

Definiens

# Tissue Studio<sup>®</sup> 3.5

Release Notes

DEEPER INSIGHTS  
FASTER RESULTS  
BETTER DECISIONS

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## **Definiens Documentation:**

### **Definiens Tissue Studio® 3.5**

#### **Release Notes**

##### **Imprint**

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Day of print: 21 March 2012

# Contents

<b>1</b>	<b>Overview</b>	<b>1</b>
1.1	About Definiens Tissue Studio® 3.5 . . . . .	1
1.1.1	Key Features . . . . .	1
<b>2</b>	<b>New Features, Bug Fixes and Errata</b>	<b>3</b>
2.1	New Features . . . . .	3
2.2	Bug Fixes . . . . .	4
2.3	Known Issues and Limitations . . . . .	6
2.4	Document Errata . . . . .	6
<b>3</b>	<b>Additional Information</b>	<b>7</b>
3.1	Solution Files from Previous Versions . . . . .	7
3.2	Contact . . . . .	7
	<b>Acknowledgments</b>	<b>9</b>



# 1 Overview

Definiens Tissue Studio® is an image analysis product that provides functionality to support the pathologist in analyzing standard assays in histopathology. It enables non-technical users to configure, calibrate and execute versatile image analysis workflows. The software supports all major acquisition devices and users can analyze all kinds of tissue slides, tissue micro arrays and microscope images.

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.

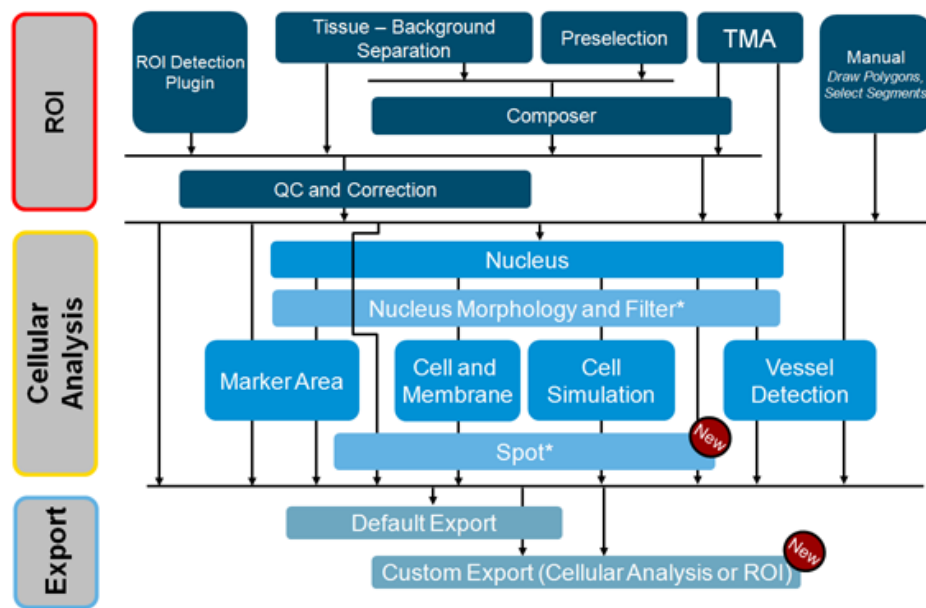
Definiens Tissue Studio® allows the user to quantify IHC, fluorescence and other histological assays on a cell-by-cell basis.

## 1.1 About Definiens Tissue Studio® 3.5

Definiens Tissue Studio® 3.5 is a feature release. Please have look at the key features below, as well as the detailed listing of features and bug fixes in the next section.

### 1.1.1 Key Features

- Spot Detection and Classification
  - Address in situ hybridization assays (FISH, CISH, SISH, Dual-CISH)
  - Measure gene amplification in the whole tissue, in cell compartments or nucleus only
  - Evaluate any stain with a spot-like appearance
- Systematic random sampling of regions of interest
  - Sample your regions of interest in a meaningful way, generating your initial results faster
- Custom Export for ROI Detection
  - Generate detailed statistics on the individual regions that have been detected by Definiens Composer Technology



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

- Improved usability
  - Nucleus Morphology and Filter
  - Heatmap
  - Custom Export

## 2 New Features, Bug Fixes and Errata

### 2.1 New Features

See [table 2.1](#) on this page, *New Features in Tissue Studio 3.5*.

**Table 2.1.** New Features in Tissue Studio 3.5

Category	Reference	Description
Data I/O	17795	Introduce cropping for Mirax import
Data I/O	18373	Support of Aperio annotations for Hamamatsu and generic file formats (tif, png etc.)
Data I/O	18393	“Save workspace as ...” should support saving of Tissue Studio region selections
Data IO	18609	Deactivate the import template “Mirax - with resolution” for Tissue Studio
User Interface	18794	General Settings: Introduce new checkbox: use metadata
User Interface	18370	Add transparency slider to Heat Map for whole slide workflow
ROI Detection	17714	TMA ROI-correction: Option to switch from core to the whole slide
ROI Detection	17932	Introduce multi-layer selection for Tissue Background IF
ROI Detection	18386	Random sampling of regions
Cellular Analysis	18287	New Action: Spot Detection
Cellular Analysis	18454	New Action: Spot Classification
Cellular Analysis	18344	Nucleus and Cell Classification based on Spots

*Continues...*

Category	Reference	Description
Cellular Analysis	18462	Option to analyse in up to 60x magnification
Cellular Analysis	18342	Eliminate tile border effects for Vessel Detection
Export	18308	Class and Feature Filter for Custom Export
Export	18293	New Action: Custom Export (Regions of Interest)
Export	18437	Export for random sampling workflow
Export	18183	IF: export layer names in config.csv
Export	18630	Include class name in custom domain export
Export	18306	Whole slide export: add summary export across all ROIs
18393	Workspace	Save workspace as: copy folder “Manual Classifications”

## 2.2 Bug Fixes

See [table 2.2](#) on the current page, *Bugs Fixed in Tissue Studio 3.5*.

**Table 2.2.** Bugs Fixed in Tissue Studio 3.5

Category	Reference	Description
Data I/O	17986	Browsing Aperio Spectrum: No access to files if name is empty
Data I/O	18851	Aperio Annotations flipped upside down
Data I/O	18697	CRASH: Customized import in TS:load Customized import lead to crash
Data I/O	17979	Rename import template ‘Applied Imaging’ to “Ariol”
Data I/O	18396	Loading single image files with Generic import template wrongly reads resolution
Data I/O	18605	TMA: batch import of annotations does not work
User Interface	18801	Distortion when zooming into image
User Interface	18203	Display for ‘Image & result swipe view’ not synchronized
User Interface	18080	Scene Information: Cell Classification: Number of Cells Excluded by Feature is zero

*Continues...*



Category	Reference	Description
User Interface	18629	Scene Information: ROI Correction: No ROIs are counted outside the ROI area
User Interface	18465	Display cellular analysis results on selection of Default Export in BF portals
User Interface	18847	ROI correction: after 'Reset' image is zoomed
ROI Detection	17950	Composer: Reduce tiling artifacts
ROI Detection	18015	Composer: Reclassify: Feature settings are not reset on removal of action
ROI Detection	18103	Composer: Reclassify: Option 'All Composer Classes' with condition does not give any result
ROI Detection	18763	Composer: Reclassify: Second instance of action is using parameters from first instance
ROI Detection	18448	Cut At Bottleneck: Cut-width is not in $\mu\text{m}$
Cellular Analysis	15670	Membranes & Cells IF: Cells are merged despite clear membrane signal
Cellular Analysis	17789	Nucleus Detection: Well-defined nuclei with corona
Cellular Analysis	18153	Nucleus Detection: Preview is different if preview threshold is executed
Cellular Analysis	18830	Nucleus Detection: Some nuclei have holes
Cellular Analysis	18375	Nucleus Detection: Positive nuclei found inside negative nuclei
Cellular Analysis	18527	Cell Simulation: Strangely shaped cells for cell simulation inside cytoplasmic stain
Cellular Analysis	18567	Nucleus Classification: Nucleus Classification is not run if preview is not executed for small images
Cellular Analysis	18848	Nucleus Classification: Could not use optical density
Cellular Analysis	18348	Vessel Detection: everything classified as Vessel in preview
Export	18101, 18222, 18263, 18817	Corrections for export of 'Config.csv'
Export	18204	Core position and type is missing in custom exports

*Continues...*

Category	Reference	Description
Export	18320	Default export per ROI: Slidename on subsets corresponds to current scene, not top scene
Export	18446	ROI area is exported in pixels instead of $\mu\text{m}^2$
Export	18579	TMA BF: Exports for Marker Area Classification and Vessel Classification are wrong if core is processed in multiple tiles
Export	18582	Marker Area Classification: Export has zero values
Export	18624	Export # Nucleus not Colocalized and # Cell not Colocalized
Processing	18462	Image layers remaining in dpr folder
Processing	18600	Composer Training: Cannot create map smaller than $4 \times 4[x1 \times 1]$
Other	18821	Crash after Reset Workspace

## 2.3 Known Issues and Limitations

See [table 2.3](#) on this page, *Known Issues and Limitations in Tissue Studio™ 3.5*.

**Table 2.3.** Known Issues and Limitations in Tissue Studio™ 3.5

Category	Reference	Description
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.

## 2.4 Document Errata

None

## **3 Additional Information**

### **3.1 Solution Files from Previous Versions**

Solution files from version 2.1.0 and above can be loaded with Definiens Tissue Studio 3.5. If an old solution file is loaded, the software will enter into a compatibility mode with the respective version. If you would like to leave this compatibility mode, press the button New Solution or load a solution that has been created with Definiens Tissue Studio 3.5.

### **3.2 Contact**

If you have any additional questions, please contact your account manager or email [support@definiens.com](mailto:support@definiens.com).



# Acknowledgments

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