# Manual Root-O-Mat

Release 1.0

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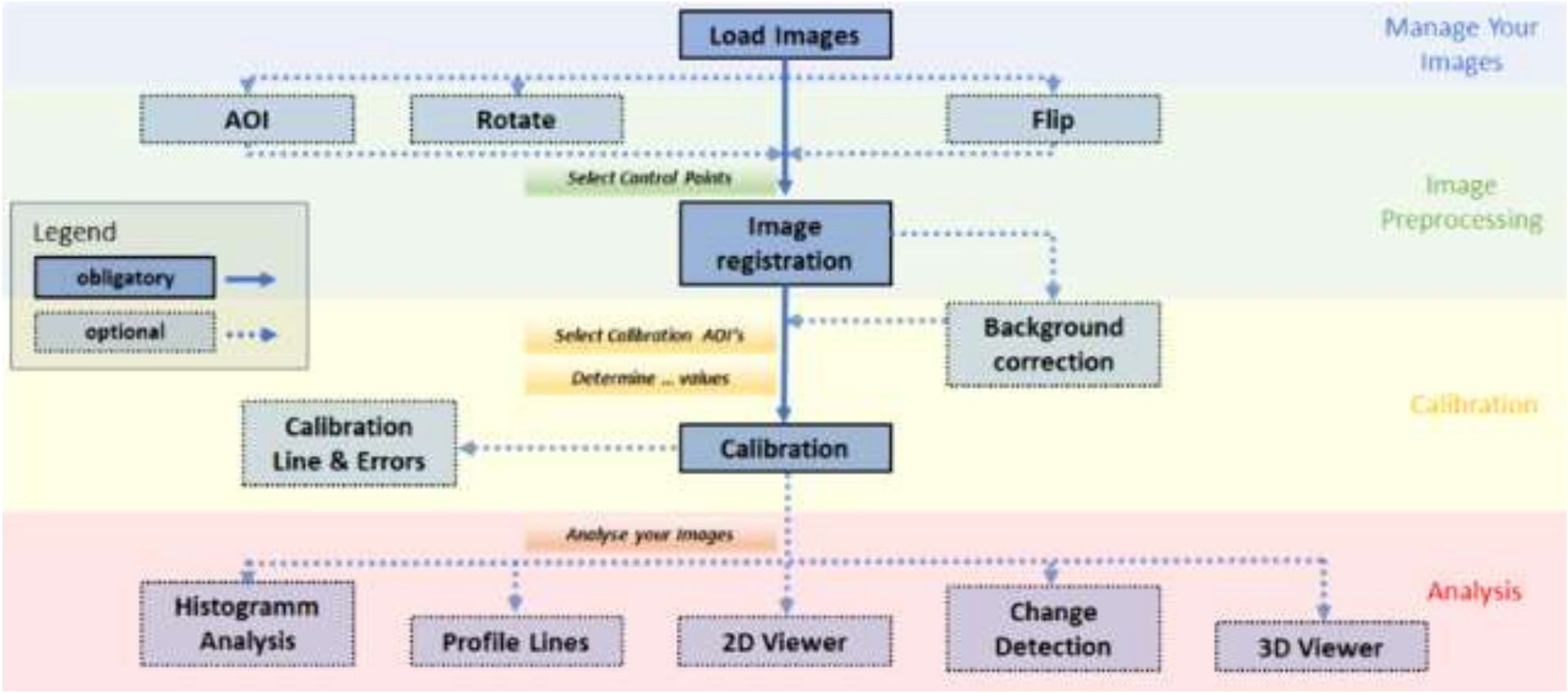
# Scheme

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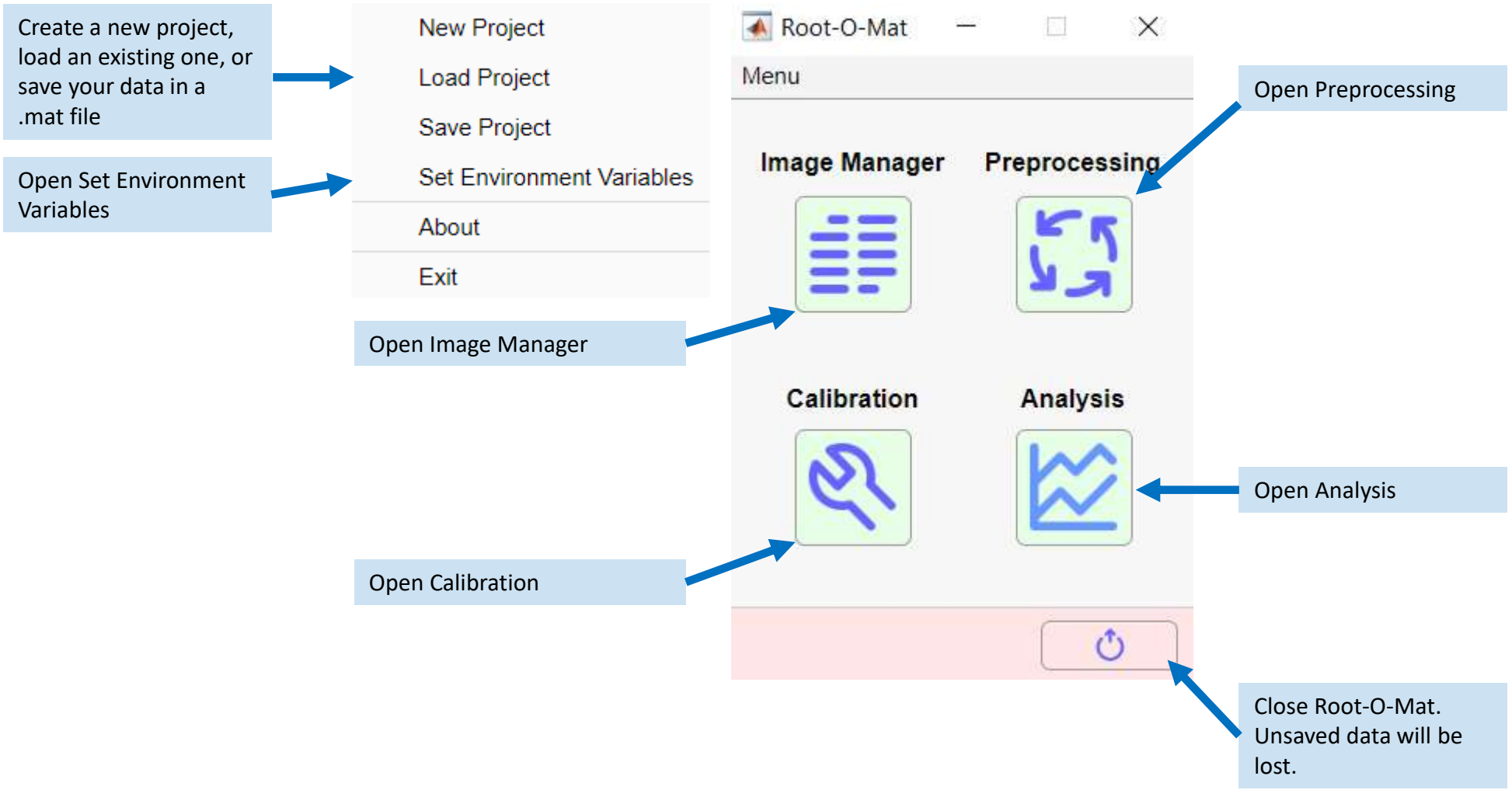
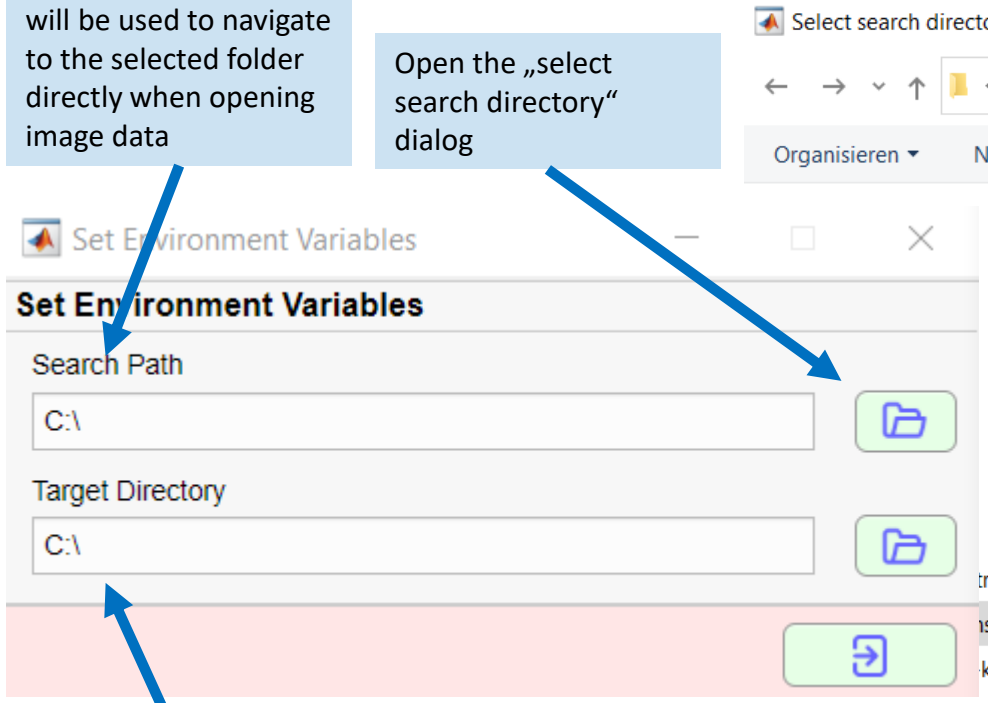
# Main Menue

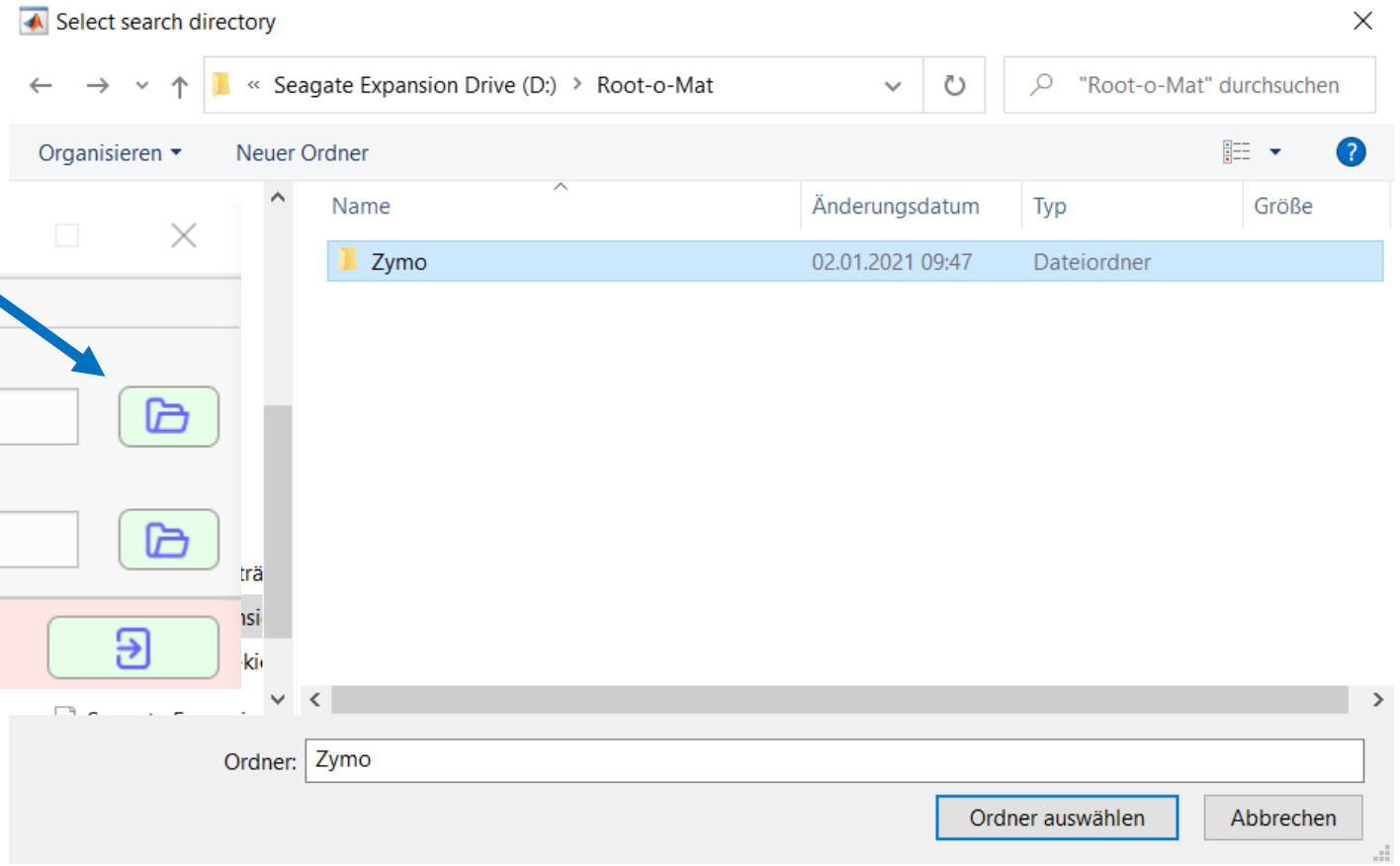

Create a new project, load an existing one, or save your data in a .mat file
Open Set Environment Variables
New Project
Load Project
Save Project
Set Environment Variables
About
Exit
Root-O-Mat
Menu
Image Manager
Preprocessing
Calibration
Analysis
Open Image Manager
Open Preprocessing
Open Calibration
Open Analysis
Close Root-O-Mat. Unsaved data will be lost.

# Set Environment Variables

The Search Directory will be used to navigate to the selected folder directly when opening image data

Open the „select search directory“ dialog



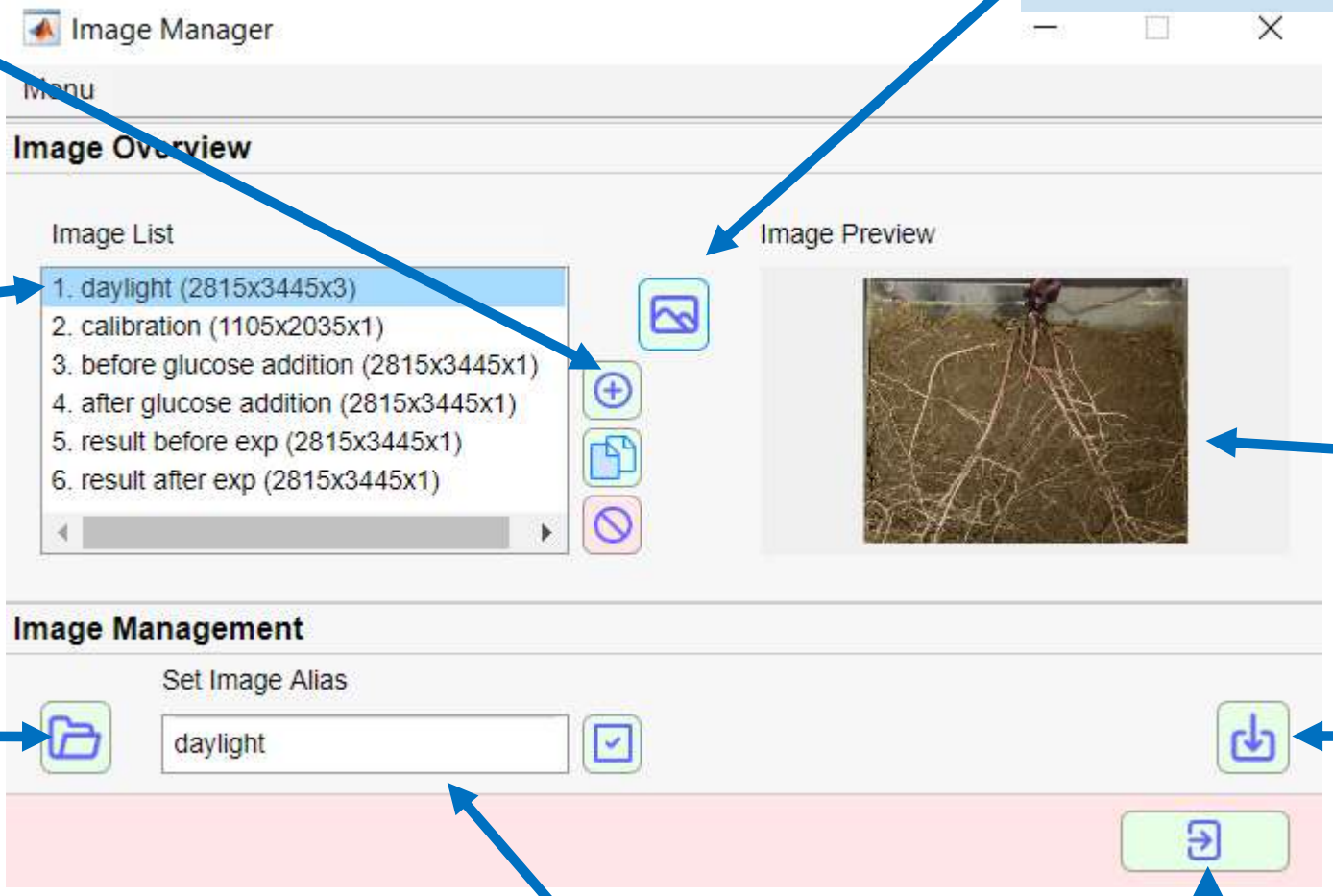

The Target Directory is the default path when saving the results

# Manage your Images

The „+“ - button creates a new image slot, the „–“ – button deletes the selected one. Use the „Dublicate“-button to copy a slot including all data

The Image List shows all image slots including their resolution. Images are shown in the Image Preview. Multi-selection is possible by pressing SHIFT

Opens Image Viewer




The Image Preview shows the image selected in the Image List. 8-bit input images will be displayed in grayscale, and 64-bit result images with colormap

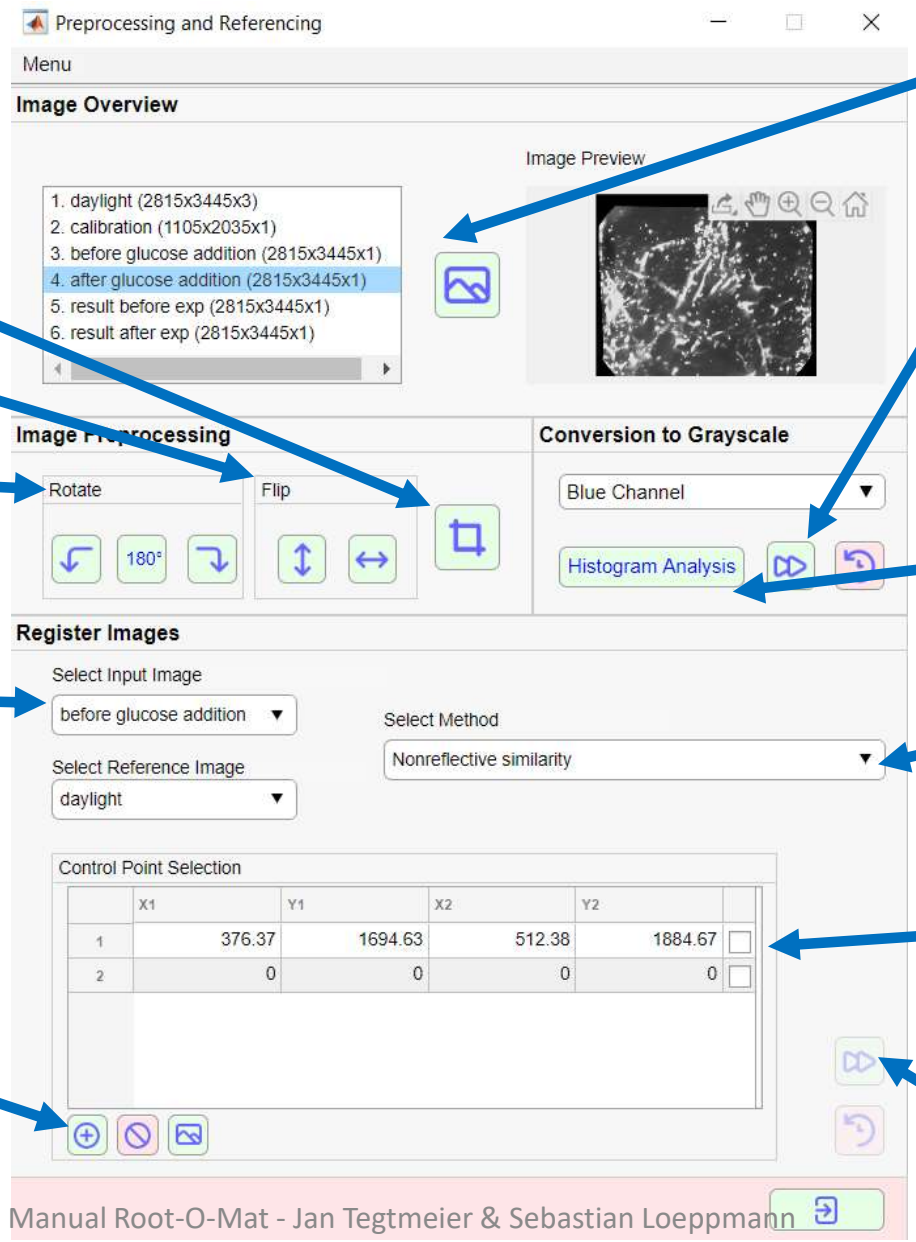
Load image data into the selected image slot

Open Export Data

Set an Alias for the image slot selected in the Image List

Save changes and quit Image Manager

# Image Preprocessing and Image Registration




Crop image

Flips the image upside down or left-right

Rotates the image by 90° left or right, or 180°

Select the Input Image and the Reference Image

Add a new control point or delete the last one in the list. Note, that there is a minimum of control points required depending on the registration method selected

Select method for grayscale conversion

Converts all images selected in Image List to grayscale using the method selected above. Undo the changes using the Reset-Button

Open Histogram Analysis

Select method for image registration.
Minimum number of control points for
Non-reflective similarity: 2
Affine: 3
Projective: 4

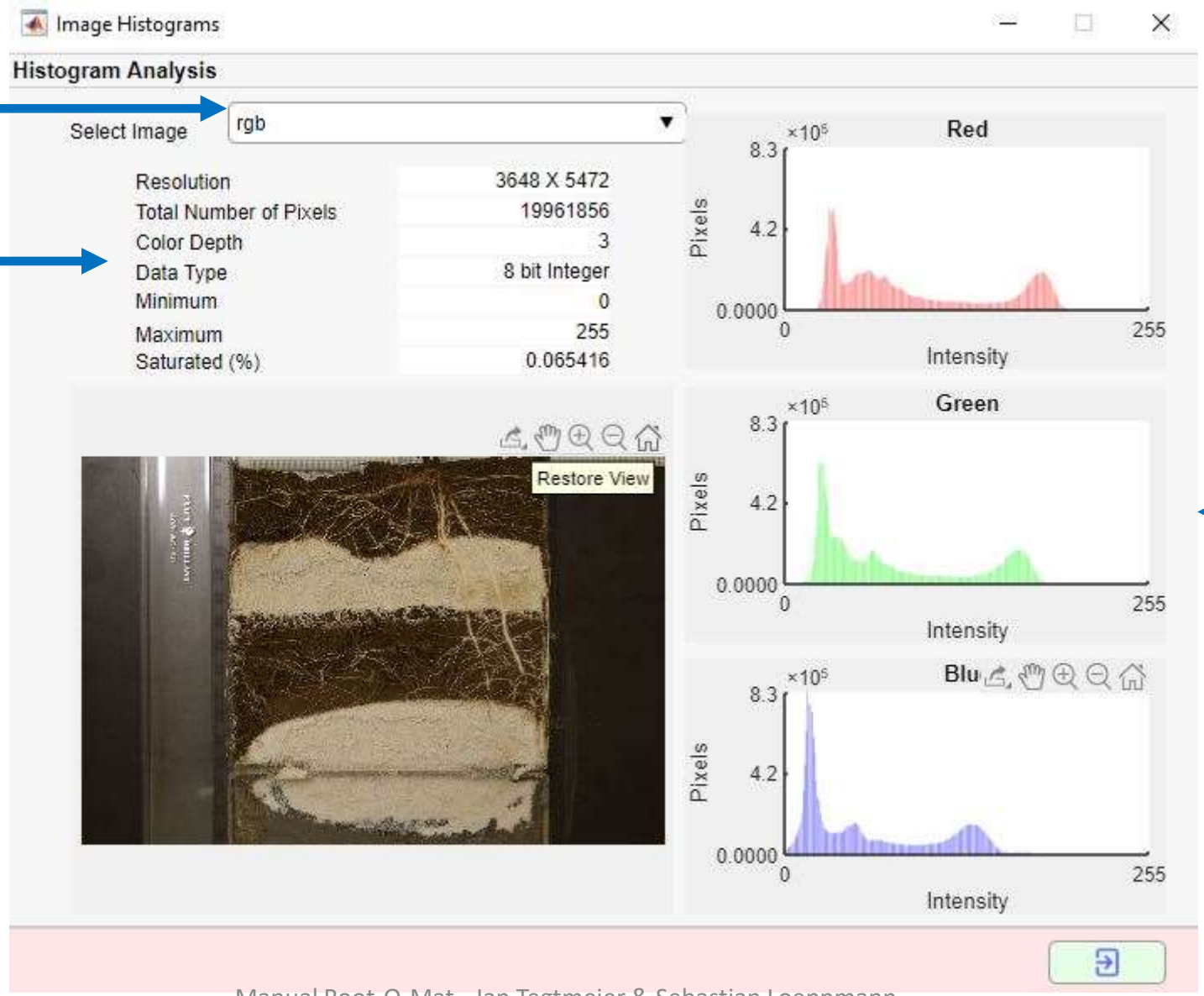
Click on the checkbox to select a pair of control points in the input and reference image

After image registration is performed, a new window with an overlay of the registration result and the input image opens. The original image data in the input image slot will be changed.

# Image Histogram Analysis

Select your image for analysis

Basic image information are shown here




The histograms of the selected image. R/G/B components will be shown separately.

# Calibration

Select AOI from image
for background correction

Select AOI from the selected image to
calculate the mean grayvalue
for background correction

Apply Background Correction.

List of calibrations

Set an Alias for the selected calibration

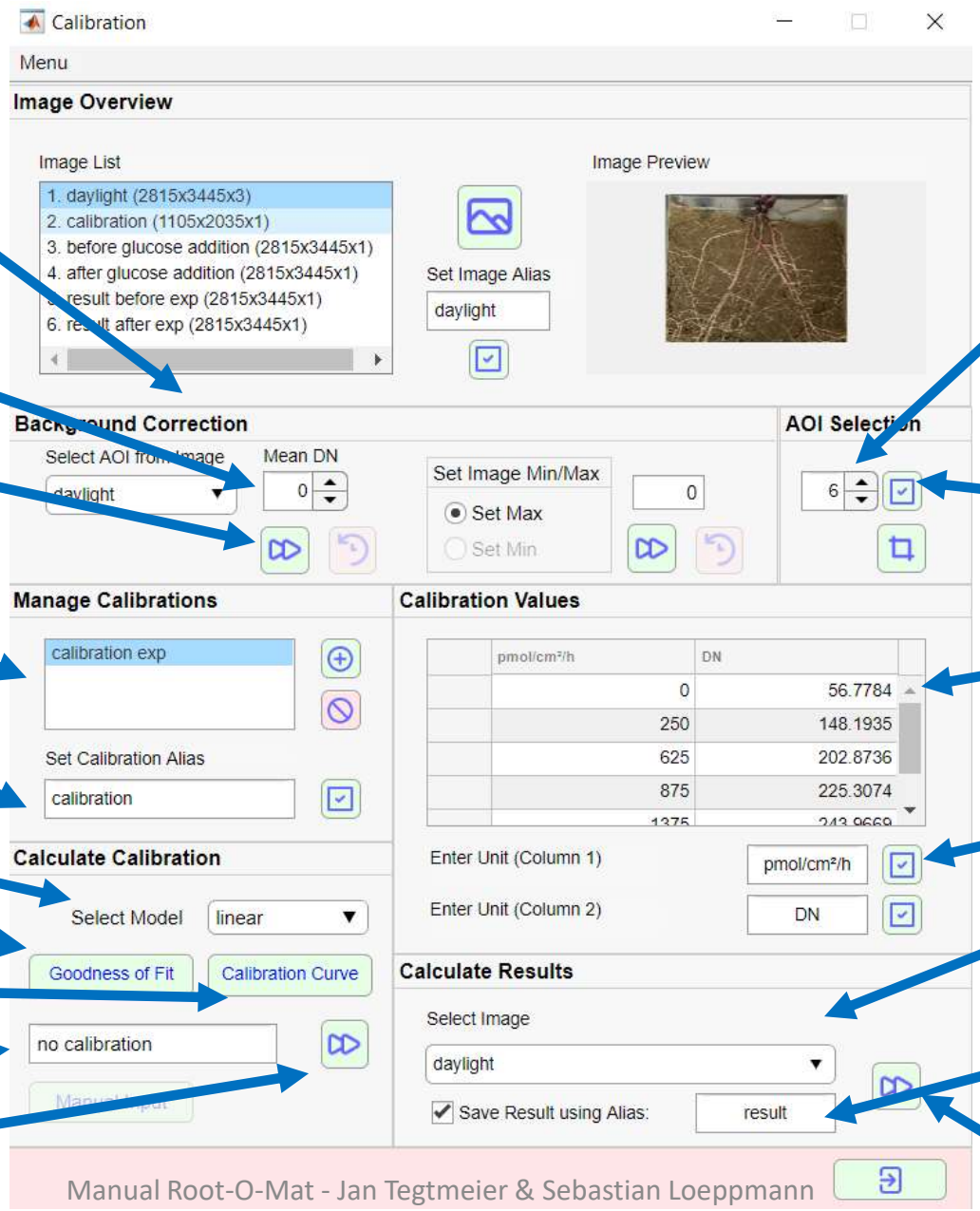
Select the model used for calibration

Show the goodness of fit

Show the calibration curve

Shows the calibration formula

Performs curve fitting




Select the number of calibration points

Start AOI selection. Select the calibration image in the image list first.

Enter your calculated calibration values in the first column of the table. The second column will be filled out with the mean gray values automatically when the AOI selection has been performed

Enter the unit for x- and y-axis (will be used for labeling)

Select the zymograph to process the calculation for the resulting image

Check the „Save Result“ box and enter an Alias to make the result available in the Image List

Calculate your result

# Draw a polygon for each calibration concentration


Left click to enter a new vertex. After closing a polygon with the last vertex, right click into the polygon area and select „finish“ from the menu to finish polygon. Note, that this process will repeat several times according to the number of AOIs selected in the calibration menu. You are able to delete a single vertex, however do not delete the last one. If so, you need to close the window and start AOI selection again

The mean gray value of the pixels will be shown after finishing the polygon

# Analysis

Change detection: Select input images from the drop down menue

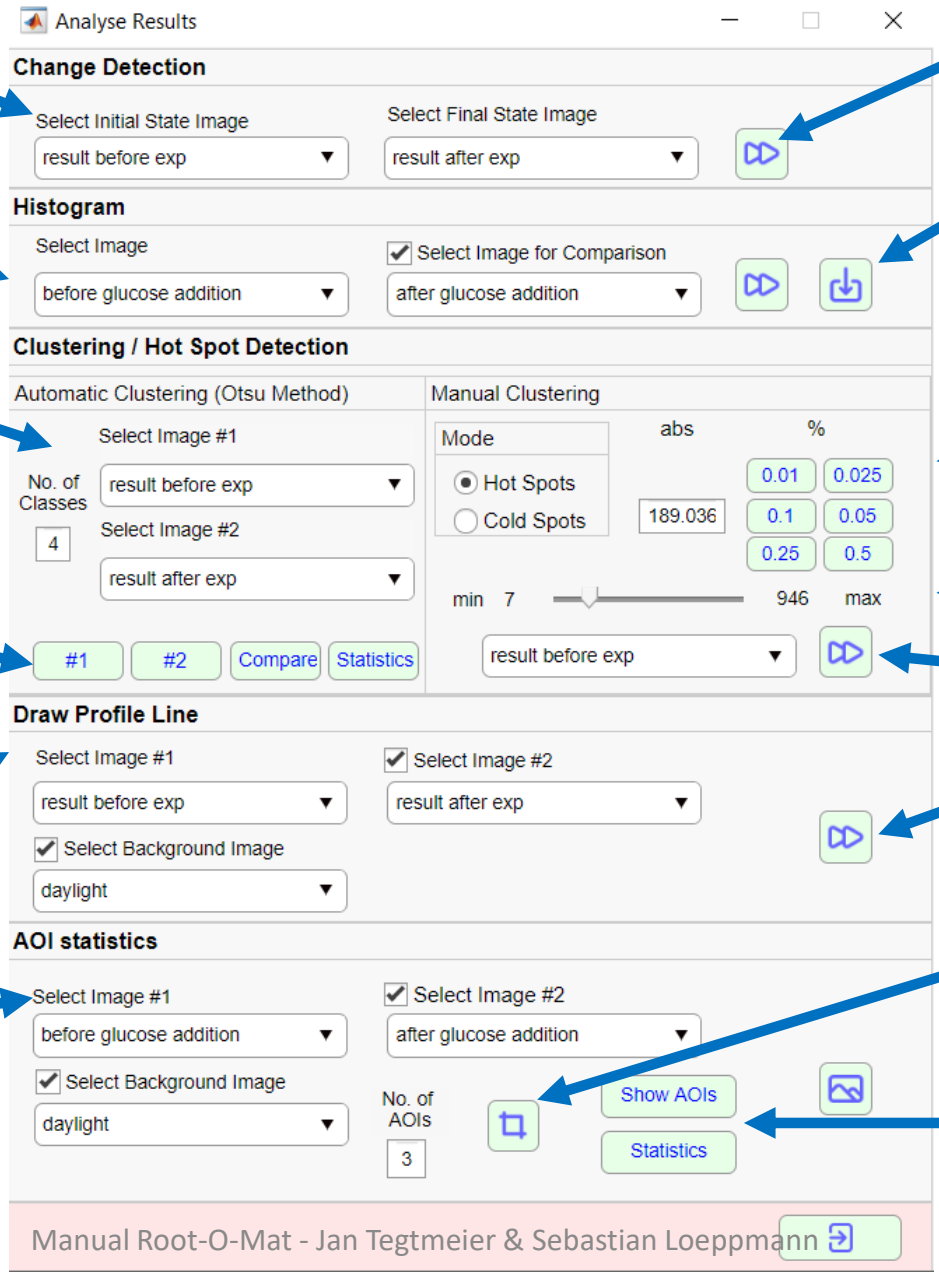
Compare images by the frequency distribution analysis

Automatic Clustering using Otsu method. Select the input images and the number of classes first

Show clustered image #1. The same thresholds are used for image #2. The Compare Button shows the changes, Statistics compares the percentage of total image area by class

Compare profile lines from two images. Select an optional background image to draw on

Compare polygons from two images. Select an optional background image to draw on




Show the difference image

Export the histogram data

Select the percentage of total image area to be classified as Hot- or Coldspots

Use the slider or the text field to enter the threshold manually

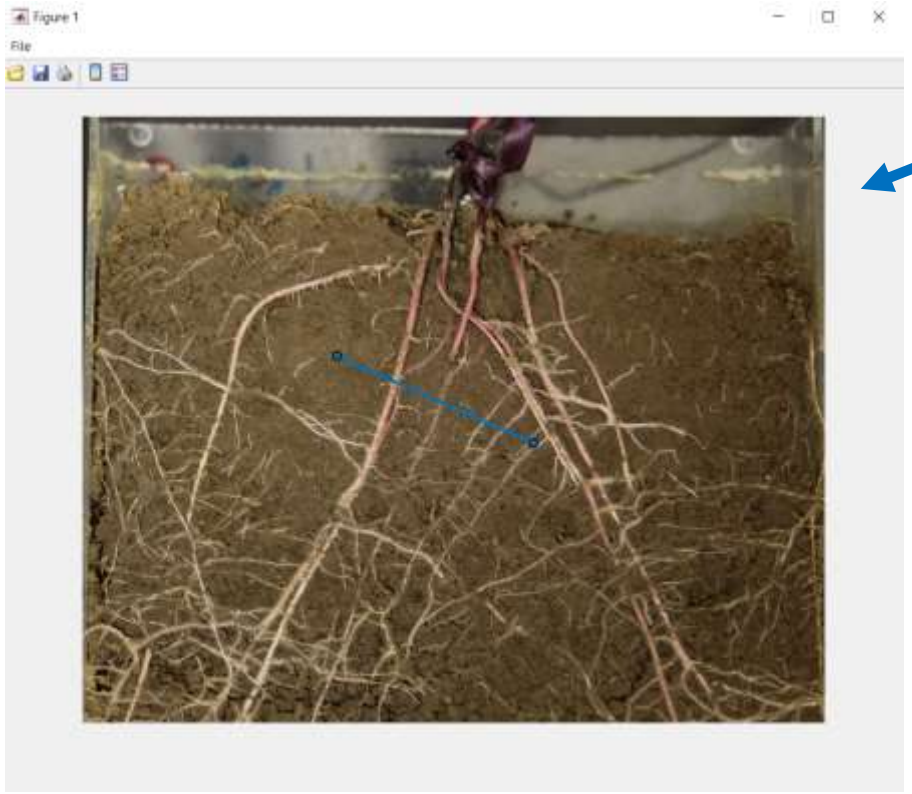
Select the image to analyse and start the clustering using the threshold above.

Start drawing a Profile Line

Start drawing AOIs

Show AOIs and Statistics

# Draw a profile line into the image




Start drawing the profile line by left click into the image. Hold the mouse button until you reach the endpoint. The plot window (right) will open automatically