

Overview of technical features - TissuemorphDP™

Nuclei

Nuclei detection:

- Advanced techniques for identifying nuclei based on color, shape, and size.
- Work in true stain space for classification
- Classifier trained by example using the Label and ROI tools.
- Detection of 1 or 2 types of nuclei for accommodating differences in shape.

Nuclei Classification

- Separate detected nuclei into positive and negative.
 - User defined threshold for positivity.
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Cytoplasm

Detect cytoplasm based on feature image:

- True stain space
- Traditional color space
- User defined threshold for detection

Detect cytoplasm based on morphology:

- Set maximum cell width.

Easy endpoint definition for cell population characterization:

- Nuclear and cytoplasmic intensity
 - Histogram and 2D scattergram representation
 - Proliferation ratio
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Membrane

Membrane detection:

- Advanced techniques for identifying membrane based on texture and color.
- Classifier trained by example
- User defined threshold for sensitivity.

Easy endpoint definition, e.g.:

- Membrane connectivity
 - Intensity
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Whole Slide Image integration

Process Whole Slide Images directly in the database either in ROIs, entire image, or batch mode.

Ability to work with Whole Slide Images from 3DHISTECH, Aperio, Hamamatsu, Leica, Olympus and Zeiss.

Database

Microsoft MS-SQL database

Switch between databases with four folder levels

Define database structure

Store and review individual and series of images, pairs of images, image stacks, stitched images, image data, and image metadata

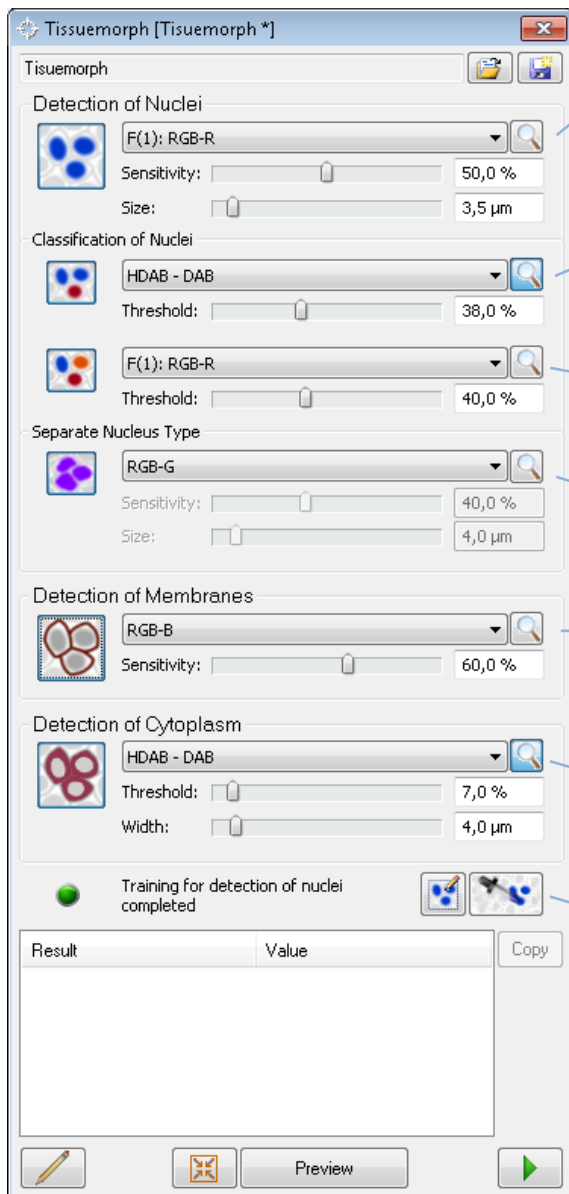
Import individual or series of images to the database

- Support for all major image formats

Assign calibration to imported images

Card view allows including and reviewing user defined information at different levels in the database

Electronic audit trail



Detect nuclei based on feature image and move the slider bar to see the effect of different levels of sensitivity. Move the slider for the size or enter a value in microns.

Classify nuclei as positive vs. negative based on a feature image (e.g. stain separated image) and adjust the threshold to see the effect

Adjust the level of positivity manually and see the effect immediately in the image.

Train the classifier to detect another type of nuclei if two types of nuclei with distinct shapes are present in the image.

Train the texture classifier and choose a feature image for detection of membranes. Manually choose the sensitivity of detection by moving the slider bar or entering a percentage.

Detect cytoplasm corresponding to all detected nuclei based on a feature image, a threshold for detection and a cell width.

Launch Label tool for drawing and train classifier.