CellMorph

This ImageJ plugins measures cell size (area and perimeter) and cell shape (roundness, compactness, aspect ratio, circularity, fit ellipse) in 2D fluorescence microscopy images with labelled cell membranes.

The assay uses a combination of fluorescence intensity, tubeness and edge detections to faithfully identify cell boundaries.

This method uses a specified pixel size that should be modified in the code with your own value (# of pixels / 1µm). This method also excludes cells of certain circularity and area values – these boundaries should be modified if your objects have a different scale or shape.

Before using these plugins, you must install the Canny-Deriche filtering edge detection plugin in your ImageJ plugins folder. The plugin is provided as image_edge.jar.

Image requirements:

Images must be single channel, grayscale images with a single optical slice and a single time-point (if you are interested in a measurement through optical slices or through time, do not hesitate to contact me to make those modifications).

Here is a short description of the provided plugins:

1) CellMorph_.ijm
    - Runs on single channel, single optical section, single time point image
    - Measures cell size and shape based on membrane label
    - Saves an image with measured cells highlighted
    - Saves measurements as a .xls file
    - Can easily be expanded to batch processed folders of images or run across optical sections and/or time points

REFERENCES:

If you use this plugin, please cite:

TBA

ImageJ macro installation:

https://imagej.nih.gov/ij/docs/guide/146-31.html