt Lake City, Utah, and a large online retailer.

They found 28 species of mushrooms across all 16 food products. Almost all products that claimed to have wild mushrooms consisted of cultivated species, including oyster, shiitake, or portobello mushrooms. Only five products had contents that were accurately described on the label, and some included species that likely have yet to be described in academic literature. One packet of dried wild mushrooms from the online retailer contained a species from a group of fungi that includes the “Death Cap,” a notoriously poisonous mushroom known to cause renal failure in humans.

“If you looked at the reviews on this product, a surprising number of people wrote that the mushrooms ‘made me violently ill,’ or that they had ‘never been so sick in my life,’” said Daley Cutler, lead author of the paper and a recent biology graduate at the U. “No one is checking if the mushrooms are what the labels say they are.”

The authors contacted the online retailer to inform them of the potential dangers of the product. As of the paper’s publication,
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MEMBERSHIP MEETING

Tuesday, November 9, 2021, at 7:30 pm at the Center for Urban Horticulture, 3501 NE 41st Street, Seattle

In line with the mandates provided by the University of Washington and the State of Washington, masks will be required and, by vote of the PSMS Board, proof of vaccination will also be required. We hope that by next year we can include children under 12 again since PSMS has always been a family friendly organization.

This month we are planning on having two speakers. From 7:45–8:15 pm, Wren Hudgins will present a talk on “Guiding at PSMS Field Trips and Safety in the Woods.” From 8:20–9:20 pm, Shannon Adams will present “From Saucepan to Science! Take the Next Step on your Fungal Adventure.”

Guiding at PSMS Field Trips and Safety in the Woods

Wren Hudgins is a psychologist by profession and (amateur) mycologist by passion. He joined PSMS in 1974 and, apart from living in France and Switzerland for a few years, has been a club member ever since. Coming to his senses about 15 years ago, he moved from passive to active membership. He revived a tradition, which had died, of taking new members out on field trips in order to stay safe and learn habitat. Like most members at their entry into the mushroom world, his priority was eating. After a while, finding mushrooms became priority #1 and eating was relegated to #2. Finally, identifying has become #1 and eating is now down to third priority. He co-chairs the Field Trip Safety Committee, is a member of the Identification and Education committees, and won last year’s Golden Mushroom Award for service to the club. He will talk about field trips, field trip guiding, how to become a guide, and safety in the woods.



Wren Hudgins

From Saucepan to Science! Take the Next Step on your Fungal Adventure



Shannon Adams

New developments in citizen science make it easier than ever to make a lasting contribution to knowledge of our fungi. Shannon Adams will share her journey from learning to forage to an interest in taxonomy, steps which led her to describe a new mushroom species. Join her to find new ways to enjoy your mushroom hobby whether it is taking a few photographs to becoming the world expert in the mushrooms in your own backyard. In addition to her interest in fungi, Shannon’s background is in sociology, ethnography, and consulting, primarily in the tech sector. Currently, she is working as a UX Researcher at Facebook supporting product and marketing teams.

*There are mushrooms that are pretty;
There are mushrooms that are not.
There are mushrooms that smell gorgeous,
And some that stink a lot.
There are mushrooms that are commonplace,
And some that are incredible.
But the mushrooms that attract me most
Are the species labeled “edible.”*

— Don Goetz, *Spokane Mush. Club*

CALENDAR

- Nov. 9 Membership meeting, 7:30 pm, CUH
- Nov. 15 Virtual Board of Trustees meeting, 7:30 pm
- Dec. 14 Membership meeting, 7:30 pm, CUH

BOARD NEWS

Su Fenton

The October board meeting was full of excitement regarding the upcoming Fall Show on October 23rd and 24th at North Seattle Community College. We also heard the enthusiasm of those returning from another successful Ben Woo Foray on the foothills of Mt. Rainier. You might be surprised to learn that about two years ago, PSMS received a generous donation of approximately 8 acres in Grayland, WA. The Board convened a committee to explore the best use of the property. After months of careful deliberation and discussion, and with the Board’s approval, it was decided to sell the property. The sale was concluded at the end of the summer and now the Board is excited to have more funds to further support the mission of PSMS. Reminder: PSMS field trips are for members only!

PSYCHEDELIC MUSHROOMS: DENVER PANEL TO RELEASE REPORT, PUSH FOR FURTHER DECRIMINALIZATION

Micah Smith

<https://www.thedenverchannel.com/>, Oct. 14, 2021

DENVER - After nearly two years of studying the impact of psilocybin mushrooms on Denver's public health and safety, the City of Denver's Psilocybin Mushroom Review Panel is close to releasing its findings to the public.

"We've been meeting as a panel over the past 18 months," said Kevin Matthews, president of the review panel. "What we learned is that decriminalizing psilocybin has not created any significant public health or safety risk to the city."

Matthews said the panel plans to submit the comprehensive report to Denver City Council within the next few weeks. "We're going to ask the city to expand decriminalization in Denver to provide more civil liberties for residents," Matthews said.

When Denver voters passed the psilocybin decriminalization law in 2019, users could no longer be charged for possession, use, cultivation, or storage of psilocybin mushrooms. Also, police could no longer use city funds to arrest or prosecute users. The law also called for the creation of a panel.

"We're asking the city to decriminalize gifting and sharing of psilocybin mushrooms and also allow for communal use," Matthews said. Under Colorado state law, if someone is caught giving psilocybin mushrooms as a gift, they can be charged with felony distribution.

Matthews said further decriminalization could open the door to therapeutic uses.

"We're asking the city to consider what psilocybin therapy or psilocybin treatment could look like here in the city. I think the city of Denver really has incredible opportunity to continue to be a leader nationwide in terms of drug enforcement and also looking at how we can really start to address the mental and behavioral health issues that we're facing," Matthews said.



BEN WOO FORAY

Su Fenton

Those of you who were able to go found that there was quite a variety of fungi though it appeared to be a lesser year at first glance. James Nowak (affectionately known as "Animal") took the time to scope out the potential spots and draw maps and directions which helped our search enormously. The identifiers, the usual suspects, did a great job of clarifying what was found. The beautiful blue green *Clitocybe odora* var. *pacifica* was found by several people, a new one for me. The speakers were entertaining and informative, and the hall was packed with an appreciative audience. The workshops were filled to capacity and enjoyed by all. One attendee wrote to Randy that she appreciated the requirement of "proof of vaccination and use of masks, which [allowed her to feel] comfortable attending."

FOUND: WORLD RECORD PUFFBALL

Kathy Bradeanu

<https://www.worldrecordacademy.org/>, Oct. 12, 2021

Andrew Scott was visiting a friend in the Ottawa Valley over the weekend when he came across a giant puffball. It came in at a whopping 35.58 lb with a 78-in. circumference, which is a new world record for the largest puffball, according to the World Record Academy. The previous world record, according to the WRA, was 66.5 in. in circumference and was found in West Yorkshire, UK, by schoolboy Finley O'Neill.

Scott, who was visiting his friend's farm to help harvest alfalfa and straw, walked over to the area and quickly realized he had discovered the mother of all mushrooms.



Andrew Scott with giant puffball.

"I picked it on Sunday and we brought it home," he said. "I wasn't thinking of records when I picked it up, right? Because I had no clue," he said. "But everybody's telling me you better take that and get it measured and stuff like that," the *Orilia Matters* reports.

Calvatia gigantea, commonly known as the Giant Puffball, is commonly found in meadows, fields, and deciduous forests usually in late summer and autumn. It is found in temperate areas throughout the world.

Most grow to be 10 to 50 cm (4 to 20 in.), sometimes 90 cm (35 in.) in diameter, although occasionally some can reach diameters up to 150 cm (60 in.) and weights of 20 kg (44 lb).

The inside of mature giant puffballs is greenish brown, whereas the interior of immature puffballs is white. The large mushrooms are edible when young and white inside.

The fruiting body of a puffball mushroom will develop within the period of a few weeks and soon begin to decompose and rot, at which point it is dangerous to eat. Unlike most mushrooms, all the spores of the giant puffball are created inside the fruiting body; large specimens can easily contain several trillion spores. Spores are yellowish, smooth, and 3–5 µm in size.

A mushroom aficionado, Scott shared the harvest of his puffball bounty with 17 families, the *Orilia Matters* reports.

"They only last so long once they're harvested," he said, noting the wild delicacy can be made into a range of dishes, including mushroom steaks or fried in butter with garlic and Parmesan.

"Once you open it, it has a really strong mushroom smell. It makes for good eats."



FIELD TRIP REPORT, Sept. 25, 2021

Brian S. Luther

Our first field trip for fall 2021 was a great success. It had been nearly two years since our last field trip because of Covid-19. Ninety-seven people signed in; 45 of those were brand new members, which might be a record for new members attending. The weather could not have been more pleasant—warm and sunny, with no wind.

Our morning hosts were Carolina Kohler & Jamie Rumbaugh, and they set out a wonderful assortment of breakfast snacks and made lots of fresh hot coffee. Special thanks, Jamie and Carolina, as always!

Seven field trip guides volunteered: Randy Richardson, Alyssa (Al) Philipps, Wren Hudgins, Andrew White, Dan Paull, Joe Zapotosky, and Dave Weber. Thank you, guides, for doing a great job of helping our new members! It had rained only very recently in that neck of the woods, so the conditions were moist with few fungi fruiting. Nonetheless a lot of members found chanterelles, many being in pretty good condition, others not. Concerning other edible fungi, a few small collections of Angel Wings (*Pleurocybella porrigens*) and Cauliflower mushrooms (*Sparassis crispa*) also came in. I worked with members showing them how to identify and cull or cut out the bad spots of their chanterelles. I counted about 50 different species of fungi displayed on the picnic tables, with nothing out of the ordinary being found. Everybody seemed to have a really good time.

We had to cancel all of our fall potlucks for pandemic safety reasons, but I'm hopeful we can get back into our normal field trip routine with the spring 2022 field trips.



Joe Zapotosky

Morning meeting at the Sept. 25 field trip.

FIELD TRIP REPORT, Oct. 2

Brian S. Luther

We had a great turnout at this location, with 118 people signing in and 47 brand new members who were on their first field trip. It was also a pleasant day, but mostly overcast. The crystal clear creek was loaded with spawning salmon. As soon as I arrived I got a fire going in the outside fire pit, which seemed to be a popular spot in the cool morning.

Hosting Committee Co-Chair Debbie Johnson gave us a great selection of breakfast snacks and hot coffee to start the day off right. Special thanks, Debbie, for your good work. Thanks also to field trip guides Joe Zapotosky, Paul Hill, Alyssa (Al) Phillipps, Julia Benson, Dave Weber, and Wren Hudgins, who lead out a full complement of members.

I counted around 100 different species displayed on the ID tables. As far as edibles found, we had Yellow Chanterelles (*Cantharellus formosus*), White Chanterelles (*C. subalbidus*), a Red Cap Bolete (*Leccinum* sp.), *Boletus fibrillosus* (related to *B. edulis*), Angel Wings (*Pleurocybella porrigens*), a few Oyster mushrooms (*Pleurotus ostreatus* or related species), and some fine collections

of Cauliflower mushroom (*Sparassis crispa*). Interesting or unusual fungi found included *Lepiota acutesquamosa*, *Tricholoma subsejunctum*, and the little, but strongly garlic-scented species *Mycetinis (Marasmius) applanatipes*. The prettiest little mushroom had to be *Atheniella* (formerly *Mycena*) *aurantioidisca*, with its small conical orange and yellow caps.



Brian S. Luther

PSMS Member Laurentiu Dusciuc with the fabulous Cauliflower Mushroom he found on the Oct. 2 field trip.

We got the tables all cleaned off and put back inside the shelter around 4:00 pm, then everyone headed home.

FIELD TRIP REPORT, Oct. 8–10

Brian S. Luther

Wren Hudgins came over early Friday, and we then took my USFS shortcut roads over the mountains to the Entiat River Road. Once at the campsite, we drove up the road several miles and cut a load of firewood. Several members began arriving later on Friday afternoon and evening and set up their tents, with some coming late at night in the dark. The weather predictions were for nice conditions on Friday and Saturday, but rain was supposed to come in Saturday night. Fortunately, that never happened so we had very pleasant conditions for the entire weekend.

Forty-six members signed in, with eight being on their first PSMS field trip. Unfortunately, when we arrived we discovered that the water pump was not working, and those in the regular campground nearby were locked. Our intrepid hosts Dave & Wuqi Weber had to go back nearly 20 miles to a local store to buy enough water for the weekend. Everyone really enjoyed the fantastic Saturday breakfast snack spread they put out. Dave said they made and went through 4½ gallons of hot coffee on Saturday morning! Thanks, Wuqi & Dave, for going “above and beyond”—a great job, as usual!



Wren Hudgins

Brian doing a table tour identifying mushrooms on the October 8-10 field trip.

The field trip guides included Wren Hudgins, Julia Benson, and Dave Weber. Thanks for the good work. They went out a couple of times, and almost everyone found very meaty White Chanterelles (*Cantharellus subalbidus*) and/or Bear's Head (*Hericium abietis*), as well as some *Hypsizygus tessellatus*. I counted 77 different species. Some of the more interesting fungi collected included the polypores *Climacocystis borealis*, with

large white, spongy fruiting bodies, and *Ischnoderma benzoinum*, with overlapping dark wrinkled-brown pilei and a strong anise-like fragrance. Another fragrant mushroom collected was *Rhodocollybia oregonensis*, which has an odor of bitter almond. The rare

fungus *Pluteus umbrosus* was also found, which has a beautiful dark brown, radially wrinkled cap with a granular covering.

After the groups went out Saturday morning, Ben Moore helped me cut and fetch another big load of firewood for the campfire. We really needed it, because it was cold at night, and we kept the fire roaring constantly during the day and evening. Thanks, as always, Ben.

I had never previously stayed overnight at this location, but spent both Friday and Saturday nights sleeping in my RAV4 with a new



Night time camp fire, Oct. 9 field trip.

4-in. memory foam as padding.

Everyone helped clean up the group camp Sunday morning, and we were out of there by noon.

All in all, it was a wonderful weekend with many happy members.

FIELD TRIP REPORT, Oct. 16

Brian S. Luther

We had a fantastic day at this location—good weather conditions along with 94 members signing in, 12 of which were on their very first PSMS field trip. I arrived at 7:20 am and got a fire going in the shelter fireplace. Thanks to our hosts, Paolo Assandri & his wife, Masaki Jo, we were treated to delicious breakfast snacks and hot coffee first thing, which got us all ready and eager for going into the woods. Thanks, Masaki & Paolo!

At 9:00 am Dave Weber and I had our usual morning meeting with the group. There were no field trip guides for this outing, unfortunately. Nonetheless most everyone found some Yellow Chanterelles (*Cantharellus formosus*), a few White Chanterelles (*Cantharellus subalbidus*), Bear's Heads (*Hericium abietis*), Cauliflower mushrooms (*Sparassis crispa*), and Angel Wings (*Pleurocybella porrigens*), along with the largest Veiled Oyster mushroom (*Pleurotus dryinus*) I'd ever seen. It was over a foot in diameter and was found by Debbie Johnson. Several different color forms of the Woodland Russula (*R. xerampelina*) were brought in, allowing me to discuss the characters of this fungus to the group.

I counted 121 different species displayed on the shelter ledges and picnic tables, and I spent most all of the day identifying member's collections. Tony Tschanz found a huge specimen of the polypore *Bondarzewia mesenterica*. Especially beautiful species included *Pholiota flammans*, *Pyrrhulomyces* (formerly *Pholiota*)



Carolina Kohle

Picnic tables covered with mushrooms at the Oct 16 field trip.

astragalina, *Atheniella (Mycena) adonis*, *Mycena strobilinoides*, and *Hygrocybe singeri*.

Several members stayed to help get the shelter cleaned up and swept out by 4:30 pm Then we all headed home after a very fine day.

CANCER DRUG DERIVED FROM HIMALAYAN CATERPILLAR FUNGUS SMASHES EARLY CLINICAL TRIAL

Peter Dockrill

<https://www.sciencealert.com/>, Oct. 12 2021

A new kind of chemotherapy derived from a molecule found in a Himalayan fungus has been revealed as a potent anti-cancer agent, and may in the future provide a new treatment option for patients with cancer.

NUC-7738, synthesized by researchers at the University of Oxford in partnership with UK-based biopharmaceutical company Nu-Cana, is still in the experimental testing stages and isn't available as an anti-cancer medication yet—but newly reported clinical trial results bode well for the drug candidate.

The active ingredient in NUC-7738 is called cordycepin, which was first found in the parasitic fungus species *Ophiocordyceps sinensis* (also known as caterpillar fungus because it kills and mummifies moth larva), used as a herbal remedy in traditional Chinese medicine for centuries.

Cordycepin, also known as 3'-deoxyadenosine (or 3'-dA), is a naturally occurring nucleoside analogue, reported to offer a range of anti-cancer, anti-oxidant, and anti-inflammatory effects, which goes some way to explaining why the fungus is sometimes called the world's most valuable parasite.

Naturally occurring cordycepin extracted from *O. sinensis* does have its drawbacks, however, including that it is broken down quickly in the bloodstream—with a half-life of 1.6 minutes in plasma—by the enzyme adenosine deaminase, or ADA. It also shows poor uptake into cells, meaning the molecule's actual potency against tumor cells in the body is greatly diminished.



Igor Chius / Getty Images

Sinensis growing out of a caterpillar.

To amplify cordycepin's potential as an anti-cancer agent, NUC-7738 makes use of a number of engineered advantages, allowing it to enter cells independently of nucleoside transporters, such as Human Equilibrative Nucleoside Transporter 1 (hENT1).

Unlike naturally occurring cordycepin, NUC-7738 doesn't rely on hENT1 to gain access to cells, and other tweaks to the molecule mean it's pre-activated (bypassing the need for the enzyme adenosine kinase), and is also resistant to breaking down in the bloodstream, with built-in protection against ADA.

According to a new study on NUC-7738, these changes make the drug candidate's anti-cancer properties up to 40 times more potent than cordycepin when tested against a range of human cancer cell lines.

cont. on page 6

Cancer Drug Smashes Early Trials, *cont from page 5*

Moreover, early results from the first in-human clinical trial of NUC-7738 appear to be positive so far too. The Phase 1 trial, which began in 2019 and is still ongoing, has so far involved 28 patients with advanced tumors that were resistant to conventional treatment.

So far, weekly escalating doses of NUC-7738 given to this cohort have been tolerated well by the patients, who have shown “encouraging signals of anti-tumor activity and prolonged disease stabilization,” the researchers report in their paper.

“These findings provide proof of concept that NUC-7738 overcomes the cancer resistance mechanisms that limit the activity of 3’-dA and support the further clinical evaluation of NUC-7738 as a novel cancer treatment.”

While it’s certainly a promising start, it will still be some time before NUC-7738 becomes available to patients outside the trial.

Planning is currently under way for Phase 2 of the trial, once the safety of the drug has been more thoroughly demonstrated, and once the recommended regimen for Phase 2 patients has been identified.

The findings are reported in *Clinical Cancer Research*

RESEARCHERS IDENTIFY PROTECTIVE ROLE OF CELLS IN OVERWINTERING FUNGI

<https://www.sciencedaily.com/>, Oct. 12, 2021

A study suggests that cells involved in the sexual development of Aspergillus fungi also play a role in producing chemicals that deter hungry predators.

Scientists have discovered a new role for cells that are known to nurture the overwintering reproductive structures in a type of fungus, according to a study published today in *eLife*.

The findings suggest that Hülle cells in the fungus *Aspergillus nidulans* (*A. nidulans*) also play a key part in its chemical defense strategies to ward off hungry predators.

“As immobile organisms, fungi can’t run away from attacking predators or organisms such as bacteria that compete with them for resources, so they turn instead to chemical defense strategies by producing protective compounds called secondary metabolites,” explains first author Li Liu, a Ph.D. student at the University of Göttingen, Germany. “In our study, we wanted to investigate where the proteins that assist the production of these compounds are located in *A. nidulans*.”

The team found that the proteins behind the production of secondary metabolites are concentrated heavily within the fungus’ Hülle cells. The production of these defensive chemicals ramps up as the fungus’ fruiting structures develop, aided by the Hülle cells.

They then showed that a regulator called the “velvet complex” controls the pathway for the production of these defense chemicals. Without this regulator, the fungi are unable to make them. When the production of the chemicals is interrupted, intermediate compounds build up within the Hülle cells that impair the growth of the fungus’ fruiting structures.

Finally, the team exposed the fungus to tiny arthropod predators, including woodlice. They found that the predators avoid eating the

reproductive parts of the fungus that produce defensive chemicals, but they will gobble up the reproductive parts that lack them. “The chemicals are not toxic to the predators—they simply make the fungus and their reproductive parts unappealing to them,” says co-senior author Jennifer Gerke, a postdoctoral researcher at the University of Göttingen.

“Together, our experiments highlight a previously unknown role for Hülle cells in protecting *A. nidulans* from predators,” concludes senior author Gerhard Braus, Professor of Microbiology and Genetics at the University of Göttingen. “We’ve shown how the cells accumulate deterrent chemicals that protect the fungus’ reproductive structures from predators, ensuring its long-term survival. The work provides new insight on both the ecology of *A. nidulans* fungi and the ecological functions and impact of the secondary metabolites they produce to defend themselves.”

PEOPLE WHO’VE TRIED PSYCHEDELICS HAVE LOWER RISK OF HEART DISEASE AND DIABETES

Tibi Puiu

<https://www.zmescience.com/>, Oct. 12, 2021

What’s the connection between psychedelics such as “magic mushrooms” and heart disease? It’s probably not what you think. Unlike [the case with] drugs of abuse such as cocaine or alcohol, individuals who’ve used psychedelics at least once in their lifetime have been associated with a lower incidence of heart disease and diabetes, according to a new study.



Wikimedia Commons

Psilocybe semilanceata.

Psychedelics likely have no biological influence on heart health, but researcher Otto Simonsson of the University of Oxford, who was in charge of the study, believes the results are owed to the fact that psychedelic experiences are often accompanied by dramatic changes in lifestyle. These may include spontaneously deciding to live a healthier life by taking up exercise or quitting alcohol and smoking.

“In our previous research, we have found associations between lifetime classic psychedelic use and lower odds of being overweight or obese as well as lower odds of having hypertension in the past year, both of which are risk factors of cardiometabolic disease,” Simonsson told *PsyPost*. “We therefore wanted to look specifically at the link between lifetime classic psychedelic use and cardiometabolic diseases such as diabetes and heart disease.”

Psilocybin (the active psychoactive ingredient in magic mushrooms) and DMT activate serotonin receptors, potentially acting as appetite suppressors and reducing cravings. Ultimately, this may lead to weight loss and a reduced incidence of obesity, a huge risk factor for both cardiovascular disease and diabetes.

Simonsson mentions in the study that psychedelics can improve mental health conditions associated with cardiometabolic diseases indirectly. By reducing anxiety and improving the odds of curbing addiction, psychedelics may reduce heart disease through behavioral change.

For their study, the researchers analyzed data pertaining to more than 375,000 Americans who participated in the National Sur-

vey on Drug Use and Health. Among the questions they had to answer, the participants had to anonymously indicate whether or not they've ever tried PSD, DMT, ayahuasca, peyote, San Pedro, or any kind of psychedelic drug. Additionally, the participants reported their history of heart disease and diabetes in the past year, which the researchers employed to trace any link between the two factors.

According to the results, among those who used psychedelic substances, 2.3 percent reported heart disease and 3.95 percent said they were diagnosed with diabetes. In contrast, those who never used a psychedelic drug had a 4.5 percent incidence of heart disease and 7.7 percent of them had diabetes. The differences are nearly double in both instances.

"The results of this national survey-based study showed that lifetime classic psychedelic use was associated with both lower odds of heart disease in the past year and lower odds of diabetes in the past year, which indicates that classic psychedelic use might be beneficial for cardiometabolic health. The findings are novel and build on previous findings on the associations between lifetime classic psychedelic use and various markers of physical health, but there are several limitations inherent in the study design that merit consideration," the authors wrote in the journal *Nature*.

FUNGI CRAVE FATS AND PLANTS ENTICE THEM WITH IT

Britt Bunyard

"Editor's Picks," *FUNGI*, 14(4), Fall 2021

The study of mycorrhizal relationships (those symbioses involving fungi and plant roots) has been a hot area of research over the past few decades. One of the most exciting realizations to come from this work is that fungi facilitated the move by plants from an aquatic (marine) habitat onto dry land. The migration of plants started somewhere around 450 million years ago and required plants to acquire a number of crucial new traits. Fossil records provide compelling evidence that one of these traits was the mutualistic symbiosis between these early land plants and arbuscular mycorrhizal (AM) fungi. But how was it that fungi were enticed into the partnership in the first place?

In a recent paper, Rich et al. (*Science*, 372(864), 2021) show that the primitive land plant *Marchantia paleacea* produces lipids that are transferred to the fungus and that this process is essential for a functional symbiosis. Higher plants also produce lipids that have a role in symbiosis with AM fungi. Algae, however, do not, suggesting that this process evolved 450 million years ago, allowing plants to colonize land, and is conserved across the plant kingdom.

The symbiosis of plants with AM fungi is so crucial for plant growth on land that about 80 percent of land plants engage in it. The plant allows AM fungi to enter its roots and form nutrient exchange structures called arbuscules in its cells. Outside the root, the fungal hyphae grow into the soil, up to 30 cm from the plant root, where they can take up water, phosphorus, nitrogen, and other elements that the plant cannot reach. For a long time, it was assumed that plants, in return for the resources supplied by the fungus, provided carbohydrates from photosynthesis to the fungus. Only recently, it was discovered that in addition to carbohydrates, plants also supply lipids to the fungus.

"Wild" Mushrooms Rarely Are, *cont. from page 1*

the dried mushrooms were still for sale. The mislabeling across the wide range of products could be due of fraud, negligence, or just a lack of awareness.

"There's an ignorance about mushrooms in general—in food products, museum collections, the definition for wild mushrooms are all over the place," said Alexander Bradshaw, co-author of the study and doctoral student at the U. "One package of dried mushrooms said it contained porcini, defined by a characteristic spongy texture underneath the cap. Just by looking at it, we knew it was untrue—the mushrooms had gills underneath their caps. It seems like if you can dry it down, you can just slap a porcini label on it."

The authors say their results are inevitable partly because policies that regulate the international food supply chain vary wildly. Some parts of Europe require a license to collect edible wild mushrooms, but the guidelines differ between countries. In the U.S., state governments are responsible for regulating commercial wild mushrooms sales, but only 31 states have any regulations at all, according to a National Survey of State Regulation of Wild Mushroom Foraging for Retail Sale.

Another reason for inconsistencies is because the field of mycology is vastly understudied.

"About 95 percent of fungal species on Earth are undescribed. Fungi are so poorly documented, how do you regulate something that is virtually unknown?" said Bryn Dentinger, senior author of the paper, curator of mycology at the Natural History Museum of Utah and associate professor of biology at the University of Utah. "This puts human health at risk, but it also puts our ecosystems at risk. Around the world, unsustainable harvesting practices could put rare and threatened species at risk of extinction."

There are still safe ways to enjoy wild mushrooms, the researchers say. Just know whom you're buying from. "I don't want people to read this and be scared to eat porcini and other wild edible mushrooms; they are delicious," said Dalley. "This study looked only at packaged products, not locally harvested wild mushrooms. I would encourage people that enjoy porcini and other wild edibles to only purchase from local sellers that are qualified in the identification of wild mushrooms."

GE GADGET LETS YOU GROW MUSHROOMS ON YOUR COUNTERTOP

Shea Van Hoy

<https://www.bizjournals.com/>, Oct. 21, 2021



The Mella, the "Smart Mushroom Fruiting Chamber."

FirstBuild, the global co-creation community and innovation lab for GE Appliances, announced the launch of Mella, the "Smart Mushroom Fruiting Chamber."

According to the release, Mella is the first countertop appliance made for growing edible gourmet mushrooms at home and automates the process for consistent results every time. The device creates the ideal environment for a variety of gourmet mushrooms

cont. on page 8

Countertop Mushroom Dryer, *cont. from page 7*

by automating humidity and providing airflow, making the process easy for beginners to mycelium masters and unearths a world of mushroom cultivation possibilities.

It is available for presale now with early-bird pricing starting at \$349 and is expected to begin shipping to backers in spring 2022.

HERB AND GARLIC MUSHROOMS

<https://lexiscleankitchen.com/>

These ultimate herb and garlic mushrooms are packed with umami flavor, are quick to make, and packed with fresh herbs. Serve them at your next Thanksgiving or dinner party and everyone will rave about them!



Ingredients

1 TBs olive oil	1 TBs butter
1 shallot, finely diced	16 oz. mushrooms (see note), cleaned & quartered
1 tsp salt	½ tsp black pepper
4 garlic cloves, minced finely	1 TBs water
1 TBs balsamic vinegar	2 TBs parsley, chopped finely
1 TBs chives, chopped finely	
1 TBs thyme, picked off stem	

Directions



Heat oil and butter in a large sauté pan over medium-low heat. Once hot add shallots, cook until softened, 3–5 minutes.

Increase heat to medium and add mushrooms, salt, and pepper. Cook until beginning to brown, about 5 minutes.

Add garlic, cook for 30 seconds. Add water, balsamic vinegar, and herbs and cook until syrupy, about 2 minutes.

Serve warm.

Serves 4–6 as a side dish

Note: Literally any herbs that you like will work here! We loved the combination of parsley, chives, and thyme, but feel free to use whatever extra herbs you have on hand.

Use any type of small mushroom, like Cremini, Baby Bella, or Button.

Nutrition

Serving Size ¼ recipe • calories 89 • calories from fat • 54 • total fat 6 g • saturated fat 2 g • cholesterol 8 mg • sodium 610 mg • carbohydrate 5.7 g • dietary fiber 1.8 g • sugars 2 g • protein 4 g



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