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Understanding Images

Definiens

Tissue Studio® 3.6

Release Notes

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FASTER RESULTS
BETTER DECISIONS

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Definiens Documentation:

Definiens Tissue Studio® 3.6

Release Notes

Imprint

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Thank you.

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1 Overview

Definiens TissueStudio® is the leading image analysis solution for quantitative digital pathology. It opens up new dimensions in tissue quantification by providing morphological fingerprints and biomarker expression profiles on a cell-by-cell basis. Definiens Tissue Studio supports scientists and pathologists in rapidly developing image analysis solutions for changing assays to obtain consistent and quantitative readouts quickly.

With the built-in Definiens Composer Technology™, regions of interest can be extracted from images by selecting samples and train the software how to find the regions of interest. Once the training is finished, Definiens Tissue Studio® can extract the regions from an unlimited number of images.

A library of pre-defined image analysis solutions for typical every-day problems is provided that can be calibrated for the particular image data set, using Definiens Composer Technology™ and/or simple graphic sliders. These calibrated applications can be saved and submitted for batch execution.

Definiens Tissue Studio® allows the user to quantify IHC, immunofluorescence, in situ hybridization as well as other histological assays.

1.1 About Definiens Tissue Studio® 3.6

Definiens is delighted to bring version 3.6 of Definiens Tissue Studio® to you. The main goal of this release is making users more productive, accelerating the whole process from digital image to final result. We recommend all customers to update to this new release. Please have a look at the key features:

1. Fast and efficient review of large, whole slide images for quality control and result interpretation
2. Improved handling of metadata (patient ID, dosage, etc.), e.g. for visualization, training data set creation and result review
3. Smooth integration with Definiens Image Miner® for fast path to final result
   - Direct interaction between products
   - Metadata directly available for data grouping, data visualization and result interpretation
4. Introducing a new workflow for iterative improvement of results, using a different solution e.g. on outlier images

This release comes with a number of additional enhancements, e.g. support for the Nikon file format, and ca. 15 bug fixes. Please have a look at the next section for details.

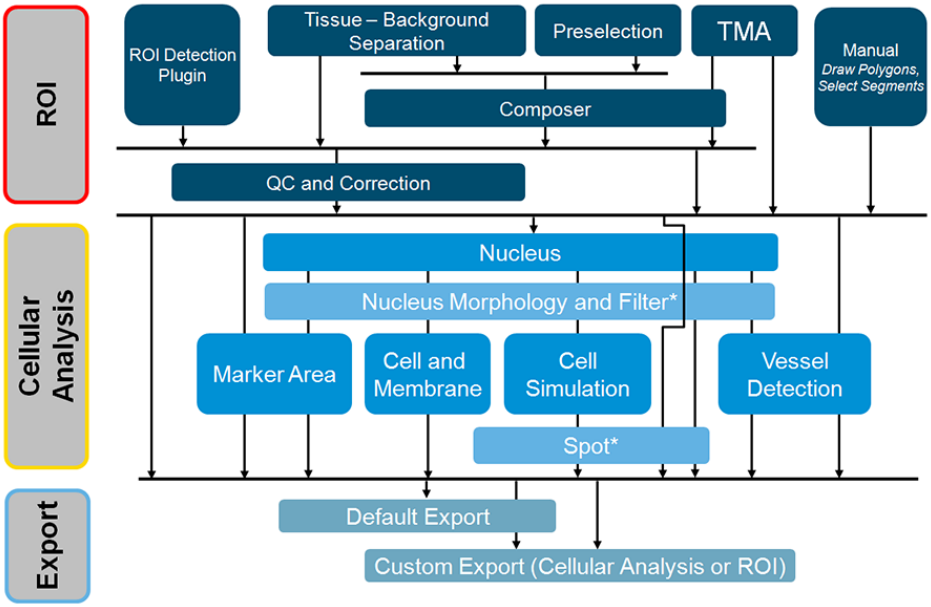

Figure 1.1. Overview of available actions in Definiens Tissue Studio (to reduce complexity, classification actions are not displayed)

2 New Features, Bug Fixes and Known Issues

2.1 New Features

See table 2.1 on this page, *New Features in Tissue Studio 3.6*.

Table 2.1. New Features in Tissue Studio 3.6

Category	Reference	Description
Data I/O	20409–20414	Import of metadata based on csv files
Data I/O	20170	Support for Nikon Elements .nd2 file format
Data I/O	20401	Display warning if an image with bit depth unequal to 8 bit is loaded into non-fluorescence portals
User Interface	20445	Workspace Window: Added option to reset single projects and delete all results from this project.
User Interface	20620	Workspace Window: Visualization of csv-based imported metadata
User Interface	20431	Image Layer Mixing: Fast histogram calculation (approximation) for large images
User Interface	20179	Whole Slide Review mode: Allow fast visualization of whole slide image result based on new result container export algorithm
User Interface	20382	Add option to open current workspace in Image Miner (Review tab)
ROI Detection	20395	Composer: Improve speed of brush tool for sample selection
Export	20287	Whole slide result container export
Export	18292,19921	Default Export (Cellular Analysis): Export size and coordinates of tiles and samples

Continues...

Category	Reference	Description
Export	20372	Custom Export: Export metadata for TMA
TMA	20317	Improved core detection
Usability	20351	Fast loading of Solution files

2.2 Bug Fixes

See table 2.2 on the current page, *Bugs Fixed in Tissue Studio 3.6*.

Table 2.2. Bugs Fixed in Tissue Studio 3.6

Category	Reference	Description
Data I/O	20501	Leica SCN: Files created from Ariol cannot be loaded
Data I/O	19938	Olympus: Crash when importing images with Z stack
Data I/O	20682	Leica SCN: Driver is not available in fluorescence portals
Data I/O	19903	Solution compatibility: Solution upgrade does not work for Architect XD client
User Interface	20446	Repeated processing in workspace leads to column duplication in workspace window
ROI Detection	20212	Composer: Reclassify: Tiling artifacts
Cellular Analysis	20456	Vessel Detection: If no vessel present on tile, nuclei are detected as vessels
Cellular Analysis	20882	Initialize Cellular Analysis: Random Sampling: Sample size is reset if solution is loaded without image
Cellular Analysis	20871	Membranes & Cells: Different thresholds are applied per tile. Same threshold should be used.
Cellular Analysis	19912	Cell Simulation: No cells are built in large stained areas for setting “Inside Cytoplasmic Stain”
TMA	20284	Artificial border artifacts in addition to tile borders are present
Export	20909	Custom Export: Zero values for Manders Coefficients
Export	20374	TMA: Metadata export mixed up between adjacent cores
Processing	19917	Composer: Analysis fails for special characters in class name

Continues...

Category	Reference	Description
Other	20883	Save Workspace as: Does not copy folder for ROI Correction

2.3 Known Issues and Limitations

See table 2.3 on this page, *Known Issues and Limitations in Tissue Studio 3.6*.

Table 2.3. Known Issues and Limitations in Tissue Studio 3.6

Category	Reference	Description
Migration	N/A	Limitation: Screenshot settings in fluorescence portals are not automatically migrated if the user chooses to migrate a solution from Tissue Studio version 3.5.0. Please configure the screenshots again after loading the solution.
Processing	N/A	Limitation: The ROI Detection algorithms work on the first six fluorescence channels only. Additional channels are ignored. Data export and visualization is possible for up to 12 channels.
Processing	N/A	Known issue: Users who would like to apply a post-processing rule set to TMA cores should submit the individual cores for post-processing. Post-processing will fail if the whole slide is submitted. In this case the post processing will analyze the cores ignoring the existing results.
Solution Configuration	21172	Known issue: Random Sampling does not work in case ROI Correction is skipped in the Rule Set.
Solution Configuration	21148	Known issue: When “Composer: Initialization” is inserted into the solution after execution of “Initialize Cellular Analysis” (Random sampling), training data seems to be lost. However, it can be retrieved by clicking the Load tab followed by the Configure tab.
Data I/O	N/A	Limitation: Leica SCN: The metadata import is not supported for multiple regions on a single slide.

3 Additional Information

3.1 Compatibility mode for solution files from version 2.1.0 and above

Solution files from version 2.1.0 and above can be loaded with Definiens Tissue Studio 3.6. If an old solution file is loaded, you may choose to enter into a compatibility mode with the respective version. This compatibility mode makes sure that you get exactly identical results when using the same solution. If you would like to leave this compatibility mode, please press the button New Solution or load a solution that has been created with Definiens Tissue Studio 3.6.

3.2 Migrating solution files

When you load a solution file from version 3.5.0 and above, you can choose to migrate it automatically to version 3.6 or stay enter the compatibility mode (see previous section). If you choose to migrate the solution, all settings are kept (with one exception, see section limitations), but the algorithms from the current version will be used for processing. You will benefit from all bug fixes and improvements, but may get different results due to algorithmic changes. Solutions prior to version 3.5.0 have to be migrated manually, i.e. the settings have to be adjusted manually.

3.3 Contact

If you have any additional questions, please contact your account manager or email support@definiens.com.

Acknowledgments

Portions of this product are based in part on the third-party software components. Definiens is required to include the following text, with software and distributions.

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