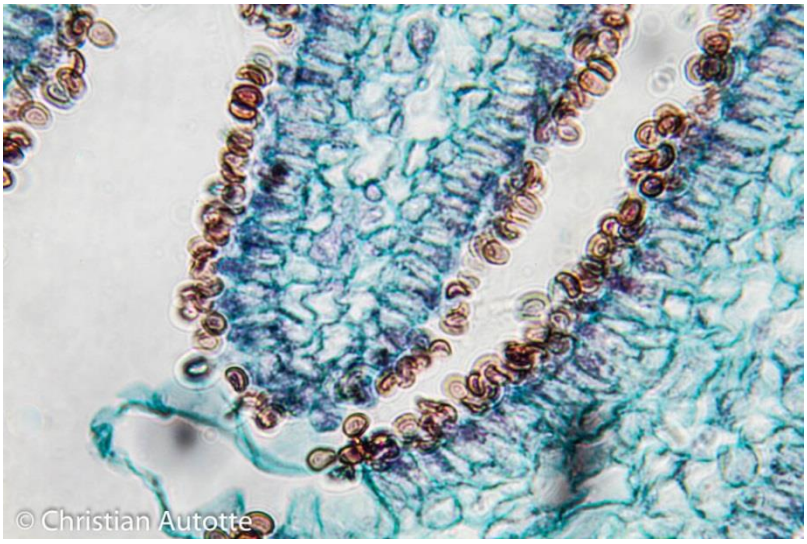
MUSHROOM SEASON

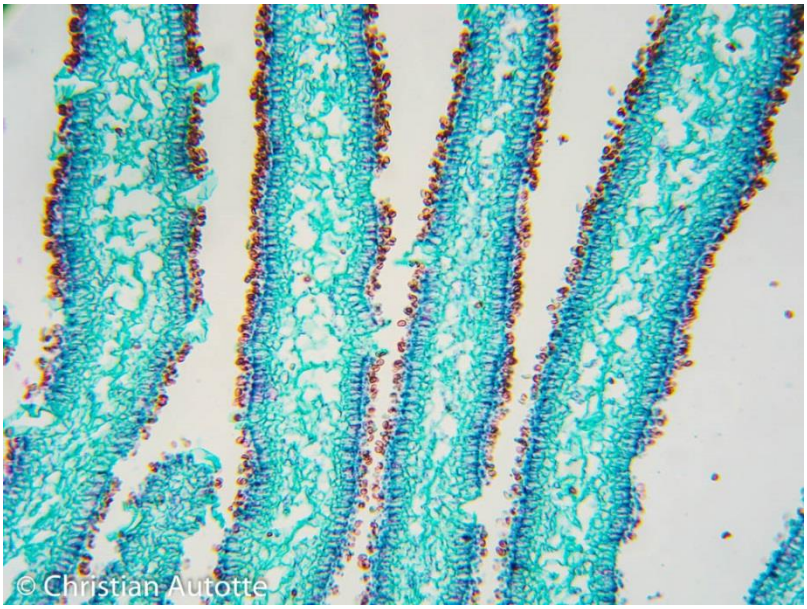
With a wet summer and the coming of fall, there are numerous species of mushrooms all over the place. While the forest is full of them, I even saw some in my garden. I've always been curious about mushrooms, taking macro photographs of many species. It's no surprise that I have also taken a closer look at them through the microscope.

In my slide collection, I have a few mounted specimens of *Coprinus*. As it turns out, I have also photographed a species of *Coprinus* mushrooms, the Alcohol Inky Cap. Common in both Europe and America, it's edible, but becomes poisonous when combined with alcohol. The inky cap of its name comes from the look of its cap that turns from grey-brown and disintegrate with age, turning into a black liquid mess.

Alcohol Inky Cap, a species of *Coprinus*.



Coprinus, 400x



Coprinus, 200x

The commercially mounted slides in my collection are interesting for they show cross sections across the gills with the spores clearly visible, thanks to the proper coloration.

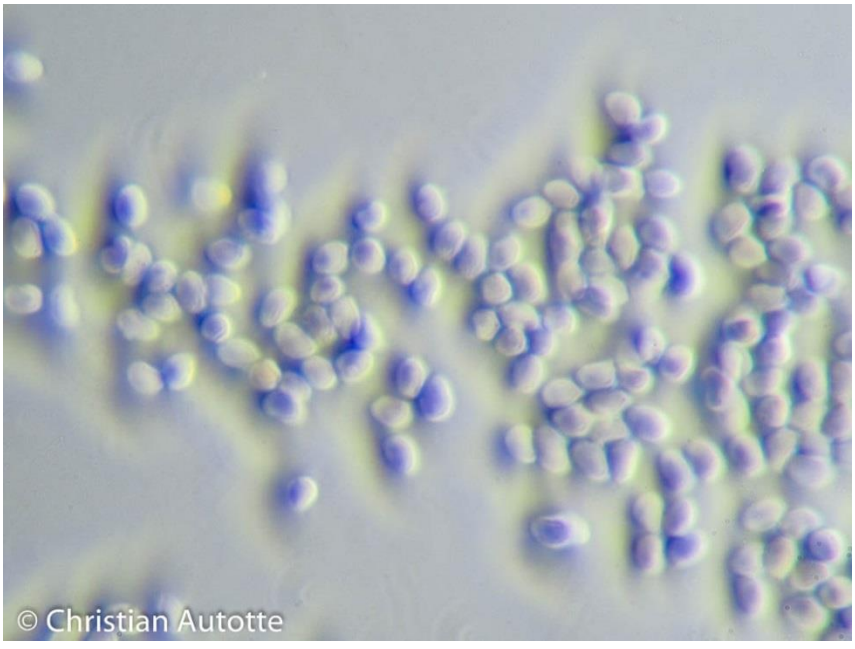
I have also made some slides of my own, concentrating only on the spores themselves. Just like pollen, mushroom spores vary greatly from one species to the next. Some spores are extremely fine and require a great deal of magnification to view any detail. One such species with very fine spores is the puffball. These globular mushrooms shoot puffs of very fine spores through an opening on their top. To photograph the spores coming out, I had to let water drop from an eyedropper on a ripe mushroom, recording the image with a flash to stop the motion of the spore cloud.

Poison Puffball shooting its spores

Puffball spores, 2000x

The spores were then easily collected in a small vial and transferred to a slide. They are so fine that I had to work at 1000x and add the digital converter on my Olympus camera to get close enough to get a decent picture.

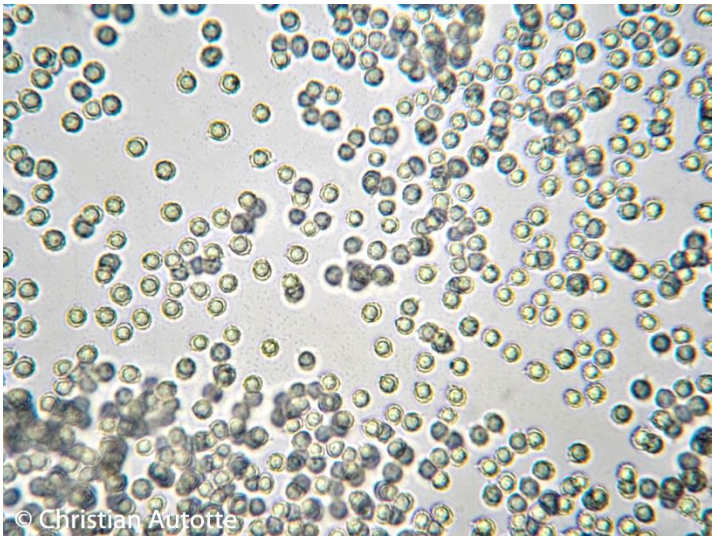
Another one of my slides shows the spores of an unidentified species. The picture is mostly interesting visually. It was photographed with oblique lighting, which gives an unusual three-dimensional aspect to the picture.



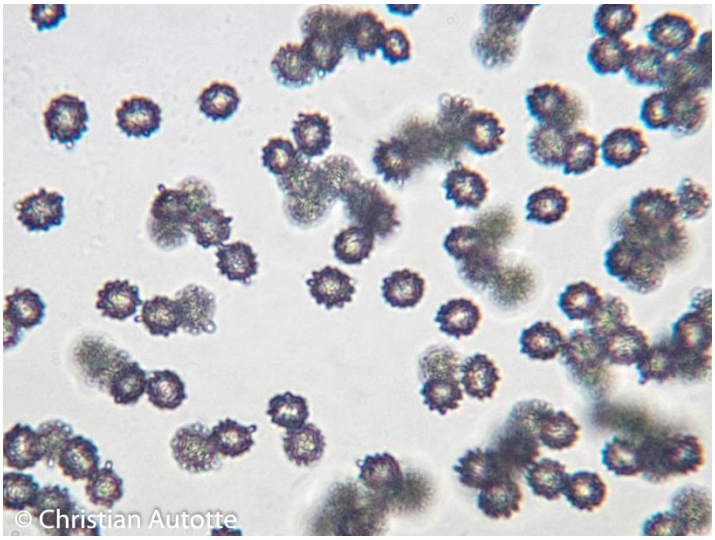
Unidentified mushroom spores, 400x with oblique lighting

Russula mushroom

Another species common in our woods is the Russula, easily identified with its red cap and white stem. While not quite as small as those of the puffballs, its spores are also very fine. To get a good look at their shape, a 1000x magnification could be required, but I got away with a 400x combined with digital conversion for an 800x total. That reveals that the spores are covered with very distinctive little spikes.



Russula spores, 400x

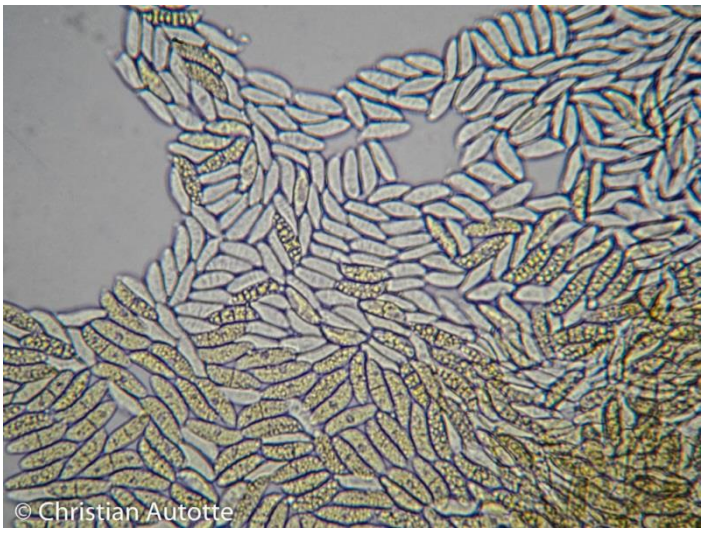


Russula spores, 800x

Orange Jelly

There are many unusual mushrooms, and the “Orange Jelly” is among them. While most mushrooms have gills or pores from which the spores are produced, the Jelly doesn’t have any visible means of spore dispersion. And that aroused my curiosity… So recently, I collected a small piece of Orange Jelly and brought it to the lab.

To collect spores from a mushroom one only has to place a piece of it right side up on a slide and wait a few hours; spores fall out and are deposited on the slide. But with the Orange Jelly I could not find a “right side up”, so I simply placed a piece of it on the slide and hoped for the best. After a few hours, the result was a smear of apparently gooey spores. A lot of them tended to stick together in clumps. They also have a very distinctive elongated shape. Some were also dividing, showing up to four distinct cells, with dividing walls and nucleus. The question is, where did they come from?



Orange Jelly spores, 400x

Orange Jelly spores, 400x

To answer that question, I went back to the mushroom itself. A thin piece was cut and squashed on the slide. On examination, the mushroom structure appears to be made of a multitude of tubules; in all likelihood, this is where the spores are coming from.

I am planning more investigations of other species, including those with tiny pores that grow on trees and can be found year round. My question for these: do they produce spores in the middle of winter? I should have my answer in a few months.

I have also tried to find what branch of biology or botany was interested in studying spores. As it turns out, palynologists study not only pollen, but also spores. I have no doubt that some palynologists have developed a specialty within the science.

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