

# Beach combing for algae

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On a walk to a local beach with some friends I came upon several big rocks covered with green algae. The long strands almost made the stone look as if it was covered with green hairs! I immediately decided to return and get some samples to study them under the microscope.







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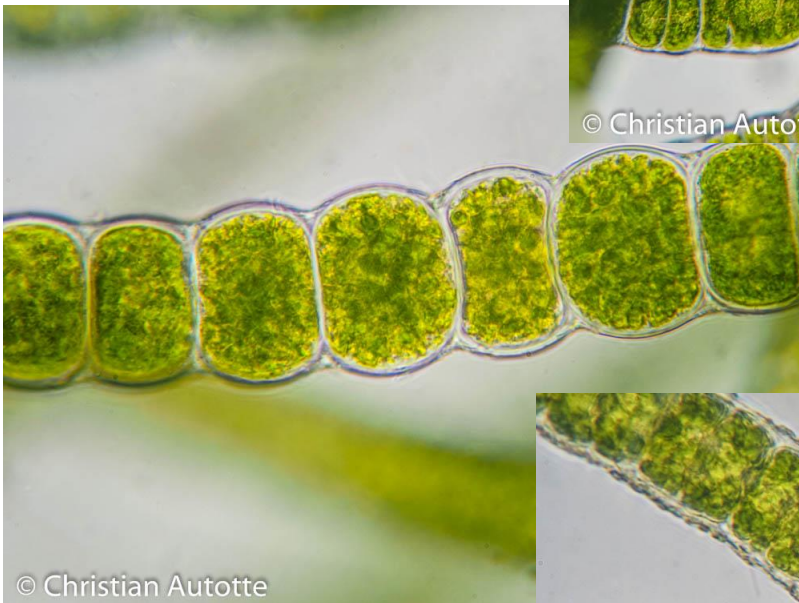
100x, stack of 10 images

As expected, these green hairs were made up of long strands of single cells. I later identified them as a species of *Urospora*. Different species exist in fresh water, but they follow the same principle: divide your cells but keep them aligned one after another, like the beads on a necklace.



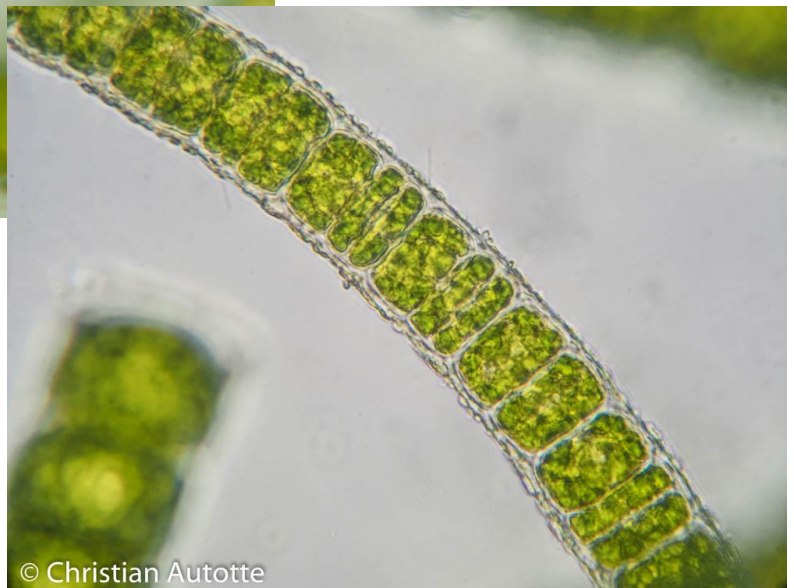
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200x



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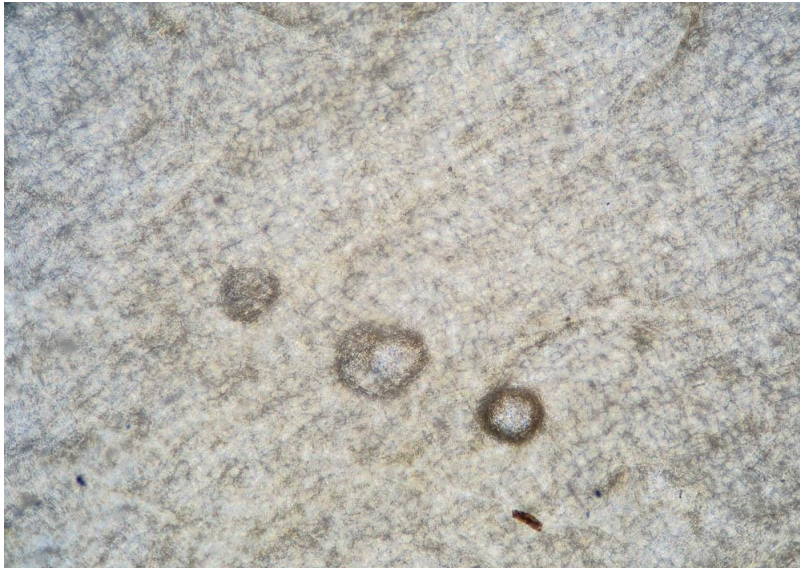
400x



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400x

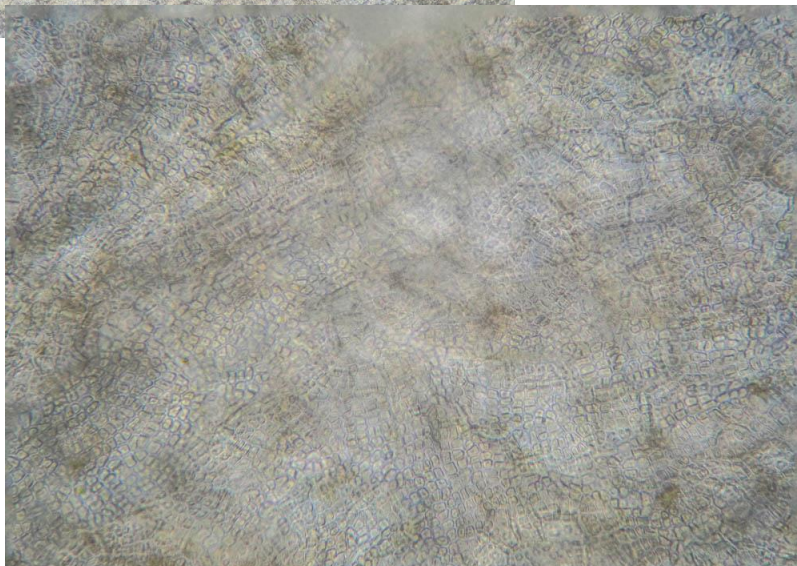




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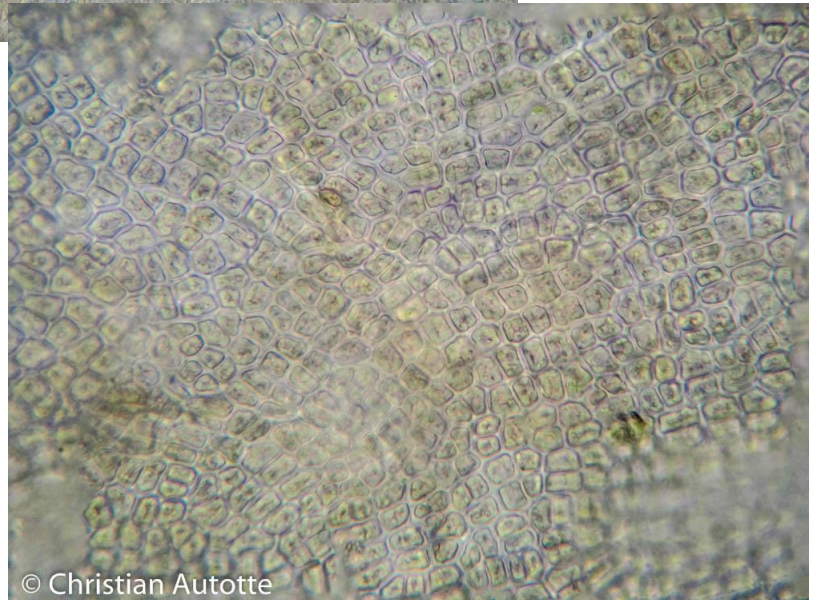
40x

On the same beach I picked up a small strand of ubiquitous brown algae that can be found on any beach in the northern hemisphere; most likely, it was a species of *Laminaria*. When first observed under low power they were rather bland and uninteresting. At higher magnification I was able to see individual cells, but the resulting pictures still left me unsatisfied.



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200x, stack of 5 images



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400x, stack of 7 images

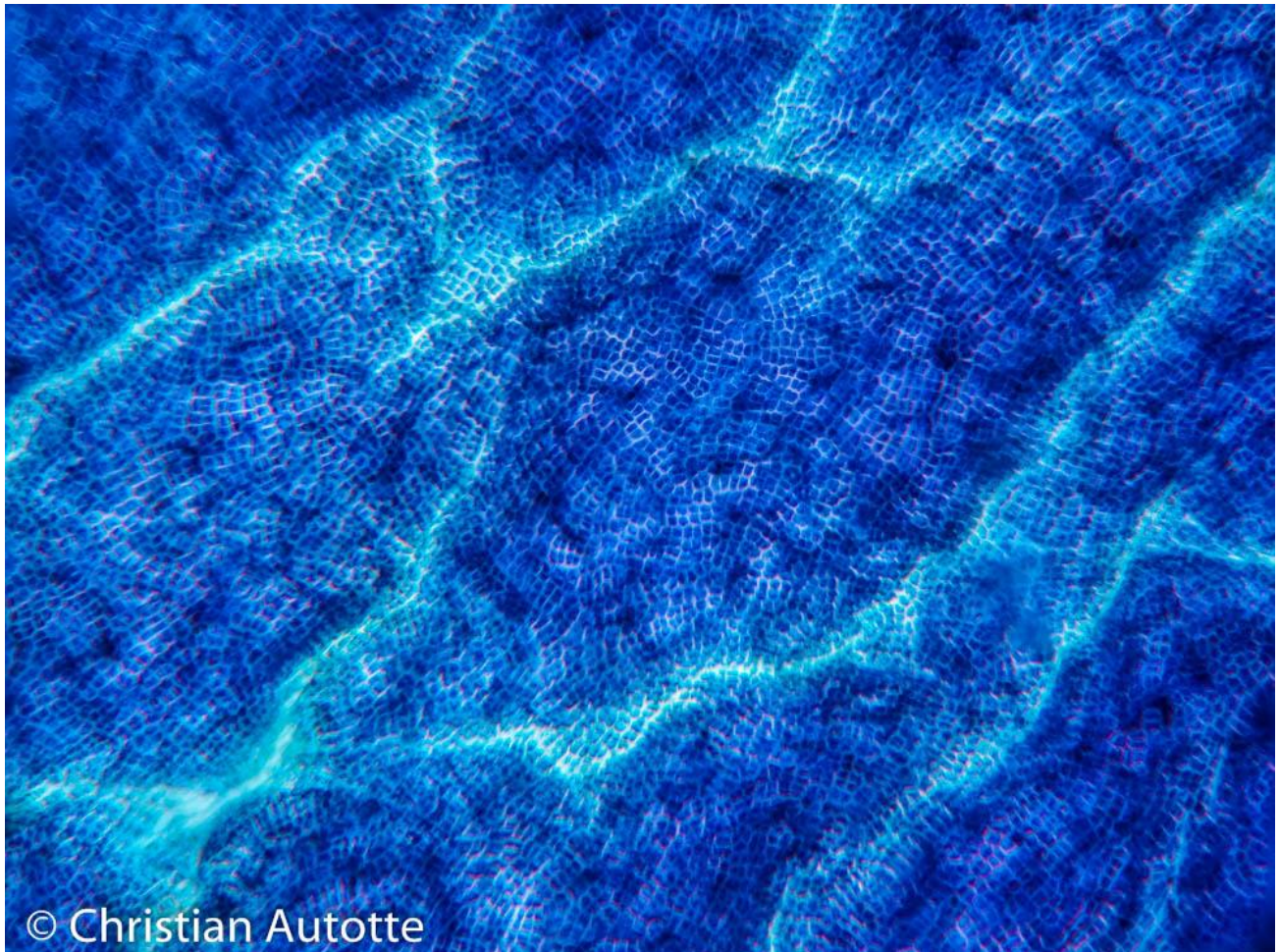




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200X, stack of 7 pictures, colored with Toluidine Blue

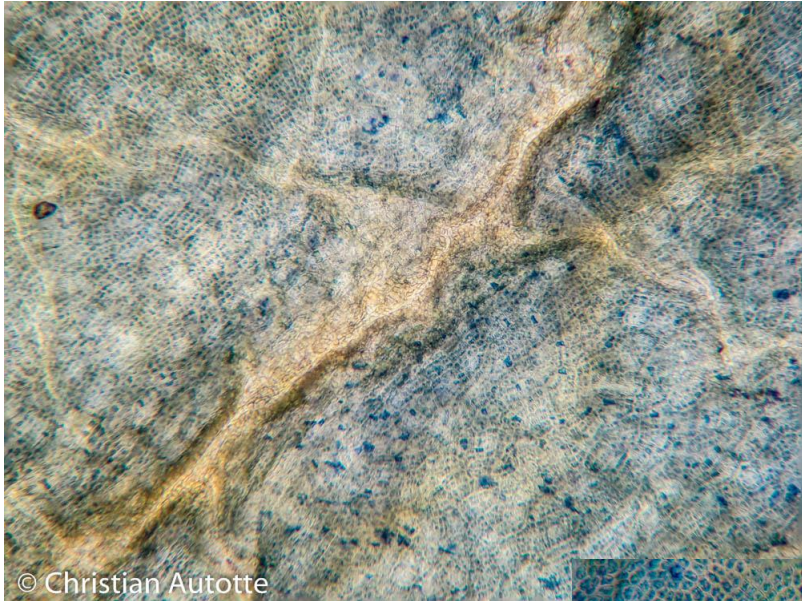
So I decided to try a few experiments with colorants. The first one I used was Toluidine Blue. A small piece of algae was placed in a dish with a single drop of die. The algae was then transferred to the slide and placed under the microscope. The die made the cells stand out, revealing “folds” that were otherwise invisible. But I found the deep blue color rather artificial. So I kept working.



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100X, stack of 5 pictures, colored with Toluidine Blue





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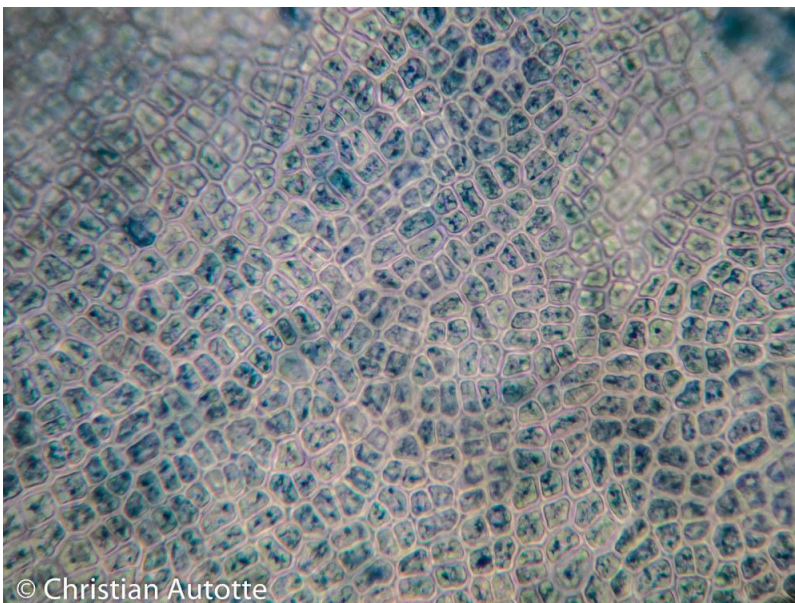
100X, stack of 8 pictures, colored with Toluidine Blue

I used the same colorant, but diluted in more water. I also dipped the sample for only a few seconds. The result is more pleasing to my eye. While individual cells are still colored in blue, the color is not as intense and the “folds” stand out more, being a different color.



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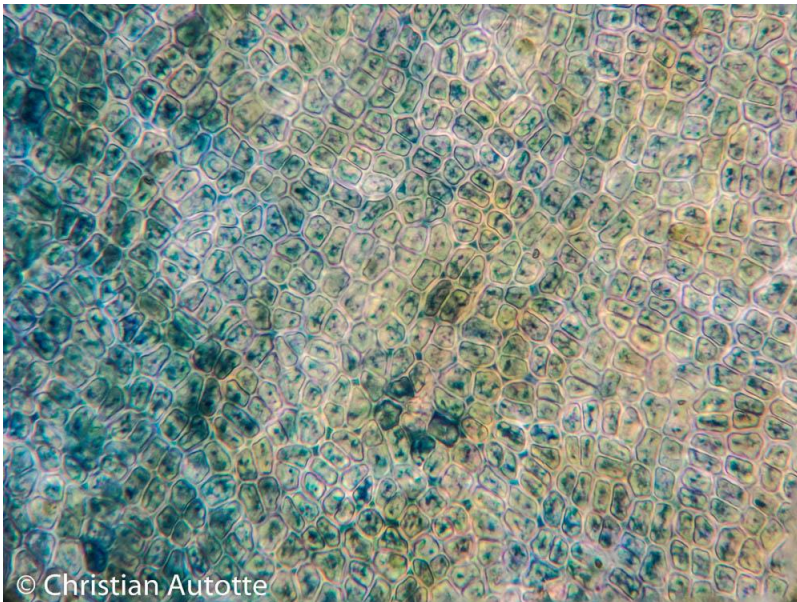
200X, stack of 7 pictures, colored with Toluidine Blue



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400X, stack of 2 pictures, colored with Toluidine Blue

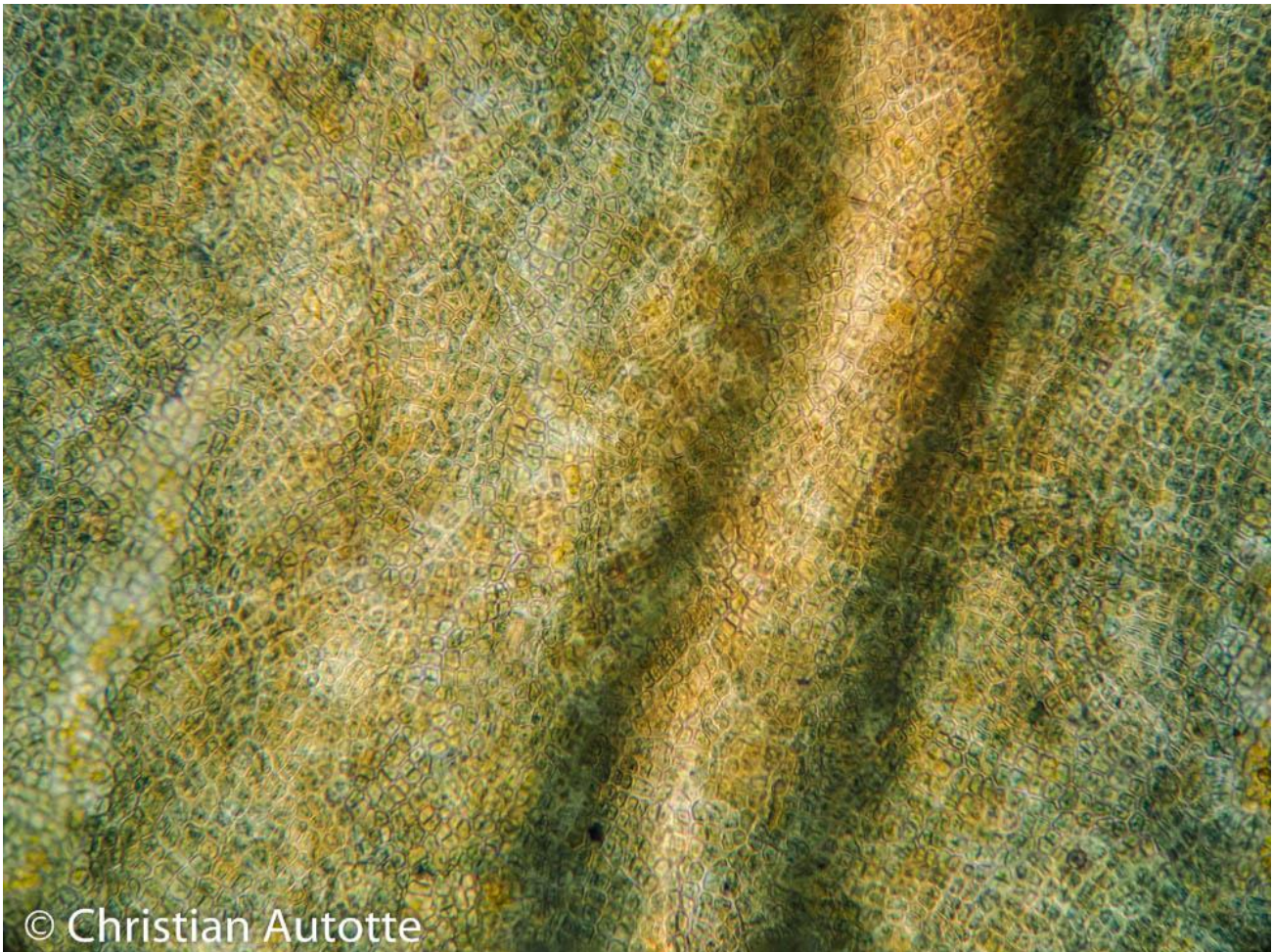




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400X, stack of 7 pictures, colored with Methylene Blue 1%

Next in the cabinet was a vial of Methylene Blue. The resulting pictures looked somewhat similar to those with the Toluidine Blue. I might do more experiments to see what will come out.



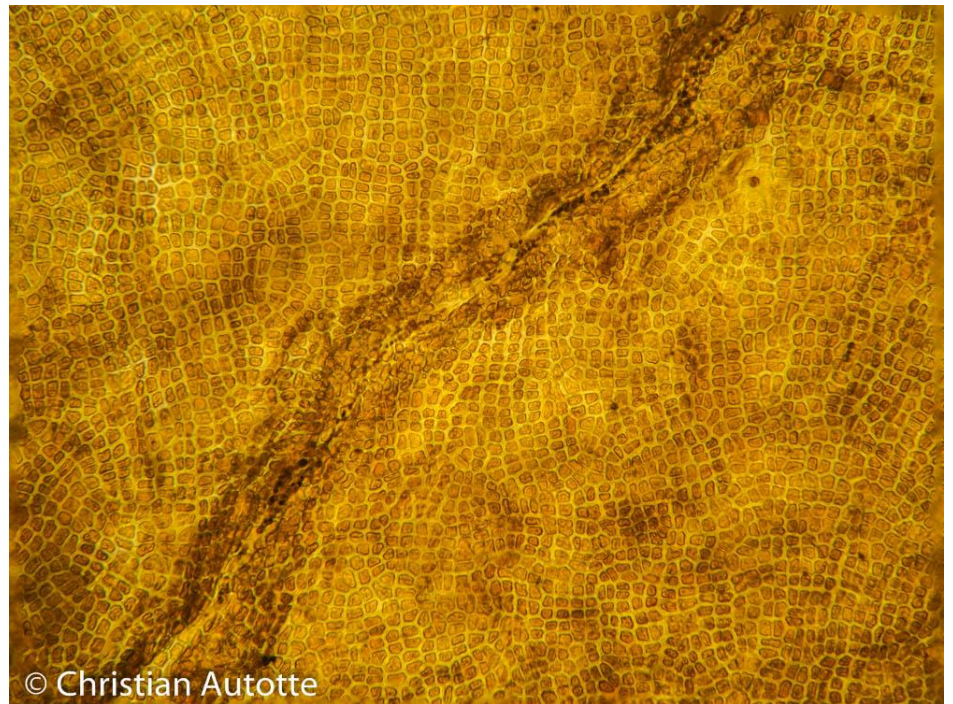
© Christian Autotte

200X, stack of 4 pictures, colored with Methylene Blue 1%



I also had some Eosin left over, but the concentration turned out to be too weak to create a good effect. So on a whim I placed a drop of Iodine 5% solution at the edge of the cover slide; the results were very impressive! Not only do the cells stand out, but the color is a lot more natural, closer to the actual color of the algae.

In the past, Iodine had not proved to be very interesting in coloring various subjects, but it sure made a difference here. I will try it again in the future.



200X, stack of 8 pictures, colored with weak Eosin and Iodine 5%



400X, stack of 8 pictures, colored with weak Eosin and Iodine 5%

The conclusion? If at first sight a subject is not to your liking, there may be a way to bring out more details and a more pleasing image. The trick is to experiment with what is at hand.

I don't often use colorants in my microscopic explorations. That is a "weakness" I should try to overcome. I plan to experiment some more with different colorants (including those found in the grocery or pharmacy) while looking at similar brown algae.

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