Explore the Process of Making a Beautiful Microscopy Image

SCIENCE SATURDAY

Using a microscope is only one step in the process of studying a research question. Before this, scientists have to prepare the samples and set up a microscope with just the right features. Often when using a microscope, a scientist will record what they see on a camera. Afterward, the scientist will analyze the images on the computer, sometimes creating tables of numbers and other times optimizing images to show as data. Sometimes, these images are also quite beautiful. Try out this image analysis process yourself to learn more about some biological samples or just to make some striking science art!

The image editing platform

This tutorial will use the freely available web platform of **ImageJ**. You can also download ImageJ to most computers or use alternative image editing software.

- ❏ Open **ImageJ** in your web browser: https://ij.imjoy.io/

The image to analyze

You will analyze a **.tif** image, which includes several components to be processed within the single file. An un-processed TIF file will look blank to standard viewing software So, get to work and see the scientific images emerge!

- ❏ Download **hair-follicle.tif** from the Save & Share Menu.

There are additional images available once you have the basic idea. All of these images are described in this spreadsheet. Some of the smaller images are also available for download in the Save & Share Menu or find all of them here.

Follow the Tutorial

1. Drag your image into the ImageJ window. Navigate between the image channels stacked in this file using the scroll bar at the bottom of the image.
2. To make all of the stacked images visible together, go to the menu bar: Image >> Color >> Make Composite
3. Turn individual channels on and off: Image >> Color >> Channels Tool and a window will appear with checkboxes for each channel
4. Adjust the signals from different channels: Image >> Adjust >> Brightness/Contrast and adjust Minimum and Maximum. Use the scroll bar to move to a particular channel to adjust its signal. Avoid saturation or background signal.
5. To change particular channel colors: In the Channels Menu click More and select a new color from the menu
6. Save the image: Image >> Color >> Stack to RGB to make a flat image (no more scroll bar) and then File >> Save As >> TIFF. Change the name if needed.