

Dendrite Length Quantifier 1.0

An automatic tool for high throughput dendrite length quantification

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Tool Functionality

Given channels of dendritic morphology (8-bit image), the tool estimates the dendrite length. The tool also assists the adjustment of critical parameters for soma extraction if soma mask is not already supplied. After the soma related parameters are set, the whole quantification process is fully automatic and can be used for high throughput process.

Installation

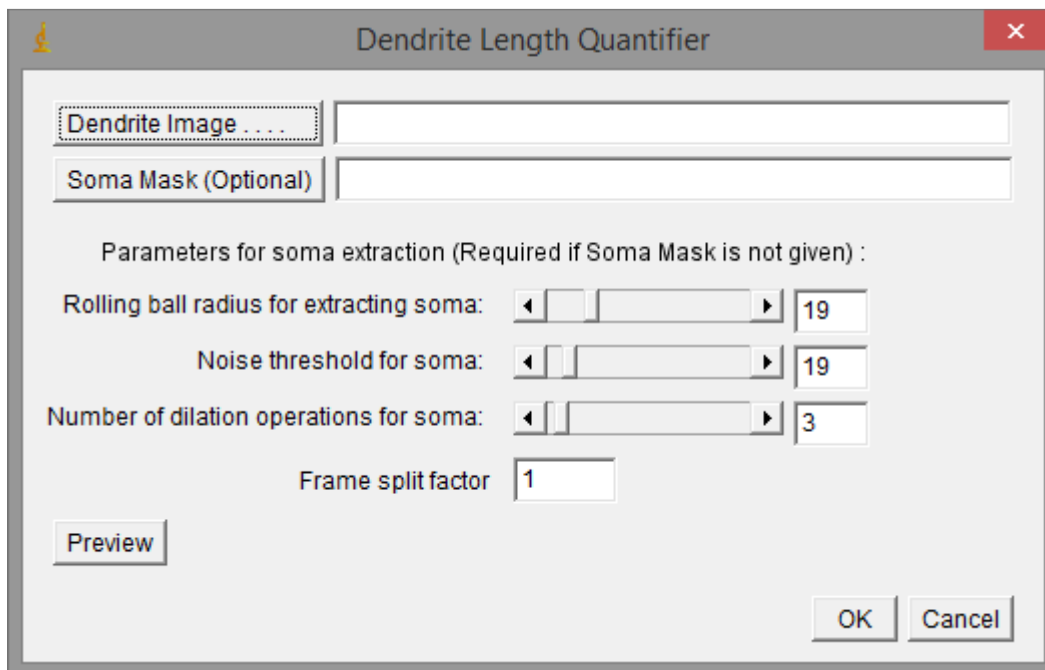
Unzip the file Dendrite_Length_Quantifier_S1.piz to ImageJ -> Plugins folder (Image version 1.48+).

Now, run ImageJ GUI, and the plugin can be found at:

Menu -> Plugins -> Dendrite_Length_Quantifier_S1 -> Dendrite Length Quantifier

GUI and Parameter

Load the image to be quantified in the plugin using the 'Dendrite Image ...' button.



Following parameters are needed if soma mask is *not* given:

- **Rolling ball radius for extracting soma.**
This parameter is used to detect and remove soma, you can adjust the scroll bar to change the value and see the effect of changed value in preview.
- **Noise Threshold for soma**
This parameter is used for soma detection and can be changed using the scroll bar, you can see the effect of changed value in preview.
- **Number of dilation operations for soma**
This parameter is used for dendrite detection and can be changed using the scroll bar, you can see the effect of changed value in preview.

Frame split factor:

This parameter is used for processing images that were originally stitched from several neuronal images by the imaging system, or the size of the image was very large. For example, if a frame split factor is set to 4, the software will process the image by splitting it to 4*4 tiles (frames) and process each frame separately. For regular images, it can be set to 1.

Preview Window:

Preview window shows up when “Preview” button is clicked. It only shows the first frame of the images (if the frame factor is 1 then the whole image is shown). When any of the soma-mask related parameters are adjusted, it shows the resulting dendrite image.

Output

Once the “OK” button is pressed in the GUI window, the plugin starts estimating the total length of dendrites. The result will be displayed after the calculation is done.

Note: Batch processing script and example images are available upon request.