THE MANY HAIRS OF TARANTULA

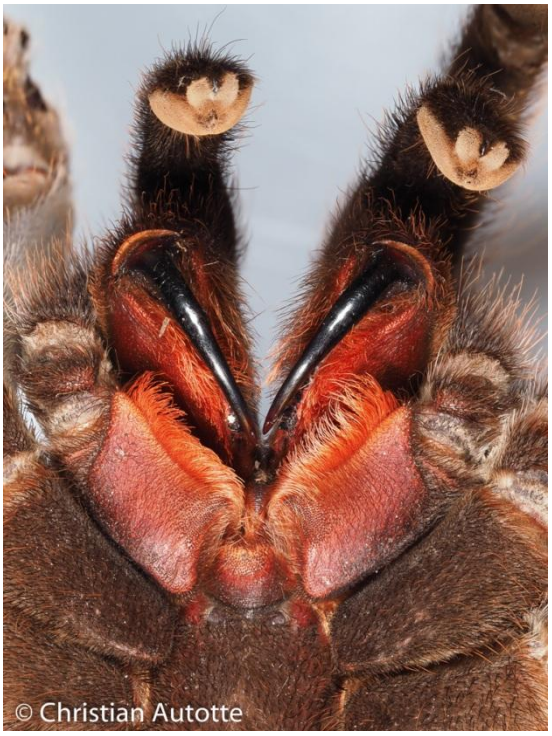
BY Christian Autotte, Montréal, Canada

A friend of mine used to be scared of spiders. To cure himself, he started to keep live tarantulas; a bit extreme, but it did work… Like all arthropods, tarantulas grow by shedding their exoskeleton, leaving behind an empty skin that looks just like the living thing. Knowing my love of strange and hairy creepy-crawlies, J.F. gave me the skin of one of his friends.

The whole skin; it's dry, brittle, and very light.

Being made of dried chitin, the skin is exceedingly fragile, and over time I did lose some bits and pieces, but most of it is still there. J.F. told me that this particular species has a habit shared by many tarantulas: when disturbed it quickly rubs its hind legs on a specific area of its abdomen, letting loose a cloud of urticating hairs that can cause skin or eyes irritation. Being curious and inquisitive, I wanted to know more about those hairs. As always, the web was very useful:

http://www.scielo.br/pdf/zool/v30n4/v30n4a06.pdf



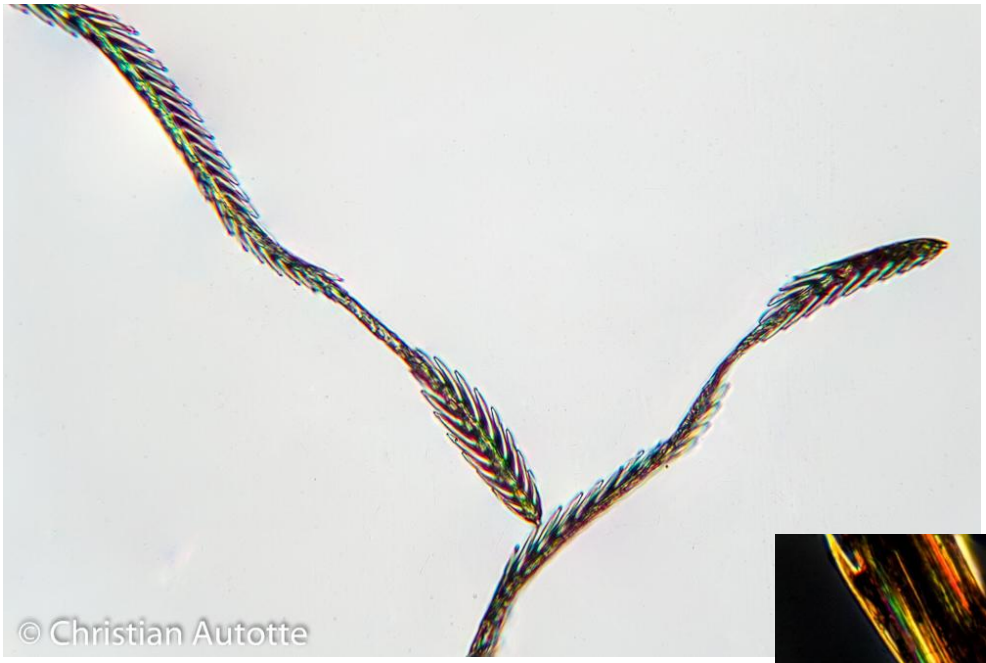
The business end… I would not want this beasty to sink its fangs in any part of my anatomy…

Eight shots were stacked to show details in the fangs. You can see the opening of that "syringe" in front of the tip.

There are five or six types of urticating hair found on different species of tarantulas:

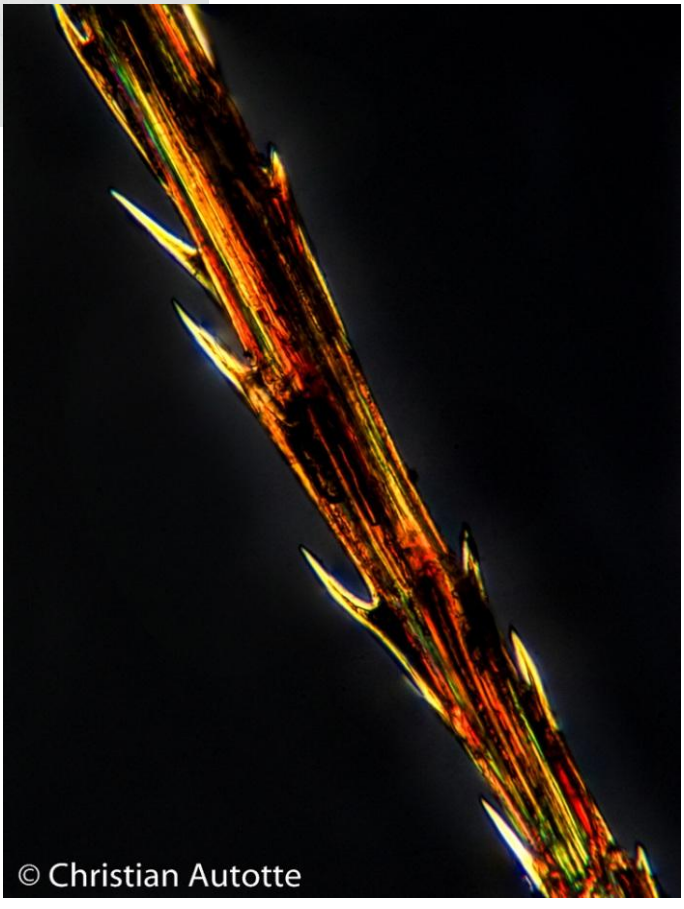
Type I are very small and easily disperse in the air and so can be inhaled by predators; those are the ones J.F. was telling me about. Type II are present only in females; they wove them into their egg sacs as a way to deter parasitic flies. Type III are potent defensive systems due to their length and sharp point; these are kicked in threatening animals face, causing serious eye and nasal irritation. IV and V are possibly similar to type I in causing respiratory inflammations in predators that get too close. Type V and VI have been found on the palps of five species of Ephebopus.

The more I learned about it, the more I wanted to see for myself the various hair shapes found on that spider skin. So out came the microscopes.



Type I urticating hair. Very small, they were shot at 400x.

The very first one that I found was a type I; they must be the strangest hairs I have ever seen. Then after searching for a while, pulling hair and looking at them, I found what looks like a type III: it's stiff with very sharp thorns.



Type III urticating hair, 400x in polarized light.

Elsewhere on the body and legs are found large sensory bristles. Those, like the whiskers of a cat, inform the spider of any object it may get in contact with. They are interesting in both brightfield and polarized light.

Sensory bristle root, 100x.

This is the edge of the cephalothorax, showing stiff wavy hairs. This picture is a stack of 11 shots made with my modified stacking microscope (http://www.microscopy-uk.org.uk/mag/artapr19/ca-stacking.pdf), about 40x.

Under the feet, hairs form a tight pad that feels like velvet, as anyone who has let a tarantula walk on their hand could attest.

Claws, a stack of 54 shots. (Magnification not recorded)

Seven shots were stacked to show the underfoot pad.

I tried to pull out one or two of those hairs, but whole clumps tend to come out. But as it turn out, the resulting image turned out very well. A stack of 12 images was used to keep enough depth-of-field.

Clump from underfooot (100x).

A stiff bristle still mounted on the skin. 100x.

I am not finished exploring this empty skin. Every now and then I pick up a pair of fine tweezers and pluck a hair or two to look at it. The more interesting ones are mounted permanently, with a note on where they were located on the skin. That skin is a few years old, and its original owner is long dead, but it should keep me occupied for some years to come.

Whatever you might say about them, tarantulas are hairy beasts…

The inside of the cephalothorax, with the top removed.