

HAIRS

Some things I do may seem a bit ghoulish: whenever I come across a corpse I like to collect some of its hairs... A few months ago, I wrote about porcupine quills, which are nothing more than modified hairs. But this is not the only corpse I came across. It's unfortunate, but the road systems around the world are responsible for millions of animal deaths each year. In Australia, it's an estimated 10 million deaths; in the UK, some estimates are split with one million animals and 10 million birds; in the United-States, it's an estimated one million per day... Some of these may be a bit smelly, many because they've been by the road side a bit beyond their expiry date, so to speak, while others are naturally of the smelly type, like skunks, especially when the stinky parts have been squashed by passing cars...

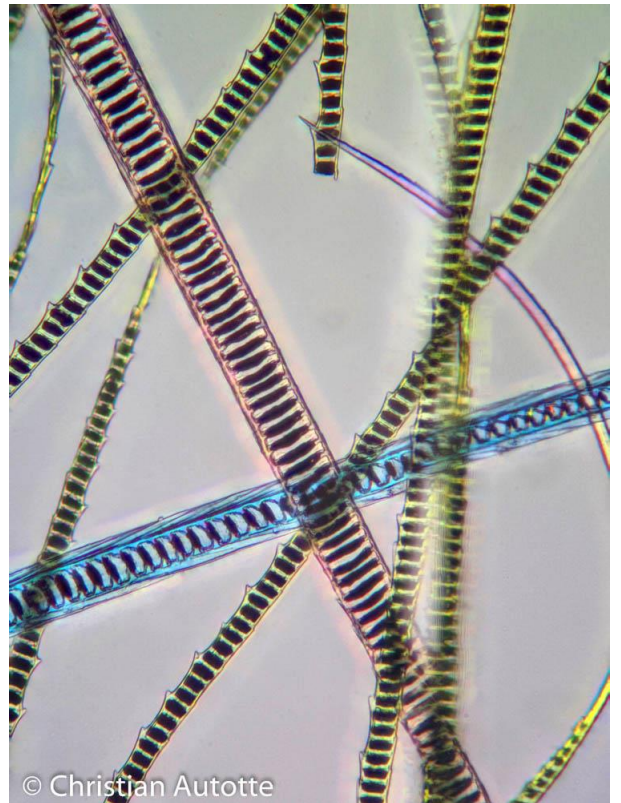
If you hike as much as I do you are bound to find some dead animals along the way. Over the years I saw many dead shrews and moles simply lying in forested paths; their life expectancy is rather short and they can drop dead after little more than a year. Others are victims of predators who may leave some remains around, including skin and hairs. Like it or not, humans are also predators and some hairs can be collected from hunters.



© Christian Autotte

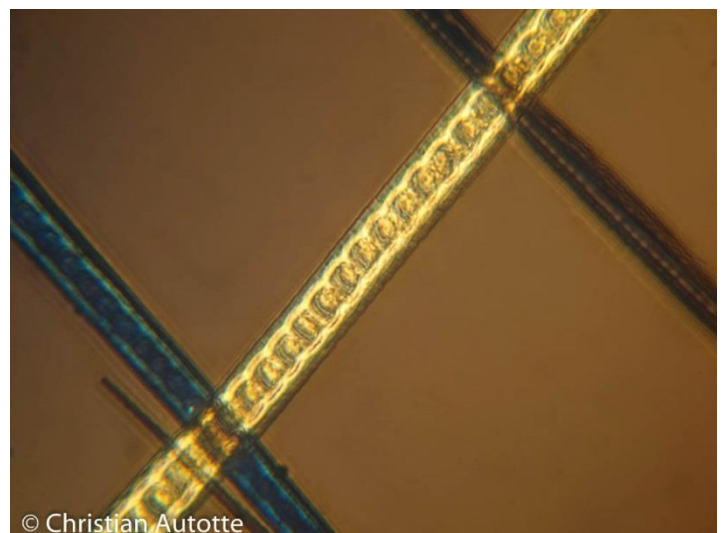
Red Squirrel hairs, 400x

One day, after returning from a camping trip, I found a dead baby mouse in my car. How it got there, I have no idea, but I took some samples which were so small that they had to be literally shaved off with a scalpel.



© Christian Autotte

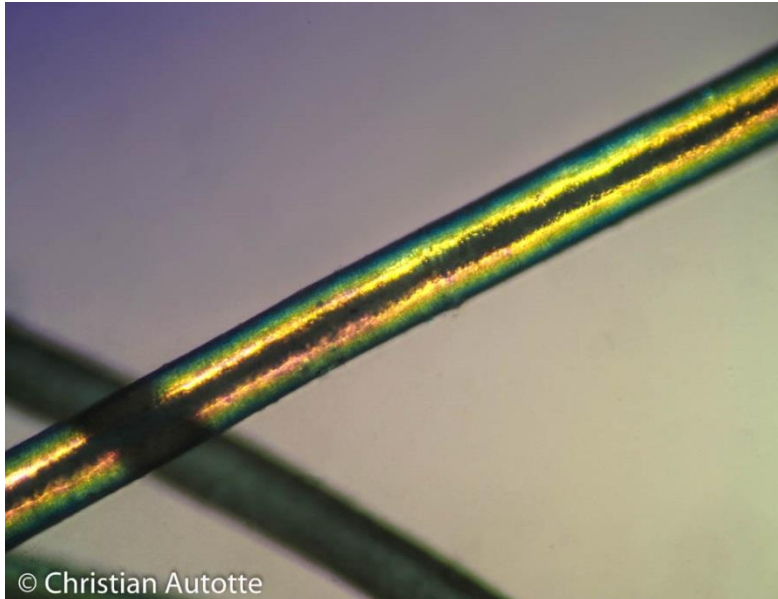
Shrew hairs, 200x, polarized light



© Christian Autotte

Baby mouse hairs, 400x, polarized light

But animals don't always need to be dead to provide some hairs for my collection. There is a drive through wildlife park that I used to visit in western Quebec; many of the animals were very friendly and would gather around the car in the hope of being given carrots that were sold at the entrance. You could pet many of them, like wapitis, spotted deer, and ibex, and if you were there during the molting season it was easy to pick up a handful of hairs.

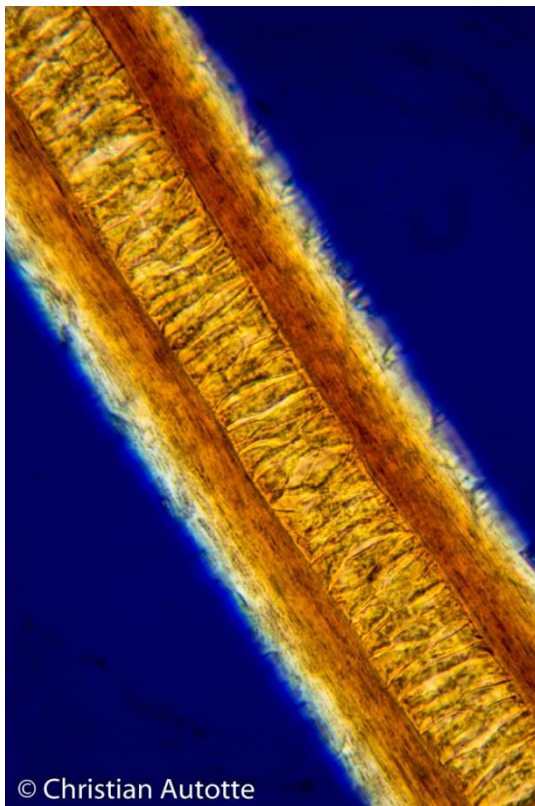


© Christian Autotte
Ibex hairs, 70x, polarized light

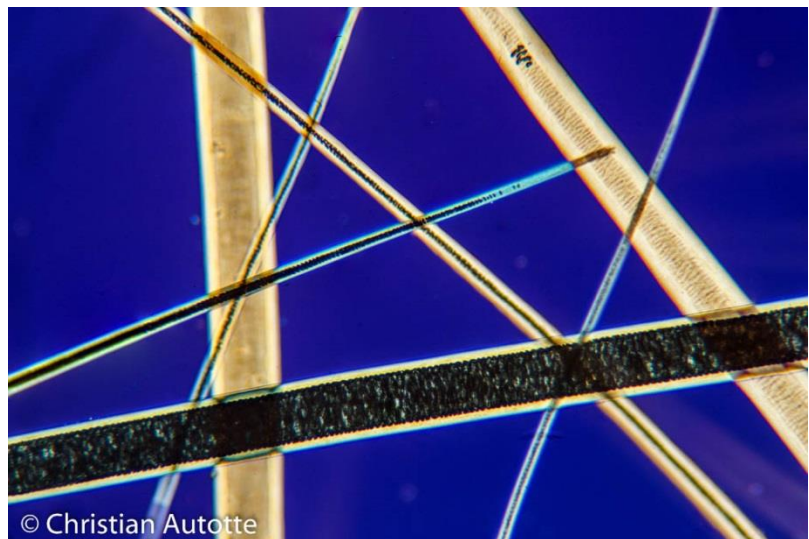


© Christian Autotte
Dog hairs (pug), 100x, polarized light

(Speaking of molting, some animals seem to be molting all the time. My sister has a small pug and every time I go for a visit my clothes pick up an abundant supply of dog hairs. Sounds familiar?)



© Christian Autotte
Black bear hair, 400x, polarized light



© Christian Autotte
Mink hairs, 100x, polarized light

Another park I used to visit had some "samples" of animal skin with some hairs that were falling off... So, obviously, I kept a few samples.

From various sources, I have collected hairs from many whitetail deer. Some of these still had their roots, which proved very interesting under polarized light.



in

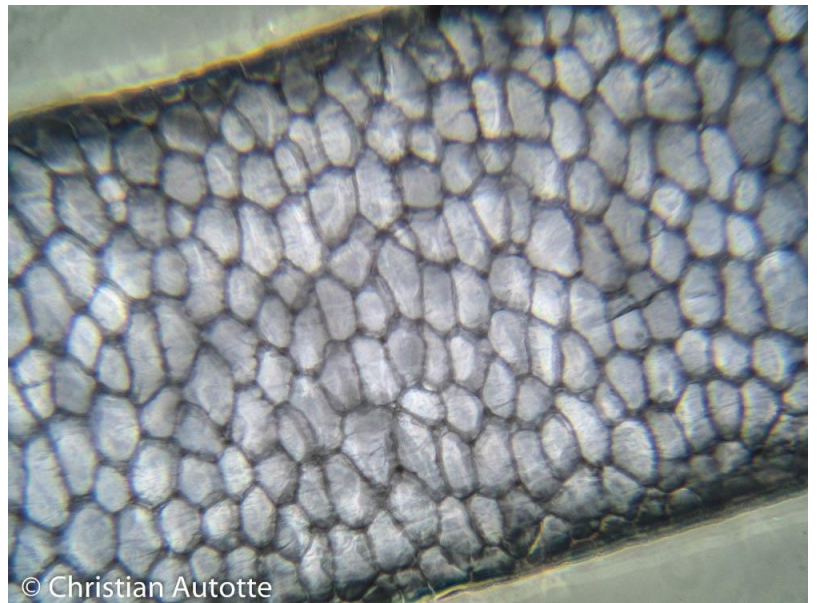
© Christian Autotte

Whitetail deer hair, 100x, Rheinberg illumination



© Christian Autotte

Whitetail deer hair roots, 100x, polarized light



© Christian Autotte

Whitetail deer hair, 400x

Hairs are not unique to mammals. Many arthropods have various types of hairs. I wrote about the many hairs of tarantula, some of which may be used for defense against potential predators. Many insects, notably some species of caterpillars, are also equipped with poisonous hairs. I had the opportunity of adding a few such hairs in my collection.



© Christian Autotte

Tarantula hairs, 200x, phase contrast



© Christian Autotte

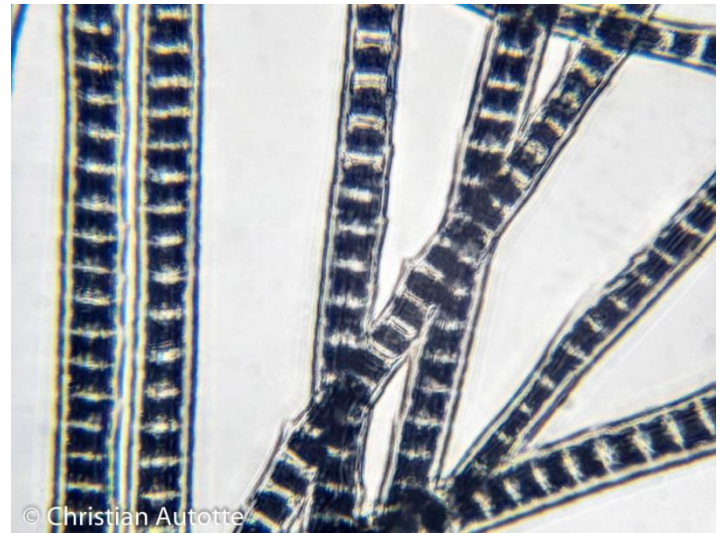
Hairy caterpillar hairs, 100x

I always look at hairs in polarized light; while it's not always the best possible view the polarization often provides surprising images.



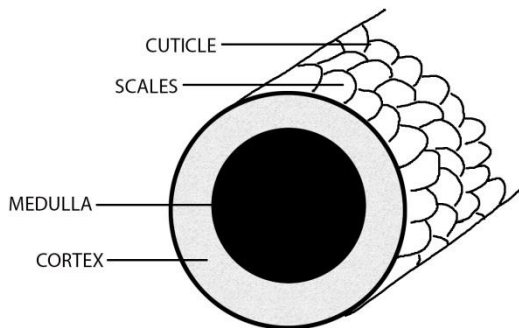
© Christian Autotte

Mole hairs, 100x, polarized light



© Christian Autotte

Mole hairs, 400x, stack of 7 images



Looking at various types of hairs under the microscope one cannot help being surprised at their diversity. Their basic structure is similar, with a “medulla” as the center core, surrounded by the “cortex”, both surrounded by an outer shell, the “cuticle”. But within these structures can be seen a lot of variations, either in the thickness or the appearance of each element. Specialists can tell species by their hairs and a whole new way of “trapping” animals to study their populations has been developed over the years.

Some of these involve “scratching posts” where animals relieve an itch and leave some hairs. Others are tight passages lined with sticky tape placed where the animals are likely to pass and leave some samples. I may try some of these myself... but I may have a hard time figuring out what kind of hairs was collected!

In my research, I came upon a fascinating document from the National University of Ireland, Galway :

<https://www.npws.ie/sites/default/files/publications/pdf/IWM92.pdf>

Another one is from the Forensic Science Communications: https://archives.fbi.gov/archives/about-us/lab/forensic-science-communications/fsc/july2004/research/2004_03_research02.htm

I even found a free eBook: Microscopy of Hairs: A Practical Guide and Manual, John W. Hicks Jan 1977, Department of Justice, Federal Bureau of Investigation

My previous articles:

Porcupine quills:

<http://www.microscopy-uk.org.uk/mag/artsep19/ca-hairs.pdf#search=%22tarantula%22>

Tarantula hairs:

<http://www.microscopy-uk.org.uk/mag/artsep19/ca-hairs.pdf#search=%22tarantula%22>



© Christian Autotte
Human hairs, brown and grey, 40x, polarized light

And being a mammal and not bald, I have also taken a look at my own graying hairs...

Comments to the author Christian Autotte are welcomed, email:
cautotte214 AT gmail DOT com

Published in the March 2022 issue of Micscape magazine.
www.micscape.org