

Definiens

Tissue Studio[®] 4.3

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 <http://www.definiens.com/company/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.

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.

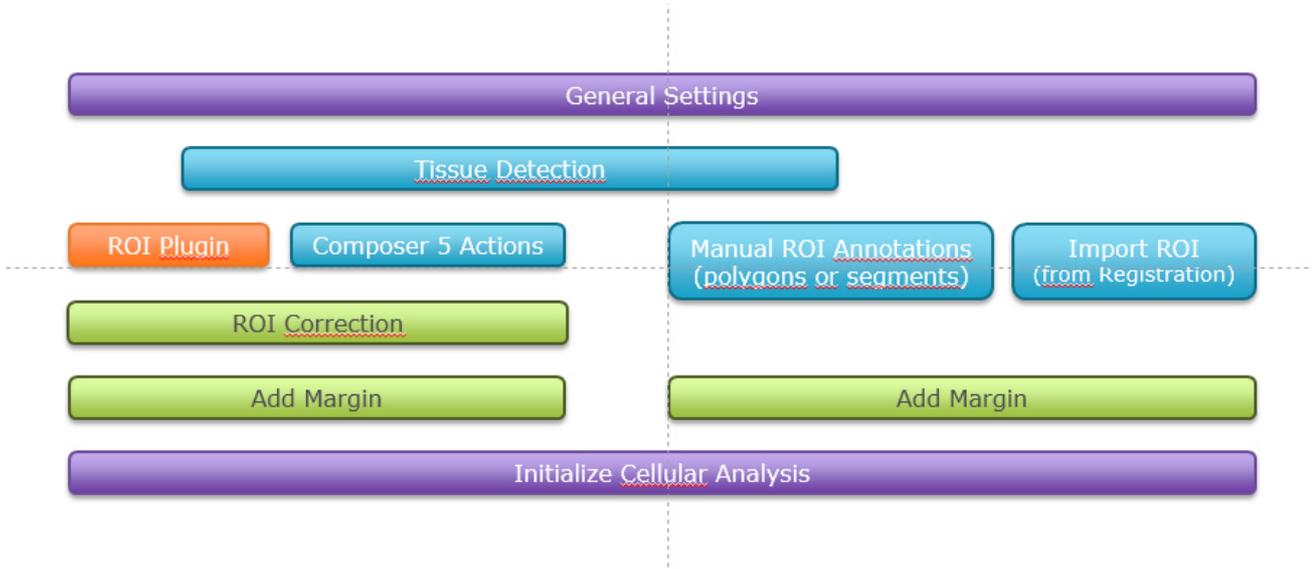
Separate analysis of multiple sections on a single slide

We have added a new workflow option, which enables you to get separate results for different regions on a slide. This may be different sections, cut from different tissue blocks. It also supports different regions, which you would like to separate on the ROI level. The new action "Tissue Detection" replaces both, the Tissue Background Separation and the Preselect Regions action in the brightfield and IF whole slide Portals, but not in the Registration portal. The action allows you to find different tissues prior to ROI Detection, either automatically or manually. You can then proceed with the Composer or with manual annotation to find different ROI classes in each tissue. The export will be separated by tissue, as if those had been on different slides.

The action is mandatory for subsequent Composer actions and can be placed before manual annotations actions.

Please refer to the User Guide for more information about the new action and also check out our "How to" video for this new functionality.

Overview of Tissue Detection and ROI Detection actions in the whole slide Portals:



Robust analysis of immune response in tumor core and margin regions

A new action called "Add Margin" enables you to create a margin around ROI objects. It can be detected by the Composer or annotated manually. The margin can be configured in width and can be placed inside, outside or directly at the border of the ROI.

Please refer to the User Guide for more information about the new action and also check out our "How to" video for this new functionality.

Precise export of ISH measurements for the nucleus and cytoplasm of a single cell

The Spot detection automatically exports the number of spots in the cytoplasm as well as in the nucleus of each cell so that you can easily keep track the location of your spots.

Reuse Composer configurations between solutions

With every Composer run, the configuration of the Composer is being saved to the result folder of the workspace. You can use this configuration with a different solution to increase consistency between different runs.

Improved TMA manual annotations including import of Aperio TMA annotations

You can use the Manual Annotation Action (draw polygons) in the TMA Portals to precisely annotate your regions inside the TMA cores. It is also possible to import annotations done in Aperio software with the same action.

During configuration of the detailed analysis the ROIs outlines are not displayed, but they are applied to the Run analysis. This will be updated in the next release.

Please refer to the User Guide and the Manual Selection (polygons) Action for more details.

Removal of tiling artifacts

We have eliminated the tiling artifacts, which occurred due to the parallel processing of image subsets during analysis of whole slide images. A setting in the action Initialize Cellular Analysis allows you to switch between the new and the old behavior in case you want to compare older results or optimize performance. To remove tiling artifacts, make sure this checkbox is activated.

New menu item Options dialog to configure data settings

In case you need to adjust the settings for decimal separator or column delimiter in the exports, you can do so easily via the new Options Dialog. You can find this in the menu bar in Tools -> Options.

Support of 32bit MultiPage Tiff

We support the import of 32bit MultiPage Tiff for the IF portals. Customers with a PE Vectra 3 can export their images in the PE software as multipage tiff and import those into TissueStudio for further analysis.

Updated Predefined Solutions

We have updated, renamed and reduced our collection of predefined solutions, to make it easier for you to quickly get started. You can easily remove actions or add different actions to tailor your solutions to your individual needs.

Fixes from previous Release Notes

34688 – “CellularAnalysis” screenshot directory may not be deleted on “Reset Workspace”

All .jpg files inside the results folder are deleted on Rollback or Reset.

35622 – TMA has wrong unit for Area feature after DetectCores was executed

The unit of the Area features is always μm , with or without the Core Detection.

35659 – Class exported on Cell levels between subsets in IF

A class will not be exported between subsets in IF.

TS-5 – Blue channel missing in Image Layer Mixing after Composer: Initialization was added

When starting ROI detection with the Composer, the display is correct now.

TS-6 – Layer mixing is incorrect in run tab if heat map was added before

Display is correct now.

TS-13 – Copy Map error for very small ROIs in TMAs resulting in no cellular analysis

Cellular detection is performed also in cases of very small ROIs in TMAs.

Known Issues

Below you will find a list of the currently known issues for Tissue Studio 4.3 and possible solutions. In case of any questions, please do not hesitate to contact customer support.

32462 – Problems with eSlide integration when using IE 10 or IE 11

When using Internet Explorer Version 10 or 11 with the Aperio eSlide integration, you may experience problems such as the absence of toolbars or failed import of data.

Solution: Use the latest Firefox browser.

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

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

Solution: Use fluorescence images with a maximum of six layers for ROI detection. More layers can be used for the detailed analysis like cell or marker detection. Note that data export and visualization is possible for up to 12 channels.

36380 – Multipage tif driver ignores ".tiff" extension

The multipage tif driver does not open files with the extension ".tiff".

Solution: Rename the file from ".tiff" to ".tif" to open it with the multipage tif driver.

32431 – An error may occur when opening a multipage TIFF image

When loading a multipage TIFF image into the software and first using the "All Files" connector, an error message will appear and the file cannot be opened.

Solution: Confirm the error message and reload the multipage TIFF image. Instead of using the "All Files" connector, make sure to use the "Multipage TIFF" connector first.

36380 – Multipage tif driver ignores ".tiff" extension

The multipage tif driver does not open files with the extension ".tiff".

Solution: Rename the file from ".tiff" to ".tif" to open it with the multipage tif driver.

36947 – BF ROI Correction: Tissue Map is displayed instead of ROI Map

When using Interrupt on Server with ROI Correction, in some cases the Tissue Map is displayed instead of the ROI Map.

Solution: Reopen the project.

TS-10 - Composer Reclassify Region – "slide preview" - not working

When using the action Composer: Reclassify Region, you can preview the result on the preview subsets, but not on the whole slide. The Slide Preview button does not work correctly.

Solution: Select multiple subsets to cover relevant areas of your whole slide to preview the result.

TS-8 – Tissue Detection does not allow import of Aperio Annotation via eSlide

The new action Tissue Detection does not allow the import of Aperio Annotations when called from the eSlide Manager, so those cannot be used in combination with the Composer, only via the Manual Selection without the Composer.

Solution: Use Version 4.2 to import the Annotations using the Preselect Region action. Then reopen the Workapce in 4.3 and proceed with the TissueDetection, which will automatically import now the loaded Annotations.

Updated results

32489 - Vessel Detection: Closing gap size is larger than user input

There had been a known issue in the closing gap functionality of the Vessel Detection. Following the fix of this bug, a TissueStudio solution may behave differently in 4.2 compared to 4.3.

Please have a test run on your results, if you need consistency between studies.

36866 - Negative numbers in the No Stain column and the % area IHC over 100

In previous version it might have happened in rare cases that the marker areas exceeded their ROI area. Thus, the resulting area calculations were wrong. This has been corrected, but it can lead to different results with older solutions. Please have a test run on your results, if you need consistency between studies.

Nucleus Detection – quality improvement

The quality of the Nucleus Detection has been improved, so that more nuclei and with better segmentation quality will be detected. This might have an influence on the number of nuclei in comparison with older versions. If needed, please revalidate your solution.

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 3.6.1 and above with Tissue Studio 4.3. If an old solution file is loaded, you may choose to enter into a compatibility mode with the respective version. The compatibility mode makes sure that you get exactly identical results when using the same solution. To exit the compatibility mode again and to use the current software version, press the button New Solution or load a solution that has been created with Definiens Tissue Studio 4.3.

Please note that when upgrading your solution to the new version, results may change slightly requiring a new round of validation.

The driver for Zeiss *.czi files uses the Microsoft JPEG XR codec. This may require relevant Windows updates (e.g. update KB2670838) to be installed on the systems running Definiens software.

Contact Information

Definiens AG
Bernhard-Wicki-Str. 5
80636 Munich
Germany

Phone: +49 89 2311 800
Fax: +49 89 2311 8090
Web: www.definiens.com
Support: support@definiens.com or <http://www.definiens.com/company/support>

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