DEFINIENS®
the tissue phenomics company

Definiens

Tissue Studio® 4.1

Release Notes

Overview

Thank you for using Definiens software. With this document, you will receive an overview about the product and functionality added with this release. Should you have any comment or suggestions, please do not hesitate to contact us on our support website at www.definiens.com/support or via e-mail at support@definiens.com.

About Tissue Studio®

Definiens Tissue Studio® is the solution of choice for biomarker and morphological profiling in research and drug discovery on tissue samples. Through its unique ability to overcome inherent biological and staining variability, Tissue Studio® accurately detects regions of interest and distinguishes cell types and cell subtypes within target regions across any number of tissue slides. It determines morphology and expression profiles per individual cell or cell compartment, solving your most challenging biological questions.

Tissue Studio® supports applications for single or multiplexed Immunohistochemistry (IHC), Immunofluorescence (IF), and In-situ hybridization (ISH) in the areas of Oncology, Immunology, Angiogenesis, Metabolic Disorders, Toxicology, and many more.

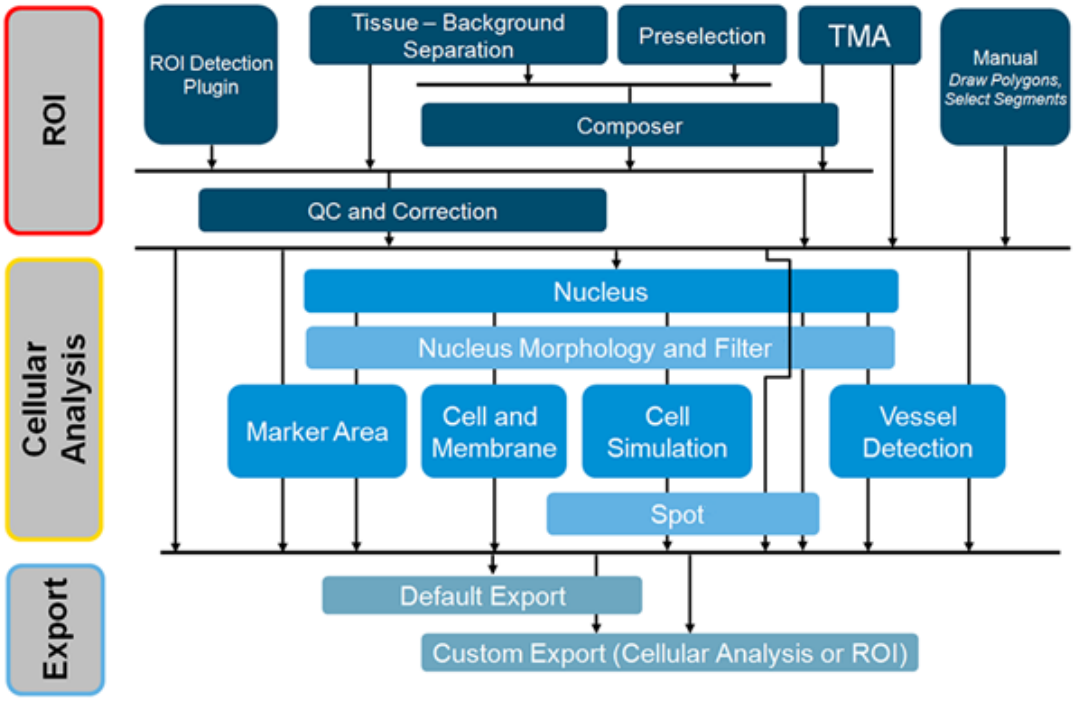


Figure 1: Overview of available actions (w/o classification actions)

What's New

At Definiens, we constantly strive to improve our products. With this new release of Tissue Studio®, you will receive a range of fixes and enhancements designed to improve the overall usability and stability. Additionally, we have added new features. You will find a short description of the most important additions below.

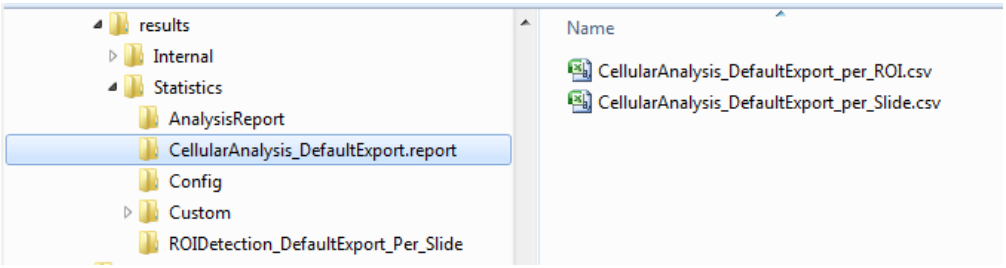
ROI Transfer using co-registration

It is now possible with TissueStudio® to detect an ROI on a selected stain and then transfer this ROI using co-registration to consecutive stains of the same block. There is an increasing need to analyze a specific region using different stains. With Tissue Studio® you can now use one stain to detect for example the tumor region (like HE or a Cytokeratin stain). The consecutive stains are imported into a single project and automatically co-registered to allow a transfer of the detected region to the other stains. In a subsequent step you can analyze the other stains like you are used to with Tissue Studio® using the transferred ROI.

Analysis Performance increased

With the new release of TissueStudio®, we have completely updated the workflow of how the system is analyzing the tissue in the region(s) of interest. There are no longer "tiles" being produced as separate projects during a server run, only a small number of "subset" projects are created. This decreases the processing time significantly with up to 40-50% performance increase. Also, results may differ from similar analysis of previous versions, since the number of tiling artefacts (e.g. nuclei cut at a tile border) is significantly reduced. Additionally the exports are structured differently and the names of several export features have been updated and harmonized. Please refer to section 10 of the Tissue Studio® User Guide for the details.

The CellularAnalysis Default Export has moved into a subfolder of the Statistics folder:



New Heatmap functionality

Due to the new workflow, there are no longer tiles being produced during a TissueStudio server run. There, the former heatmap functionality is not working anymore. We have created a new heatmap with extended functionality, the "Review HeatMap" which works in combination with a DRC, which is produced during a run using TissueStudio 4.1.

Extended dual and flexible stain support
We have further expanded the functionality with dual and flexible stain by allowing the dual ISH (Spot) detection to use flexible chromogens also in combination with silver.
Additionally the vessel detection can now also be done with any chromogen and also in combination with a flexible Marker Stain.

Additional Changes of Note

34022 - Median statistics for Vessel Detection
In former releases, the export of median statistics (e.g. Median Vessel Size (µm²)) depended on the switch "Stitch Tiles" in the General Settings action. Due to the changes of the new workflow, this switch is no longer existent and thus the median statistics are now exported, if a Vessel Classification is present.

34022 - View -> Restore Default needed to update view setting
With this release we have updated the view of the TissueStudio application: The workflow bar is now smaller and the heatmap is exchanged to a new version. In case those changes are not correctly displayed in your update, this might be due to previous installations of TissueStudio and can be corrected by selecting View -> Restore Default.

Upgrade of Previous Installations

For the upgrade of your installation please refer to our customer support.

After successful installation, you will be able to load solution files created with Tissue Studio® 3.5 and above with Tissue Studio® 4.1. 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® 4.1.

Known Issues

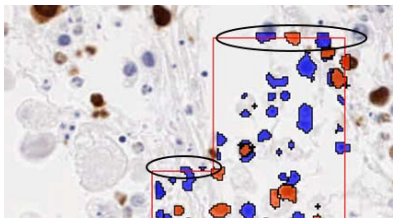
Below you will find a list of the currently known issues for Tissue Studio® 4.1 and possible solutions. In case of any questions please do not hesitate to contact customer support.

32435 – Optical density can not be exported for dual stain cell classification
When selecting customized export for dual IHC stain cell classification, it is not possible to select optical density to be included for the export.

Solution: Select to export the feature “Mean [stainlayer]” instead. This is the calculated product of the optical density and staining.

34341 - Shift between levels

Due to the new processing workflow and usage of the DRC, a small shift may appear comparing the results of the cellular analysis in the review mode. Nuclei (or cells) may appear at the border of the ROI object and may be counted differently when analyzed or when reloaded from the DRC into the review mode or Image Miner®. This is usually not statistically significant and will be fixed with the next release.



32462 – Problems with Spectrum integration when using IE 11.0

You may experience problems such as failed import of data with the Aperio Spectrum integration when using Internet Explorer 11.0.

Solution: Please make sure to use a supported browser, namely Internet Explorer 10.0 or Mozilla Firefox 33.0.

32459 – Fluorescence portal screenshots settings may not be migrated automatically

When having set specific settings for the screenshots of fluorescence portals, these may not be migrated automatically from Tissue Studio® 3.5.

Solution: Please configure the screenshot settings manually after loading the solution in Tissue Studio® 4.0.

32460 – ROI detection only takes the first six fluorescence channels into account

Using the ROI detection for fluorescence images, the detection algorithm will only use the first six channels. Any additional channels in the dataset are ignored.

Solution: Use fluorescence images with a maximum of six images for ROI detection. Note that data export and visualization is possible for up to 12 channels.

32461 – Post-processing may fail for whole slide TMA workspaces

When performing post-processing on whole slide TMA's, the algorithm may fail.

Solution: When the error occurs, the post-processing will analyze the cores ignoring the existing results. Make sure to submit the individual cores for post-processing in order to apply a post-processing rule.

Technical Support

32406 – Not all files may be deleted during uninstallation of workernode (RHEL6)
When uninstalling a workernode on a server running Red Hat Enterprise Linux 6 (RHEL6), the DIAControlService.log file may not be deleted automatically.

Solution: Delete the file manually out of the installation folder.

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