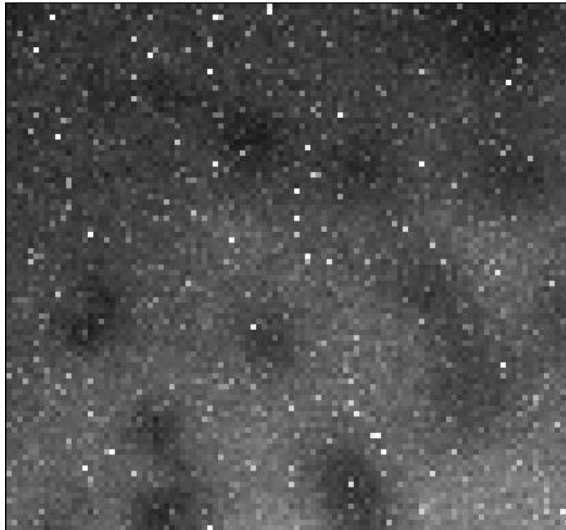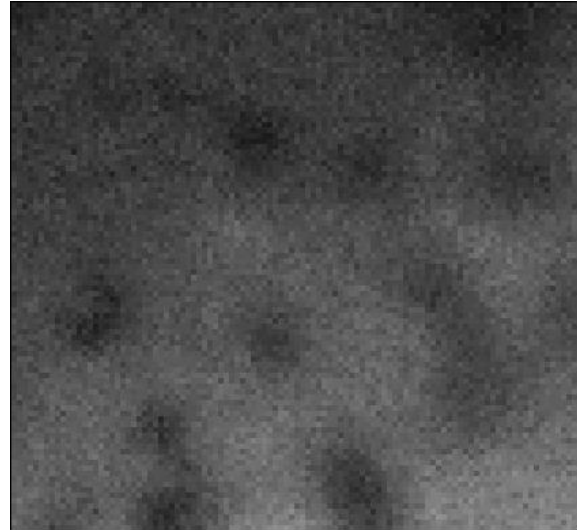## Correcting noise in sCMOS images

sCMOS cameras have many of advantages over CCD technology but in long term exposures the noise level can increase significantly. This kind of noise consists mainly of intense spikes. Fiji includes a tool called: **"Remove Outliers"** for removing it.
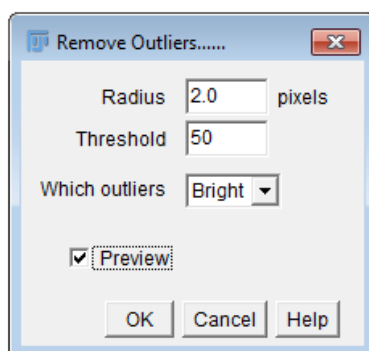

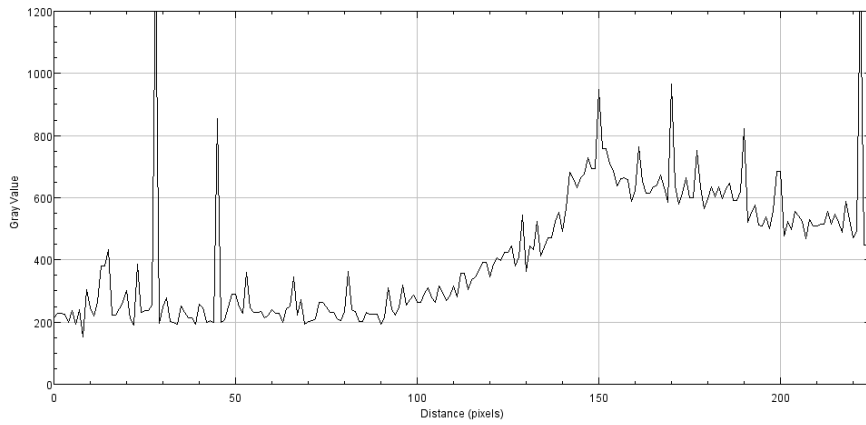**Before noise removal**

After noise removal

1. Start "Process/Noise/Remove Outliers".
2. **"Radius"** defines the neighborhood of pixels which will be used for calculating the new pixel value. The default value of **2** works well on this type of noise and doesn't alter the signal intensities too much.
3. **"Threshold"** defines the intensity value above which the spikes will be replaced. Find a value that is small enough to effectively remove the noise. The default value of **50** works well in most cases.
4. **"Which outliers"** defines if dark or bright pixels should be removed. As mentioned, the **bright** intensities are the most problematic in sCMOS images.
5. A description of this tool can also be found here: https://imagej.nih.gov/ij/docs/guide/146-29.html#sub:Remove-Outliers
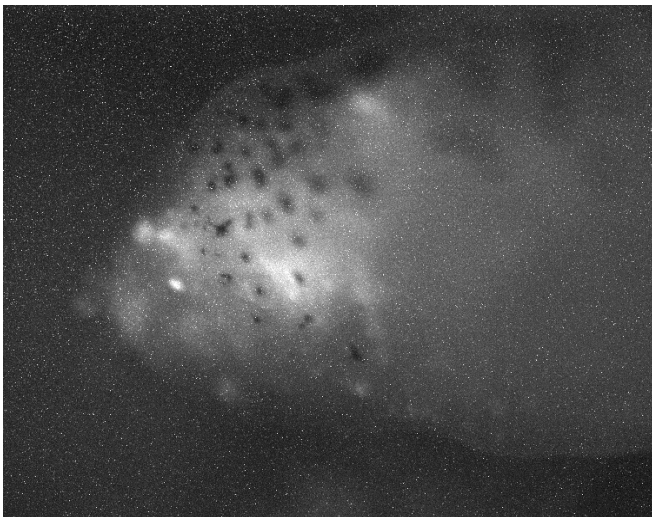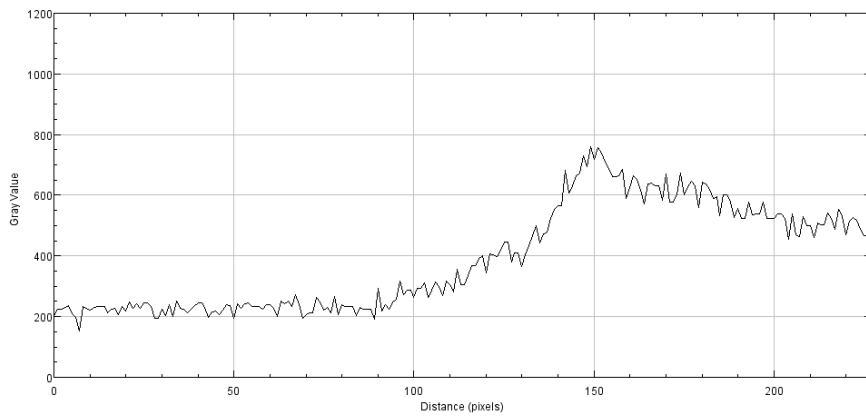Use the same filter parameters for all your images, especially if you want to measure intensities!

6. Correction of multiple images is possible using the batch function in Fiji. If you have questions on that please contact us.
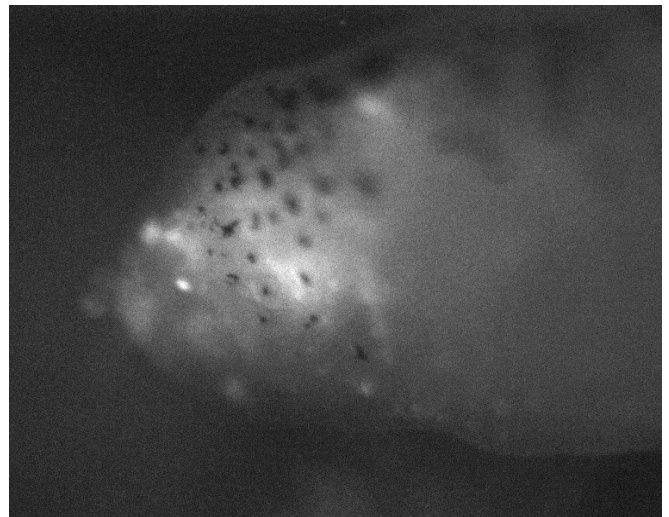
Before noise removal

After noise removal

Before noise removal

After noise removal