MUSHROOM DIGEST

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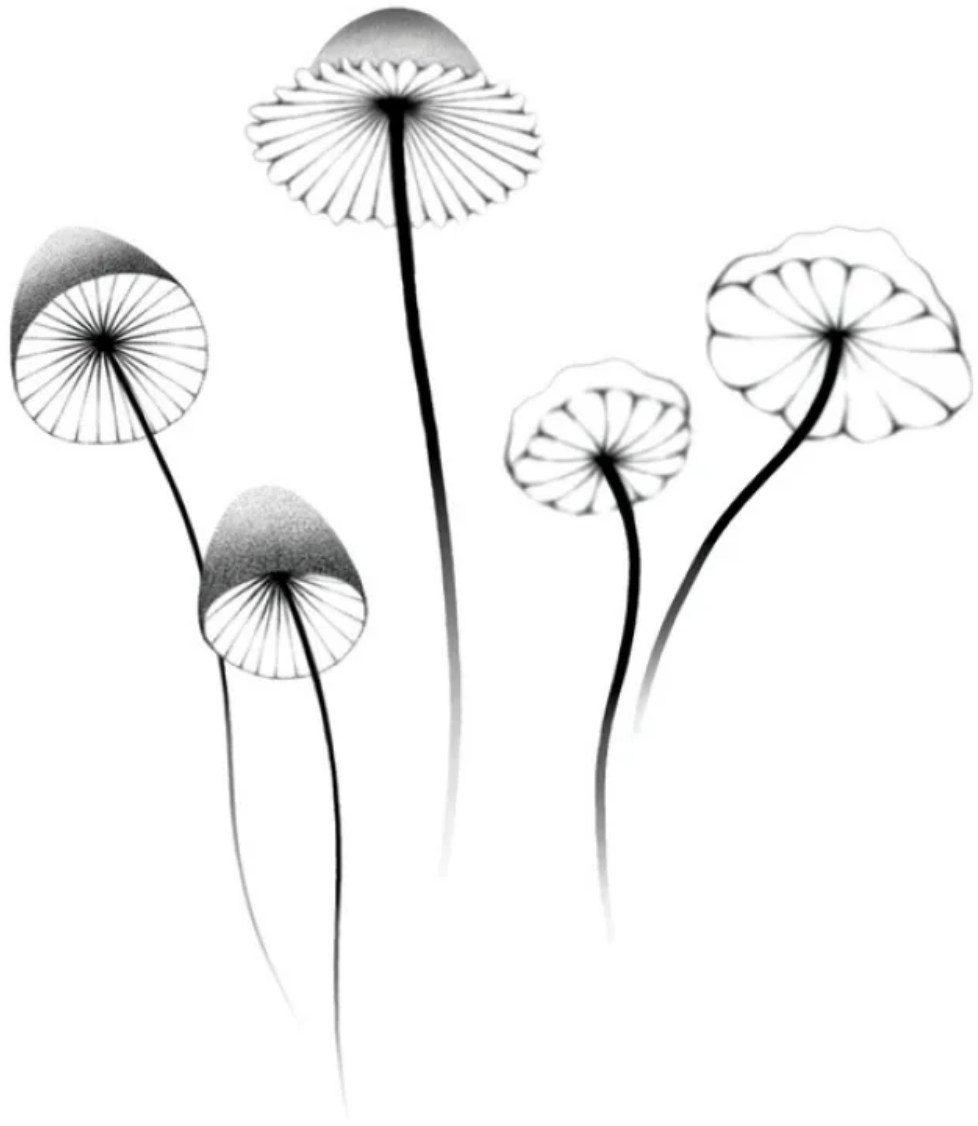

Hot Research

Newly discovered species of Psilocybe in South Africa

Psilocybe maluti was found growing in pastureland on cow manure in the Free State and Kwa-Zulu Natal provinces of South Africa, as well as the highlands of Lesotho. Credit: Cullen Taylor Clark.

Fungi enthusiasts have a reason to celebrate with the discovery of two new species of Psilocybe mushrooms in South Africa.

The Psilocybe genus contains around 140 species, including some of the most well-known and comprehensively studied psychoactive mushrooms. Many members of this group produce a compound known as psilocybin. The two new species, Psilocybe ingeli (P. ingeli) and Psilocybe maluti (P. maluti), were discovered in 2021 & 2023.

Psilocybe mushrooms are found in a wide variety of climates around the world, growing on a host of substrates, such as soil, wood and manure. Despite this, only a handful of the known species are indigenous to Africa—the latest study takes the total to six.

"Although it is not rare to find new African mushrooms, it is relatively rare to find new Psilocybe mushrooms, as these are always of interest to amateur and trained mycologists," Breyten van der Merwe, a mycologist and study author with the Department of Microbiology at Stellenbosch University, South Africa, told Newsweek.

Africa, the largest of all the continents. Has been very much left under researched in the area of mycology. Also Africa does not boast a long history with psychedelic fungi unlike South America that is teaming with biodiversity in this regard.

In 2021, Daniella Mulder discovered a mushroom growing on bovine manure in the Free State Province of South Africa. The mushroom exhibited blue bruising and Psilocybe-like characteristics. She photographed the mushroom and shared it with Andrew Killian, a renowned citizen mycologist in South Africa, for identification. Samples were later sent to Professor Karin Jacobs's lab at Stellenbosch University, where Breyten van der Merwe, a student and the study's first author, conducted genomic analysis.

DNA sequencing of the ITS region revealed that the mushroom had unique differences in specific genome regions compared to other Psilocybe species. It was recognized as a new species and named Psilocybe maluti.

Similarly, in 2023, self-taught citizen mycologist Talan Moult found a small mushroom in Kwa-Zulu Natal. Its size and cap did not match any known South African mushrooms. Samples were sent to Jacobs's lab for DNA sequencing, which confirmed it as another new species, named P. ingeli

Image: Psilocybe ingeli Credit: Cullen Taylor

Who

WHOs Who

Basidium Equilibrium

Bas, the mastermind behind Basidium Equilibrium, embarked on his journey into mycology fueled by sheer curiosity and intrigue. The name Basidium Equilibrium means so much more than a name of a business or persona name. It represents a personal mission, to bring wellness and balance to family, friends and anyone who seeks it. Fast forward to present and Basidium Equilibrium has become synonymous with Spore collection, Lab consumables and online seminars that Bas offers a intriguing look into the microcosm of Mycelium.

As a recognized spore purveyor in the industry, Bas envisions uniting talents from around the world to showcase these amazing fungi. In 2022 The Spore Co-Op was created in order to create a space where other fungi aficionados could offer samples of their great finds, or lab curated species and mushrooms varieties. The Spore Co-Op is a team of genetic experts that highlight the incredible work being done by citizen scientists at home and foragers around the world.

At basidiumequilibrium.com you will find psilocybe spores, mushroom genetics, lab supply media powders, tools, and educational courses such as "Agar Alchemy." This course aims to bridge the gap in understanding foundational information on fungi and how these organisms grow and live their lives. At Basidium Equilibrium, we uphold the philosophy that we are all interconnected within a mycelial network and must extend mutual respect to both each other and the natural world. Our team is committed to providing exceptional customer service, ensuring a seamless and professional experience for all our clients.

> "Fungi are fascinating organisms. They seem to have an intrinsic way of communicating, almost as if they're urging humanity to take a deeper look."

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Bas

GROWTH

Growth

Understanding Mycelium: The Hidden Life Force of Fungi

BY BASIDIUM EQUILIBRIUM

Mycelium, often referred to as the hidden life force of fungi, is a fascinating and vital component of the fungal kingdom. For newcomers to mycology or anyone intrigued by the natural world, understanding mycelium is essential to appreciating the role fungi play in ecosystems. Let's dive into what mycelium is and how it functions.

What is Mycelium?

Mycelium is the vegetative part of a fungus, consisting of a network of fine, thread-like structures called hyphae. These hyphae form a dense, interconnected web that can spread extensively underground or within organic material like wood. Think of mycelium as the root system of a plant, but much more intricate and widespread.

Hyphae are the building blocks of mycelium. These tubular cells have rigid walls made of chitin, a strong and flexible substance. Hyphae grow at their tips, constantly branching out and exploring new substrates to colonize. These networks can cover vast areas, often hidden from view. They form an underground web that can connect entire forests, transferring nutrients and signaling between different organisms.

How Does Mycelium Function?

Mycelium plays a critical role in nutrient absorption. The hyphae secrete enzymes that break down complex organic matter into simpler compounds, which the mycelium then absorbs. This decomposition process is crucial for recycling nutrients back into the ecosystem, contributing to soil health and fertility. One of the most fascinating aspects of mycelium is its ability to form symbiotic relationships with plants, known as mycorrhizae. In these relationships, mycelium helps plants absorb water and essential nutrients like phosphorus from the soil. In return, the plants provide the fungus with carbohydrates produced through photosynthesis. This mutualistic interaction enhances the growth and health of both partners.

Mycelium is responsible for producing fruiting bodies, such as mushrooms, which emerge above ground to release spores. These spores are the reproductive units of fungi, capable of dispersing to new locations and germinating into new mycelial networks. The mycelium provides the necessary nutrients and conditions for these fruiting bodies to develop. Mycelium is incredibly adaptable. It can modify its growth patterns in response to nutrient availability, temperature, pH, and other environmental factors. This adaptability allows fungi to thrive in diverse habitats, from forests and grasslands to urban environments. Some mycelium can inhibit the growth of pathogenic microorganisms, thereby playing a role in disease suppression. This can be beneficial for plants and other organisms living in the same environment, promoting overall ecosystem health.

Scientists are exploring the potential of mycelium in bioremediation, which involves using organisms to clean up contaminated environments. Fungi can break down pollutants such as hydrocarbons, pesticides, and heavy metals, making them valuable allies in environmental cleanup efforts.

Mycelium is much more than the hidden part of fungi—it is a vital organism that supports ecosystems, recycles nutrients, forms beneficial relationships with plants, and even helps clean up the environment. For newcomers to mycology, understanding mycelium is a gateway to appreciating the incredible complexity and importance of fungi in our world. Whether you're a budding mycologist or simply curious about the natural world, mycelium offers a fascinating glimpse into the hidden life force that sustains our planet.

SPOTLIGHT

Spot Light

Chanterelle

Edible choice and forager favorite the Golden Chanterelle

Scientific Name: Chanterelle Cibarius

Genus: Cantharellus

Fruiting season: July to December (*season just started*)

Habitat: coniferous forests and broadleaved woodland

Classification and Varieties

Chanterelles belong to the genus Cantharellus and are most often golden yellow, there are also white and bright red species. The golden chanterelles (Cantharellus cibarius) are the most common and highly sought after by foragers. Despite their characteristic features, they are often confused with the poisonous jack-o'-lantern (Omphalotus illudens) and the false chanterelle (Hygrophoropsis aurantiaca).

Recent mycological studies have revealed that what was once thought to be a single species, Cantharellus cibarius, in North America is actually a group of over 20 different species. Therefore, this guide focuses on the main characteristics of chanterelles rather than specific species names.

Key Characteristics of Chanterelle Mushrooms

- **Color and Size:**

Golden Chanterelles: These range from 2-4 inches tall and 1-4 inches wide, with a light yellow to dark golden yellow-orange color. When young, they resemble little gold buttons and can mature into a distinct vase-like or funnel shape with a noticeable indent in the center.

- **Other Varieties:**
  - *Cantharellus subalbidus*, The white chanterelle is a mushroom species native to western North America. As a member of the genus Cantharellus, it shares similarities with other popular edible chanterelles. However, it is distinguished by its unique cream to white color.
  - *Cantharellus cinnabarinus,* commonly known as the red chanterelle, is a mushroom species native to eastern North America. Belonging to the genus Cantharellus, this striking fungus is distinguished by its vibrant red hue, which is due to the presence of the carotenoid canthaxanthin.
- **Cap and Stem:**

The cap is smooth and can be either flat or slightly rounded. The stem is fleshy and the same color as the cap, with no markings or rings. The flesh inside is white or pale yellow and dense.

- **Smell:**

Chanterelles emit a faintly fruity scent, often compared to apricots. This fruity aroma can be quite strong, especially when you find a large patch of them.

False Gills:

Unlike true gills found on mushrooms like shiitakes, chanterelles have false gills which are forked ridges or folds that do not detach easily from the stem or cap. These false gills run down the stem and appear to be fused onto the mushroom. Although referred as “false gills” these mushrooms still produce spore on these false gills.

Caution and Best Practices

Although chanterelles have characteristic features, it is essential to avoid confusing them with poisonous look-alikes such as the jack-o'-lantern and the false chanterelle. To ensure safe foraging:

Educate Yourself: Study pictures, search the internet, and read mushroom foraging books to become familiar with the differences between chanterelles and their toxic counterparts. Utilize not just visual cues but also the distinctive fruity smell of chanterelles to aid in identification.

Practice with Experts: Gain experience with a local mycology expert before foraging on your own. Never consume any wild mushroom unless you are absolutely certain of its identity.

By paying close attention to these key characteristics and practicing safe foraging methods, you can enjoy the rewarding experience of harvesting chanterelle mushrooms from the wild. Foraging Tips and Best Practices

Chanterelle Culinary History

Chanterelle mushrooms, known for their vibrant golden color and delicate, fruity aroma, have been a prized ingredient in gourmet cuisine for centuries. Originating from European forests, chanterelles were cherished by French chefs as early as the 16th century. Their unique flavor and texture made them a staple in classic French dishes, particularly in sauces, soups, and sautés.

During the 18th and 19th centuries, chanterelles gained popularity in other European cuisines, including German, Italian, and Scandinavian culinary traditions. These mushrooms were often paired with rich ingredients such as butter, cream, and wine to enhance their naturally earthy and slightly peppery taste.

In the United States, chanterelles became more widely recognized in the mid-20th century as interest in gourmet cooking and foraging grew. American chefs began incorporating them into a variety of dishes, from elegant appetizers to hearty main courses. Their ability to complement both meat and vegetarian dishes has solidified their status in high-end restaurants and home kitchens alike.

Today, chanterelles are celebrated worldwide for their versatility and distinctive flavor. They are featured in an array of gourmet dishes, including risottos, pastas, and fine dining creations, continuing to captivate chefs and food enthusiasts with their culinary allure.

FORAGE

Forage

A Passionate Pair: Multi State Fungi Foragers

Meet Keaton and Melani, a couple deeply passionate about fungi and foraging. Their shared love for nature and exploration has led them on countless adventures through the lush forests around the country. As fungi enthusiasts, they find immense joy in discovering various mushrooms, learning about their unique characteristics, and understanding their roles in the ecosystem.

For Melani and Keaton, foraging is more than a hobby; it's a way to connect with nature, relieve stress, and stay active. The tranquility of the forest offers a peaceful escape from the hustle and bustle of everyday life. "Walking through the forest, breathing in the fresh air, and hearing the sounds of nature instantly calms our minds," Keaton explains. “Its all about the connection to nature”.

Their foraging excursions provide a healthy dose of exercise. Navigating through dense woods, climbing over fallen logs, and bending down to examine mushrooms all contribute to the experience. “Its a spiritual practice at this point. When you first start its a hobby, soon it becomes a part of you, its the essence of who we are” Keaton says with a smile.

Foraging offers Keaton and Melani a sense of freedom that lets their inner Childs curiosity run wild. Each trip is an opportunity to learn about the diverse organisms that inhabit the forest. They meticulously identify different mushroom species, study their growth patterns, and observe how seasonal changes affect the forest's flora and fauna. "It's like a never-ending game of discovery," Keaton says. "The forest is always changing, and there's always something new to learn for the curious mind.”

The couple's foraging trips also yield delicious rewards. Keaton and Melanie often return home with baskets full of edible mushrooms and wild plants. They incorporate these fresh, foraged ingredients into their meals, enjoying the unique flavors and nutritional benefits of nature's bounty. "There's something incredibly satisfying about preparing a meal with food you've gathered yourself," Keaton remarks. "It deepens our appreciation for the sustenance the forest provides.”

When asked about their favorite finds, Keaton enthusiastically mentions morels, reishi, chanterelles, hedgehogs, chicken of the woods, hen of the woods and black trumpets. One of their most exciting discoveries was finding a chicken of the woods mushroom just feet away from a hen of the woods. "The flushes were amazing and something we don't see often growing so close together," Keaton recalls.

The couple also has taken several seasonal trips through the midwest. They follow the spring Morel season starting as south as Oklahoma. The following the Morel flush over the course if weeks north

to the northern Wisconsin woods. For Keaton and Melani, foraging has also strengthened their relationship. "We can look at foraging as a consistent bond we share. It instills a sense of freedom in both of us," Keaton says.

The couple encourages everyone to get out and connect with their local flora and fauna. Forage responsibly, and take the opportunity to leave the woods cleaner than when you arrived. For them, garbage collection is a must. “Its being a good steward to the forest and setting a example if anyone was to see.” Keaton emphasizes.

So grab a basket, head to your nearest forest, and start your own journey of discovery and connection with nature. Happy foraging!

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Researchers: Present your findings and contribute to our "Hot Science" section, highlighting the latest advancements in mycology.

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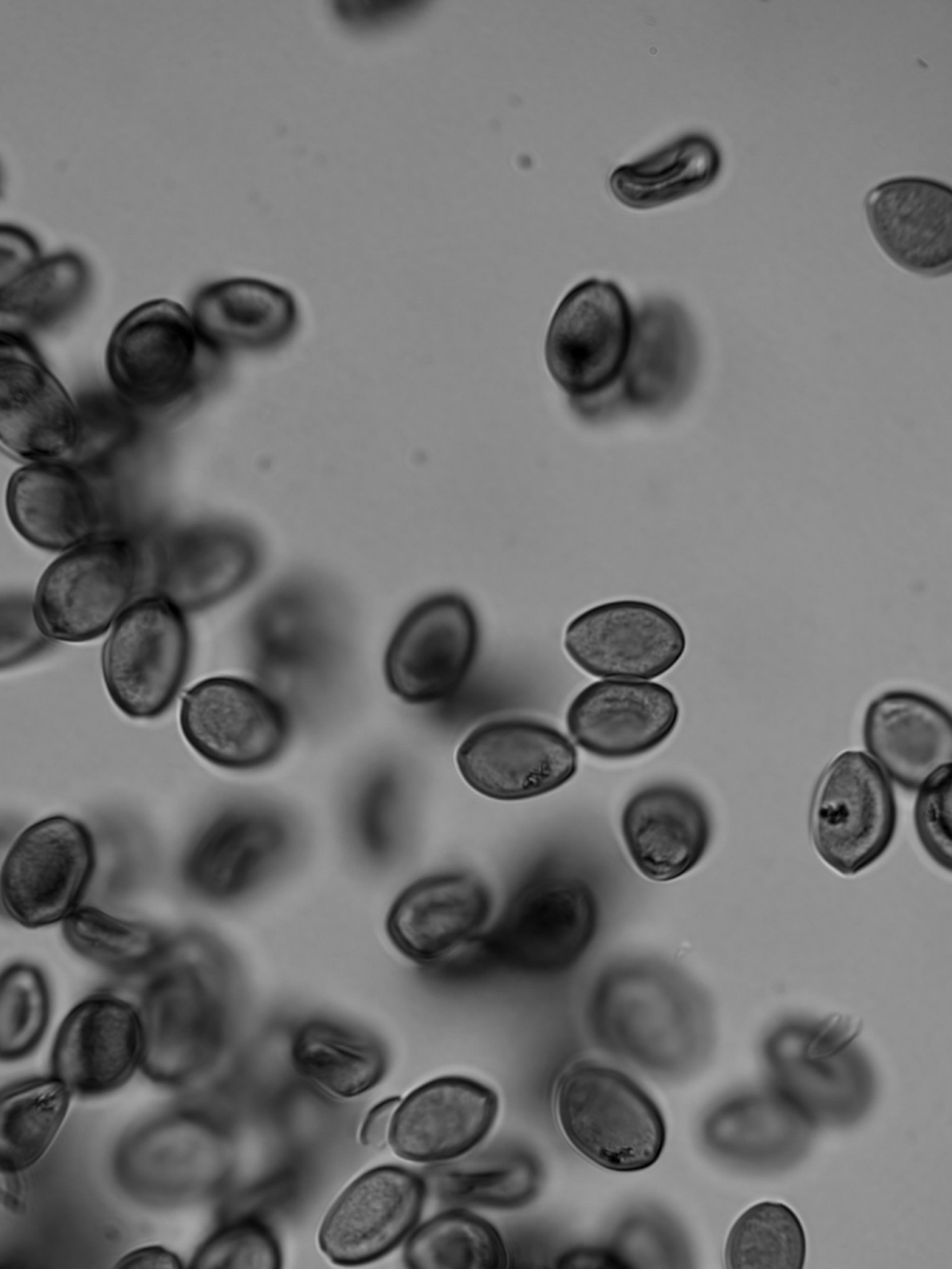

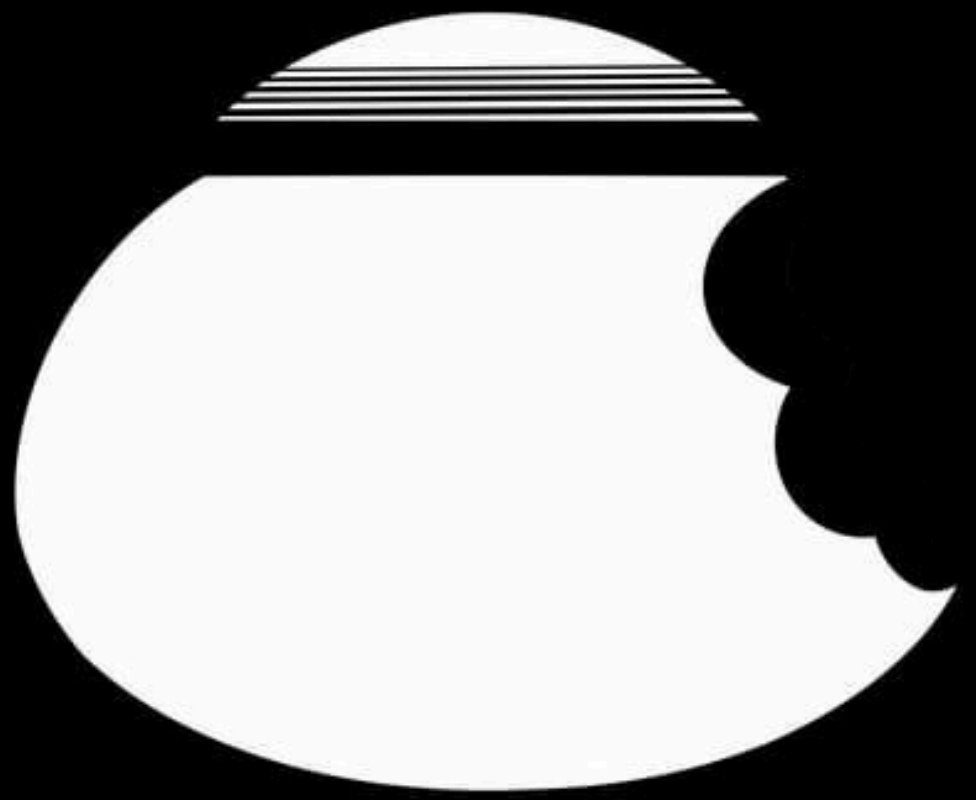

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