**//ESM II Script macro “Measure masks”**

// =================================================

// ======Macro to automatically measure the size and shape =======

// =============of multiple images showing masks============

//Developed by W.A. Out & J.F. Pertusa Grau as part of the EU Marie Curie Intra-European Fellowship "Phytores" (273610).

//Please refer to the original paper when using this macro.

//This macro was run using FIJI version 1.48c on a Mac Os X version 10.6.8.

//Based on two plugins:

// Particles\_8 by Gabriel Landini, G.Landini@bham.ac.uk

// Copyright (c) G. Landini

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\* Bob Dougherty 6/27/2004

\* Adapt Wayne Rasband's Custom Particle Analyzer to the case of Measure Roi

\* Version 1 2/26/2007 Update with using the new version of the Custom Particle Analyzer by

\* Greg Joss and Wayne Rasband

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// Loop to run the macro repetitively, see also the last line.

var shouldKeepRunning = true;

while (shouldKeepRunning)

{

//To open a series of images that are located in a single folder and contain "mask" in the name.

//The images are converted into a stack.

run("Image Sequence...", "dir starting=1 increment=1 scale=100 file=Mask or=[] sort");

//To convert the stack into a montage (single slice) showing all the masks.

run("Make Montage...", "scale=0.25 first=1 last=150 increment=1 border=0 font=12");

//To binarise the new image to prepare for collecting measurements (a thresholded 8-bit image is required).

//To obtain measurements of all masks instead of the montage itself.

setThreshold(129, 255);

setOption("BlackBackground", false);

run("Convert to Mask");

//To run the plugin Measure Roi Curve to measure the masks.

//A new window with masks appears to visualise the action.

run("Measure Roi Curve", "size=0-Infinity circularity=0.00-1.00 show=Masks display");

//To take the measurements of two obtained variables from the plugin Measure Roi Curve, Curve\_Length Curve\_Width, and remember the values in two arrays.

n=nResults;

x=newArray(nResults);

y=newArray(nResults);

 for (i=0; i<=n-1; i++) {

 x[i]=getResult("Curve\_Length", i);

 y[i]=getResult("Curve\_Width", i);

 }

//To close the window with results.

run("Close");

selectWindow("Results");

run("Close");

//To binarise the image (montage) to prepare for collecting measurements (a thresholded 8-bit image is required).

//To obtain measurements of all masks instead of the montage itself.

setThreshold(0, 129);

setOption("BlackBackground", false);

run("Convert to Mask");

//To run plugin Particles\_8 to measure the masks.

//Be aware of the risk that digits behind the comma change are rounded up when running the macro repetitively.

//This can be solved by adding the line “rt.setPrecision (3);” below the line “public void run(ImageProcessor ip) {” in the script of Particles\_8.

run("Particles8 ", "label morphology show=Particles minimum=0 maximum=9999999 display redirect=None");

//To combine the results of the plugin Measure Roi Curve with the results of the plugin Particles8.

 setOption("ShowRowNumbers", false);

 updateResults;

 for (i=0; i<=n-1; i++) {

 setResult("Curve\_Length", i, x[i]);

 setResult("Curve\_Width", i, y[i]);

 }

 setOption("ShowRowNumbers", false);

 updateResults;

//To save the results of the plugins Particles\_8 and Measure Roi Curve in a newly created folder "Data" in the directory that also contains the folder "Masks".

dir=File.directory;

mydir = dir+"Data"+File.separator;

File.makeDirectory(mydir);

 title = "P8+mroi" + ".xls";

saveAs("Measurements", mydir+title);

//To close window with results

run("Close");

//To close all windows.

while (nImages>0)

{

 selectImage(nImages);

 close();

}

//To inform the user and to offer the chance to restart or end the process.

shouldKeepRunning = getBoolean (

 "The measurements have been written to a data folder at " + mydir + "\n\n" +

 "Would you like to restart?");

} //Loop back while the user wants to continue

// \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

// \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*END macro to automatically measure masks\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

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