

Spore-Addict Times



MONTHLY MEETING

WHEN? Monday, May 23, 2016 - The 4th Monday of the month.

WHAT TIME? 6:00 pm; The meeting will come to order at 6:30 pm

WHERE? Penrose Library - Carnegie Reading Room,
[20 N. Cascade Ave, Colorado Springs, CO 80903](https://www.pikespeakmushrooms.org)

Website: www.pikespeakmushrooms.org

Contact: PPMsMail@gmail.com

PROGRAM

Hands-on Mushroom ID Workshop using Kit Scates' Easy Guide to Gilled Mushrooms and other field guides.

Members please bring your field guides and fresh specimens you would like to identify.

2016 Dues are Due!

2016 Dues are \$25 for email newsletters. As a result of the rising cost of printing and mailing, the dues for print editions have been increased to \$40.

Please send your payment by July 15th to:

Warren Williams

5131 N Mesa Drive

Castle Rock, CO 80108

Foray Coordinator Needed!

We are in need of a Foray Coordinator this season! If you enjoy participating in our forays and are good at disseminating information, this job is for YOU!

No mycological experience necessary.

Please contact [Hoa Pham](mailto:Hoam@ppms.org) for more information.

April's Meeting Minutes

Notes taken by PPMS Secretary, Tina Renshaw

Meeting came to order at 6:45pm at Penrose Library.

Topic: **The Forgotten Kingdom**, presented by Mike Essam, a general review of all the anatomy parts of a mushroom we must look at to ascertain its identity.

Bring mushrooms that you find to all the meetings so we can help identify them.

May's meeting will be a hands-on mushroom ID workshop.

No charge for Denver club (CMS) meeting. Just go through the gate and tell them you are there for the mushroom meeting.

Note that not every edible mushroom is edible for every person. "When in doubt throw it out."

We need a foray coordinator this summer. The foray coordinator sends out foray notifications and over sees the foray leader, they do not necessarily have to lead the forays. Foray leaders are anyone familiar with the terrain of the foray location and/or can assist in identifying specimens.

Celebration of Life Foray along Cottonwood Pass June 17th-20th in memory of Lee Barzee, founder of PPMS in 1974.

Buena Vista is the nearest town, Cottonwood Lake is the general area.

Brian is renting 2 houses one for the CMS group (including Vera & Cathy Cripps) and one for interested PPMS members. Link to RSVP and sign up for June Foray is in the April newsletter an email with RSVP link will also be sent

We have a closed Facebook group for current members.

<https://www.facebook.com/groups/PikesPeakMyco/>

Pat Gustavson brought in a new mushroom that was found on scrub oak. Scientist just found out that *Lentinus strigosus*/[Panus rudis](https://www.pikespeakmushrooms.org) as is critical for treatment of Chagas disease.

Please Update Your Contact Info

Have you noticed you haven't received any PPMS news, even after checking your SPAM folder and filter settings?

Maybe you moved, changed your phone number or email address this past year?

To ensure you don't miss out on any news and events from PPMS, please verify your contact information (email, phone number, address) with Warren Williams at our general meeting or email christaharp@gmail.com.

Scientists find antibiotic-like substance in mushroom that grows on horse dung

By MIHAI ANDREI

You just have to applaud the researcher that study mushrooms growing on horse dung to see what medicinal properties they have. Microbiologists molecular biologists at ETH Zurich and the University of Bonn have discovered a new agent in fungi that kills bacteria. The substance they found in the mushroom is called copsin.

Copsin has a similar effect to antibiotics, but belongs to a different class of biochemicals – it is a protein, whereas antibiotics are generally non-organic compounds.

"Fungi and bacteria compete with an arsenal of secreted molecules for their ecological niche. This repertoire represents a rich and inexhaustible source for antibiotics and fungicides. Antimicrobial peptides are an emerging class of fungal defense molecules that are promising candidates for pharmaceutical applications.", researchers explain in the study.

Coprinopsis cinerea is a common species of mushroom; you've probably seen it yourself, especially if you spent time on farmlands or in the mountains. But it's quite an interesting species as well; its genome was sequenced in 2010, and biologists consider it an important model organism for studying fungal sex and mating types, mushroom development, and the evolution of multicellularity of fungi.

When they initially started their research, scientists wanted to see how the fungus and different bacteria interact and affect each other's growth, but they quickly found that the fungus kills off certain kinds of bacteria. Further research indicated that it is the copsin in the mushrooms which kills the bacteria, and the research took a different turn.

Copsin is a defensin, a class of small proteins produced by many organisms to combat microorganisms that cause disease. While its clear that the substance does have antibacterial properties, it's not clear if it will be incorporated in an antibiotic any time soon. Markus Aebi, Professor of Mycology and the team's leader said:

"Whether copsin will one day be used as an antibiotic in medicine remains to be seen. This is by no means certain, but it cannot be ruled out either," he says.



The scientists isolated the new active compound from the grey shag that grows on horse dung. (Photo: Tim Melling)

For him, copsin raises other intriguing questions. For starters, why is it that fungus have been using copsin successfully against bacteria for millions of years, while human-used antibiotics have already led to resistant germs in a few decades? What makes copsin different to current antibiotics? The questions are highly challenging.

"Fungi have internal instructions on how to use these substances without resulting in selection of resistant bacteria. How to decode these instructions is an intriguing problem for basic research," explains Aebi.

Andreas Essig, a postdoc in Aebi's group and lead author of the study is more interested in the potential medicinal use of the substance. He has already registered potential applications of copsin for patent approval.

"Copsin is an exceptionally stable protein," says Essig. Proteins are generally susceptible to protein-degrading enzymes and high temperatures. Copsin is an exception because it also remains stable when heated to a temperature of 100 degrees Celsius for several hours or when subjected to protein-degrading enzymes.

Researchers believe that it's the protein's remarkable 3D structure that gives it such a great resistance. In addition to its potential use as an antibiotic, copsin might also be used in the food industry, because it kills many pathogens including *Listeria*, a type of bacteria that can cause severe food poisoning, especially in raw milk cheeses

and dried meats.

Journal Reference: Andreas Essig, Daniela Hofmann, Daniela Münch, Savitha Gayathri, Markus Künzler, Pauli T. Kallio, Hans-Georg Sahl, Gerhard Wider, Tanja Schneider and Markus Aebi. (2014). Copsin, a novel peptide-based fungal antibiotic interfering with the peptidoglycan synthesis. *The Journal of Biological Chemistry* doi: [10.1074/jbc.M114.599878](https://doi.org/10.1074/jbc.M114.599878)



King Oyster Mushroom and Kai-Lan in Oyster Sauce

Ingredients: (serves 3-4 as a side dish):

- 3 large King Oyster mushroom, sliced
- 4-5 dried Shitake mushrooms
- 8 oz kai-lan (Chinese broccoli)
- 1 clove garlic, minced
- 1/2 cup water or chicken stock
- 1/2 cup mushroom soaking water
- 1 tbsp oil for cooking
- 2 tbsp oyster sauce
- 1/2 tsp sugar
- 1/4 tsp sesame oil
- 1 tbsp cornstarch mixed with 2 tbsp water

1. Soak the dried shitake mushrooms in warm water for 20-30 minutes until soft. Remove and gently squeeze out excess water. Cut off the hard stalks and discard. You can either slice the shitake in half or leave whole. Reserve 1/2 cup of the mushroom soaking liquid, discarding the gritty bits at the bottom.
2. Wash and separate the leaves of kai-lan. Cut in half if the stalks are long. Blanch the vegetables in a pan of boiling water for about 3-4 minutes. Drain and arrange on a plate.

3. Heat some oil in a large pan or wok. Over medium heat, stir fry the garlic for about 30 seconds until fragrant, and then add the shitake and king oyster mushrooms. Stir fry the mushrooms for a couple of minutes.
4. Add the stock and mushroom soaking water (use 1 cup water/stock if not using the mushroom soaking liquid) to the wok. Add the oyster sauce and sesame oil and mix well. Turn the heat right down and simmer the mixture for 5 minutes, allowing the mushrooms to soak up the liquid and flavors. Remove the mushrooms and lay them out on top of the vegetables.
5. Bring the liquid back to boil and add the cornstarch mixture. Simmer until the sauce thickens. Pour the sauce over the mushrooms and kai-lan and serve.

Notes:

To make this dish completely vegan, use vegetable broth and vegetarian oyster sauce.

Bok choy, regular broccoli, or even kale can be used in place of the kai-lan (Chinese broccoli).

Wild oyster mushrooms work well in this recipe also!



Pleurotus populinus

(Photo: Hoa Pham)

Call for Newsletter Articles

Yes, every year we put this in the newsletter. If you find an article about mushrooms that you think would be of interest to the PPMS membership, please send it (or the link) to PPMSmail@gmail.com. Or you can write your own article and send it in as well. You can also send a mushroom photo that you have identified and we will try to find a place for it somewhere.

The Pikes Peak Mycological Society, a nonprofit organization dedicated to the advancement of mycology, publishes Spore-Addict Times monthly from April-September.

Membership is open to anyone wanting to study mycology. Annual dues are \$25 for individual and family memberships (\$40 for a printed newsletter). **Submission of ideas, articles, reviews, letters, artwork and recipes are welcome.**

PIKES PEAK MYCOLOGICAL SOCIETY
c/o Warren Williams, 5131 N Mesa Dr.
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Last month's entry was [*Baeospora myosura*](#)

Mystery Mushroom



I'm a beauty for sure, but if you confuse me with my delicious cousin, you'll soon regret it!

We have our differences, and as I get older, you'll see my spores are green with envy.

What am I?

The Spore-Addict times is the official newsletter of the Pikes Peak Mycological Society (PPMS) and is published monthly April - September. All articles appearing in this newsletter may be freely reproduced, unless otherwise noted, for use in other newsletters provided the source and author are acknowledged. We consider this to be a reciprocal agreement for clubs that send their newsletter to us unless we are advised to the contrary.

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