

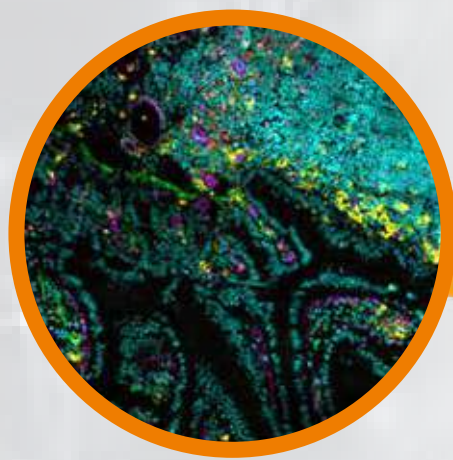


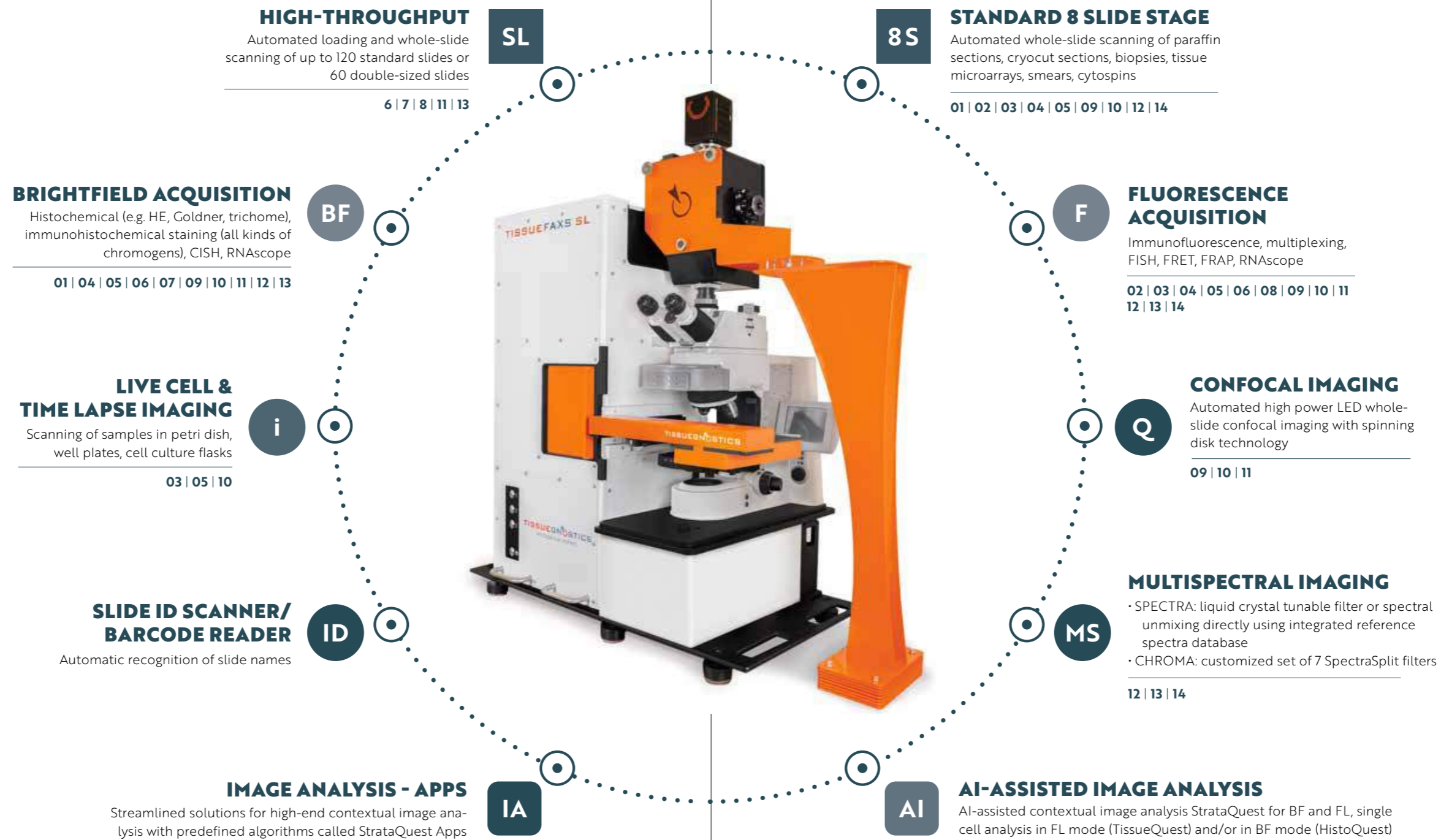
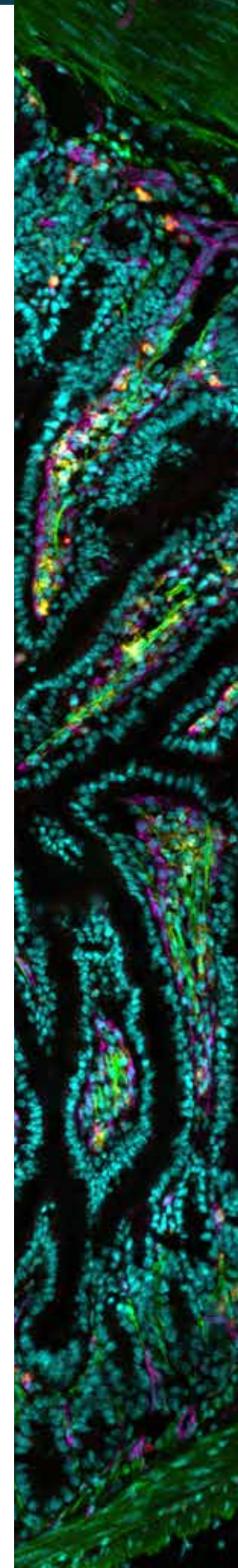
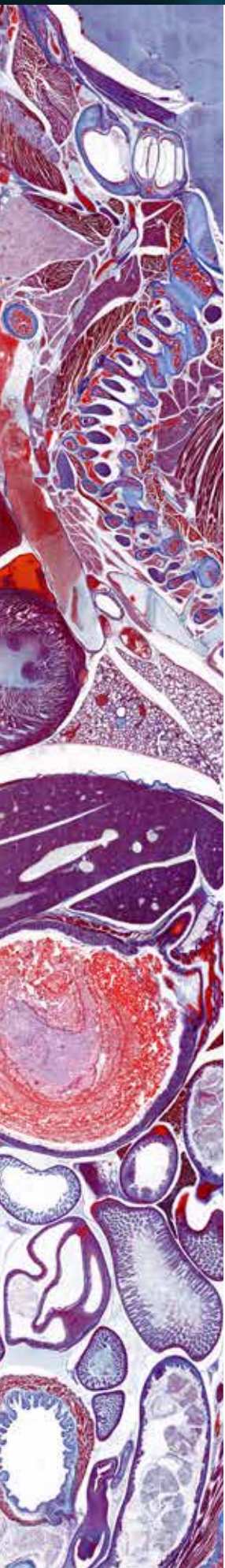
TISSUEGNOSTICS

PRECISION THAT INSPIRES

TISSUEFAXS

THE COMPREHENSIVE
TISSUE CYTOMETRY
PLATFORM FOR BIOMEDICAL
IMAGING AND ANALYSIS





HIGH-THROUGHPUT

Automated loading and whole-slide scanning of up to 120 standard slides or 60 double-sized slides

SL

6 | 7 | 8 | 11 | 13

8S

STANDARD 8 SLIDE STAGE

Automated whole-slide scanning of paraffin sections, cryocut sections, biopsies, tissue microarrays, smears, cytospins

01 | 02 | 03 | 04 | 05 | 09 | 10 | 12 | 14

BRIGHTFIELD ACQUISITION

Histochemical (e.g. HE, Goldner, trichome), immunohistochemical staining (all kinds of chromogens), CISH, RNAscope

BF

01 | 04 | 05 | 06 | 07 | 09 | 10 | 11 | 12 | 13

F

FLUORESCENCE ACQUISITION

Immunofluorescence, multiplexing, FISH, FRET, FRAP, RNAscope

02 | 03 | 04 | 05 | 06 | 08 | 09 | 10 | 11 | 12 | 13 | 14

LIVE CELL & TIME LAPSE IMAGING

Scanning of samples in petri dish, well plates, cell culture flasks

i

03 | 05 | 10

Q

CONFOCAL IMAGING

Automated high power LED whole-slide confocal imaging with spinning disk technology

09 | 10 | 11

SLIDE ID SCANNER/BARCODE READER

Automatic recognition of slide names

ID

MS

MULTISPECTRAL IMAGING

- SPECTRA: liquid crystal tunable filter or spectral unmixing directly using integrated reference spectra database
- CHROMA: customized set of 7 SpectraSplit filters

12 | 13 | 14

IMAGE ANALYSIS - APPS

Streamlined solutions for high-end contextual image analysis with predefined algorithms called StrataQuest Apps

IA

AI

AI-ASSISTED IMAGE ANALYSIS

AI-assisted contextual image analysis StrataQuest for BF and FL, single cell analysis in FL mode (TissueQuest) and/or in BF mode (HistoQuest)

Explore your sample with TissueFAXS

TissueFAXS is a highly flexible tissue cytometry platform available in various configurations, perfect to address and adapt to various research needs.

TissueFAXS configurations

01 TissueFAXS HISTO	06 TissueFAXS SL	11 TissueFAXS SL Q
02 TissueFAXS FLUO	07 TissueFAXS SL HISTO	12 TissueFAXS SPECTRA
03 TissueFAXS i FLUO	08 TissueFAXS SL FLUO	13 TissueFAXS SL SPECTRA
04 TissueFAXS PLUS	09 TissueFAXS Q	14 TissueFAXS CHROMA
05 TissueFAXS i PLUS	10 TissueFAXS i Q	

All tissue cytometers are available in a 'scan only' configuration without image cytometry software.

TissueFAXS IMAGING SOFTWARE

TissueFAXS Scanning and Management software integrates all the hardware components into an easy to use workflow. It provides automated scanning capabilities, a state-of-the-art sample viewer and management of scanned projects.

4 STEP WORKFLOW

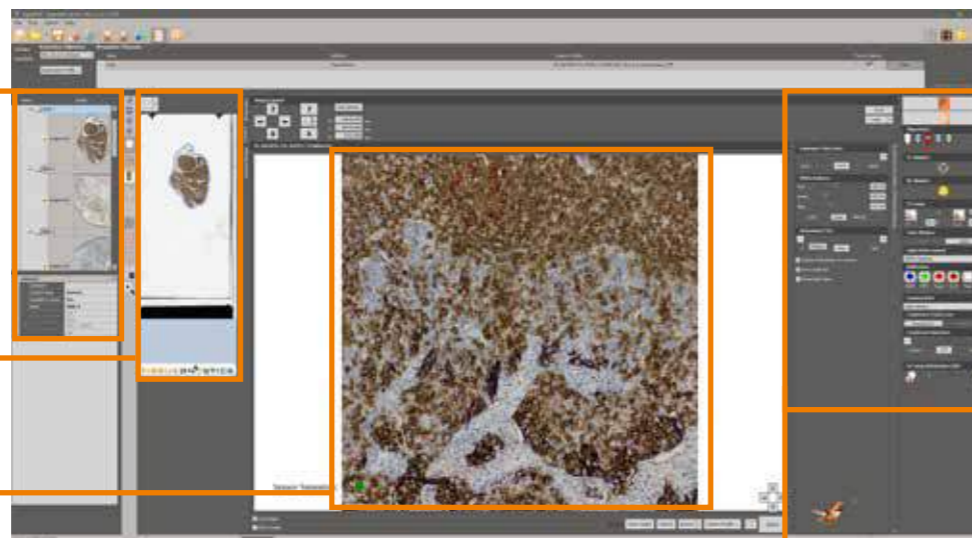


- One-click automation workflow – reuse of established templates
- Special workflow for TMAs and well plates

Sample browser

Full slide preview

Live image



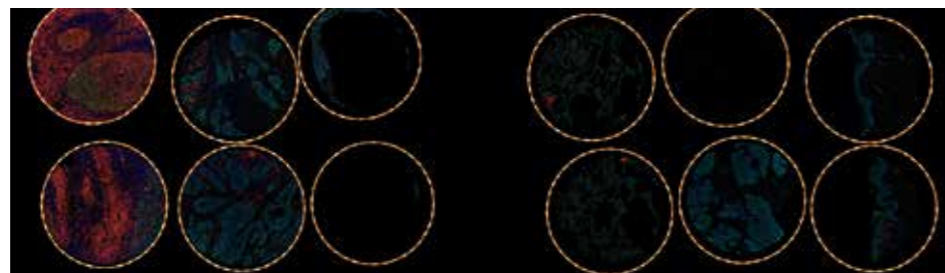
Microscope & camera control

ADAPT THE FOCUS TO YOUR NEEDS

- Autofocus
- Establish and verify the autofocus methods/settings that fit perfectly to your sample
- Use focus map mode or matrix focus mode
- Extended focus function/ Z-stacking available

WORKFLOW FOR TMA SCANNING

Streamlined workflow to easily detect, name and acquire TMA spots.

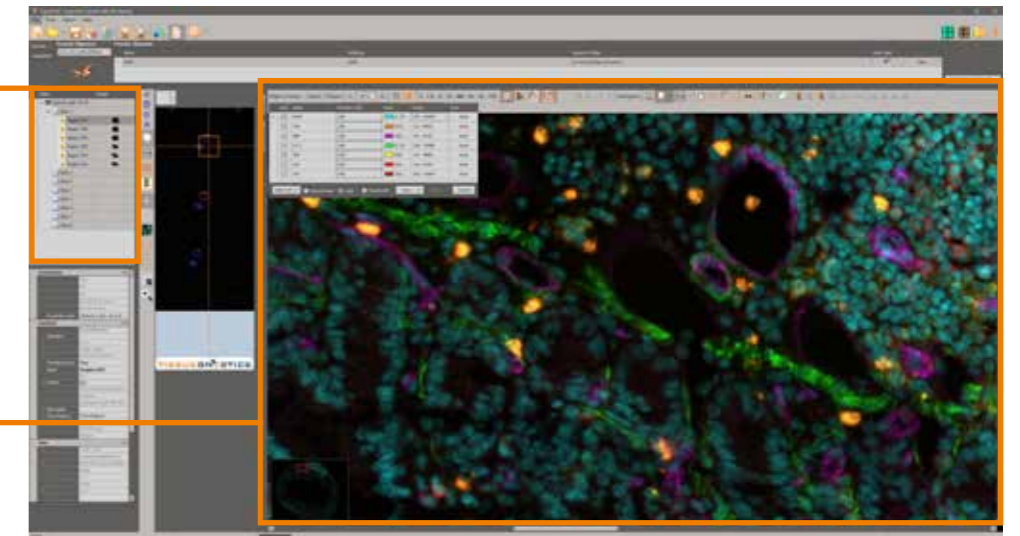


SAMPLE VIEWER

- Automated seamless stitching
- Easy navigation and zoom in/out through the sample
- Explore and visually compare scanned tissue sections
- Automated registration of consecutive samples
- Navigate and edit images for visualization
- Draw and annotate
- Easy-zoom with mouse wheel up to 1000% of source magnification
- Post-processing to optimize image quality and/or visualization of specific structures
- Pseudo-IHC View visualizes fluorescence samples in brightfield mode

Acquired regions

Image viewer



ADDITIONAL FEATURES AND OPTIONS

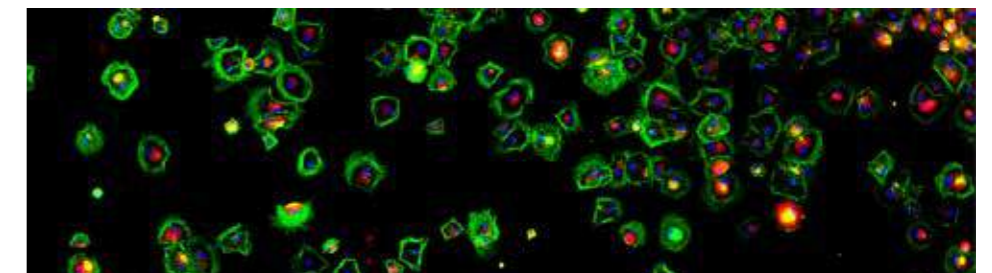
- Flexible hardware configurations
- Supports objective lenses with magnifications from 1-100x
- Standard, double, quadruple, and octuple-sized slides
- Time lapse scanning, live cell imaging, auto-oiling
- Illumination and shading correction
- High-dynamic range visualization
- 3D image viewing

EXPORT

- Export images as TissueFAXS projects, OME-tiff, png, tiff, jpg, bmp

WORKFLOW FOR WELL PLATE IMAGING

Streamlined workflow designed specifically for well-plate imaging, applicable to most well plate formats.



TissueFAXS

BRIGHTFIELD AND FLUORESCENCE IMAGING



TissueFAXS standard tissue cytometers are available in upright and inverted configurations in fluorescence and/or brightfield modes for scanning and analysis, therefore providing unparalleled flexibility for researchers.

TissueFAXS DESIGN

All imaging systems are modular and upgradable. Modularity brings high versatility and flexibility.

- Upright/inverted microscope
- Light source
- Cameras
- PC + Monitors
- TissueFAXS imaging software
- TissueFAXS analysis software (StrataQuest, HistoQuest, TissueQuest)

8-SLIDE STAGE

Motorized 8-slide stage controllable via TissueFAXS imaging software or joystick.



HIGH-SPEED CAMERAS

For brightfield as well as for fluorescence TG offers ultra-sensitive sCMOS cameras for high-resolution imaging.

UPRIGHT

- Slides
- Motorized turret for 7 objectives
- Motorized turret for 10 reflectors
- High-throughput scanning
- Support for oil immersion and auto-oiling
- Transmission & fluorescence overlay



TissueFAXS PLUS

WHOLE-SLIDE IMAGING

High-resolution panoramic imaging for scanning entire tissue sections in brightfield and/or fluorescence.



Mouse embryo - trichome staining

INVERTED

- Slides, petri dishes, well plates, flasks
- Motorized turret for 6 objectives
- Motorized turret for 6 reflectors
- Live cell imaging
- Time kinetic & end-point assays
- Transmission & fluorescence overlay
- Protection with handling liquids



TissueFAXS i PLUS

LIGHTPATH FOR

- Multi-color fluorescence
- Brightfield
- Phase contrast (optional)
- DIC (optional)
- Darkfield (optional)

HIGH PERFORMANCE LIGHT SOURCES

The right illumination is of paramount importance in microscopy. TG provides fully system software-controlled solutions which are maintenance free and have long lasting LEDs.

TissueFAXS CONFIGURATIONS



TissueFAXS PLUS



TissueFAXS HISTO



TissueFAXS FLUO

TissueFAXS i CONFIGURATIONS



TissueFAXS i PLUS



TissueFAXS i FLUO



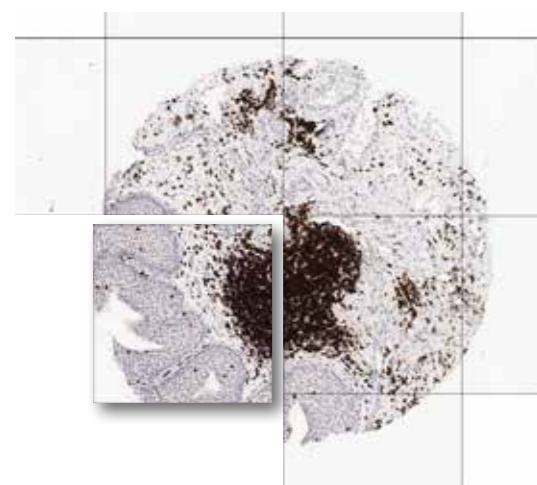
TissueFAXS i PLUS WITH ENVIRONMENT CONTROL

TissueFAXS SL

WHOLE-SLIDE HIGH-THROUGHPUT IMAGING

SL

The TissueFAXS SL platform automatically scans up to 120 slides in brightfield and/or fluorescence mode. It is upgradable for confocal and multispectral imaging. High-speed cameras as well as state-of-the-art slide loading robotics provide high-throughput imaging of slides at top speeds.



TissueFAXS SL PLUS

ADDITIONAL FEATURES

- TMA scanning is supported in all configurations
- TissueFAXS SL is capable of oil immersion scanning
- 1-click automation with various scanning templates possible
- Scanning of brightfield and fluorescence slides in mixed order
- Multiple validation workflows

TECHNOLOGY

- TissueFAXS SL systems are modular and consist of a microscope, automatic slide loader, cameras, light sources and a PC with two monitors
- The slide loader is equipped with three 40 slide magazines with each magazine containing 20 two-slide metal clips for a total of 120 standard slides
- Supports slides with rounded corners
- The clips are magnetically gripped and moved out to the stage for scanning. In this way, any contact of the slides with moving parts is prevented, safeguarding them against breakage
- Alternatively, 60 double-sized (76 × 52 × 1 mm) slides can be loaded and scanned
- Tolerates immersion oil
- Additional magazines available for rapid reloading
- Slide-drop protection when magazines are outside the loader
- Internal sensor for reliable slide detection



TissueFAXS: STANDARD CONFIGURATIONS

	TF PLUS	TF FLUO	TF HISTO	TF i PLUS	TF i FLUO	TF SL
Special feature	Brightfield and fluorescence imaging	Fluorescence imaging	Brightfield imaging	Brightfield and fluorescence imaging	Fluorescence imaging	High-throughput brightfield and fluorescence imaging
Microscope stand	Upright	Upright	Upright	Inverted	Inverted	Upright
Compatible slide formats	Standard/over-sized	Standard/over-sized	Standard/over-sized	Standard/over-sized	Standard/over-sized	Standard/double-sized
Slide capacity	8	8	8	8 slides, petri dish, well plates, cell culture flasks	8 slides, petri dish, well plates, cell culture flasks	120 slides
Objectives	Up to 7	Up to 7	Up to 7	Up to 6	Up to 6	Up to 7
Camera fluorescence	sCMOS (16-bit, 2048x2048, monochrome)	sCMOS (16-bit, 2048x2048, monochrome)	-	sCMOS (16-bit, 2048x2048, monochrome)	sCMOS (16-bit, 2048x2048, monochrome)	sCMOS (16-bit, 2048x2048, monochrome)
Camera brightfield	CMOS camera (color)	-	CMOS camera (color)	CMOS camera (color)	-	CMOS camera (color)
Light sources	Solid-state multicolor LED VIS-LED	Solid-state multicolor LED	VIS-LED	Solid-state multicolor LED VIS-LED	Solid-state multicolor LED	Solid-state multicolor LED VIS-LED

TissueFAXS Q PLATFORM

EXPLORE HIGH-RESOLUTION IMAGING



The TissueFAXS Q series delivers automated whole-slide confocal imaging using a confocal spinning disk, paired with a high-power multi-channel LED light engine, a high-end sCMOS camera and the TissueFAXS automated scanning workflow. Take advantage of the automated confocal mode to increase resolution and overall image quality in thick tissue sections and/or explore your tissue sample through a 3D reconstruction of entire virtual slides.

- Mouse brain
- Size of 73.3 mm²
- Four channels
- Confocal Z-stack in 21 layers, 29400 individual images scanned with Plan-Apo 20x/0.8 Air in 1.5 hours

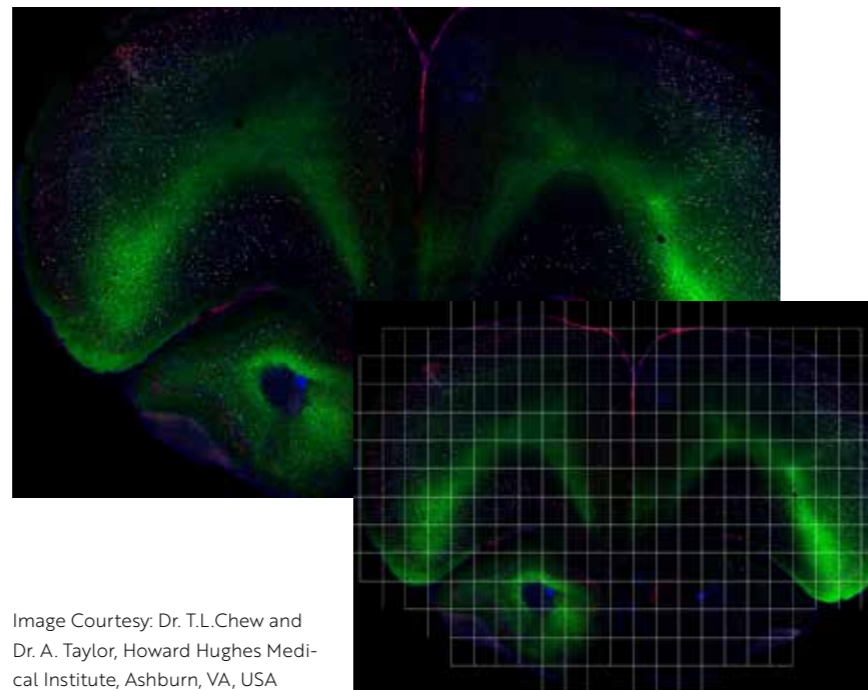
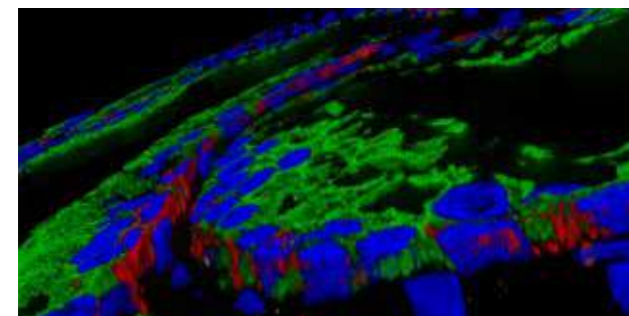


Image Courtesy: Dr. T.L.Chew and Dr. A. Taylor, Howard Hughes Medical Institute, Ashburn, VA, USA

CONFOCAL WHOLE SLIDE IMAGING

CWSI



WORK WITH CONFOCAL VIRTUAL SLIDES

Thousands of fields of view seamlessly stitched together.

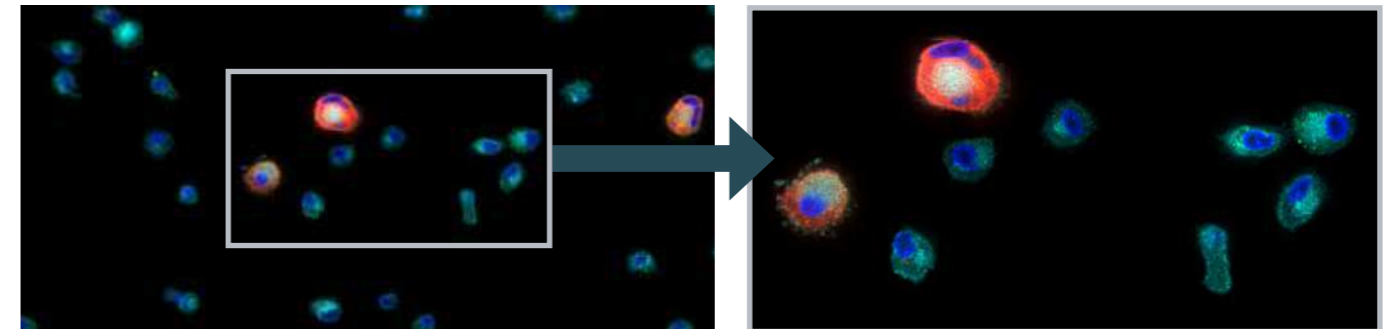
3D VISUALIZATION

Multidimensional view via TissueFAXS 3D Viewer software.

FEATURES

- Supports live cell imaging in glass-bottom plates (TF i Q+)
- Acquisition of Z-Stack
- Contrast enhancement by smart projection
- Supports expansion-based super resolution

CONFOCAL IMAGING OF CULTURED CELLS



Cultured macrophages courtesy of Ragon Institute of MIT, MGH and Harvard

PROPERTIES OF TF CONFOCAL CONFIGURATIONS

	TF Q+	TF SL Q+	TF iQ+
Special feature	Confocal imaging	High-throughput confocal imaging	Confocal imaging of cultured cells as well as slides
Microscope stand	Upright	Upright	Inverted
Microscopy mode	Confocal imaging, wide-field fluorescence, bright-field	Confocal imaging, wide-field fluorescence, bright-field	Confocal imaging, wide-field fluorescence, bright-field
Compatible slide formats	All standard and over-sized slides	All standard and double-sized slides	All standard and over-sized slides, cell culture plates/flasks, petri dish
Slide capacity	8	120	8
Objectives	Up to 7	Up to 7	Up to 6
Camera fluorescence	sCMOS (16-bit, 2048x2048, monochrome)	sCMOS (16-bit, 2048x2048, monochrome)	sCMOS (16-bit, 2048x2048, monochrome)
Camera brightfield	CMOS camera (color camera)	CMOS camera (color camera)	CMOS camera (color camera)
Light sources	Solid-state multicolor LED VIS-LED	Solid-state multicolor LED VIS-LED	Solid-state multicolor LED VIS-LED



TF Q+
8 slide automated confocal scanning



TF SL Q+
high-throughput confocal tissue cytometry



TF iQ+
live cell confocal imaging of cultured cells and tissue slides

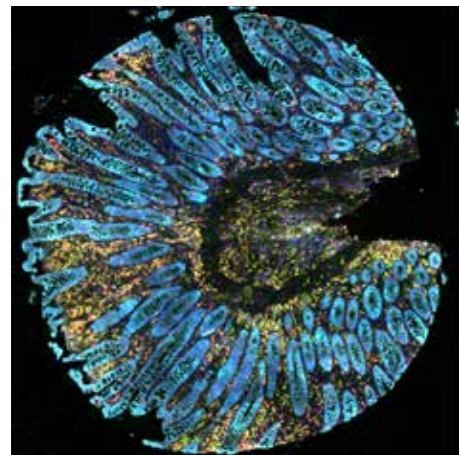
TissueFAXS SPECTRA

MULTISPECTRAL IMAGING USING LCTF TECHNOLOGY

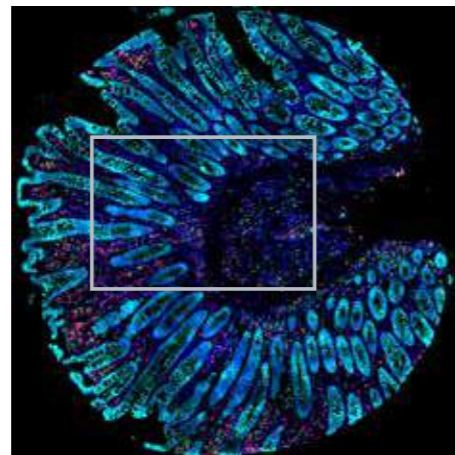


Liquid crystal tunable filters (LCTF) are optical filters that can be tuned at high speed to transmit only a narrow and specific wavelength range of light within the visible spectrum. This makes them ideal for a quick building of lambda stacks (spectral cubes), which can further be separated by TissueGnostics' powerful spectral unmixing algorithms – leading to elimination of bleed through and autofluorescence.

BEFORE SPECTRAL UNMIXING



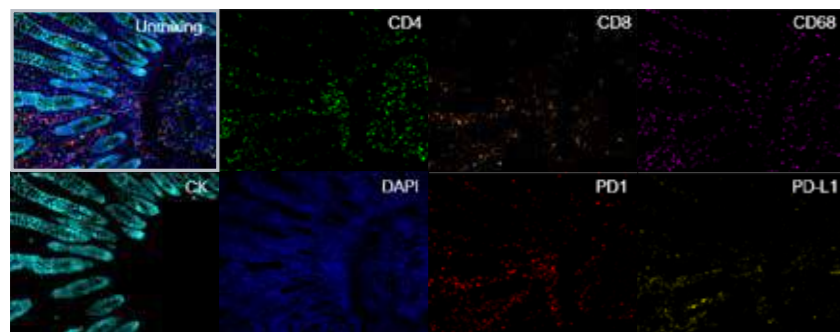
AFTER SPECTRAL UNMIXING



Colon cancer tissue microarray stained for seven markers

DRASTICALLY INCREASE THE NUMBER OF MARKERS

Stain up to 8 markers within one experiment



TissueFAXS MULTISPECTRAL CONFIGURATIONS



TissueFAXS SPECTRA



TissueFAXS SL SPECTRA



TissueFAXS CHROMA

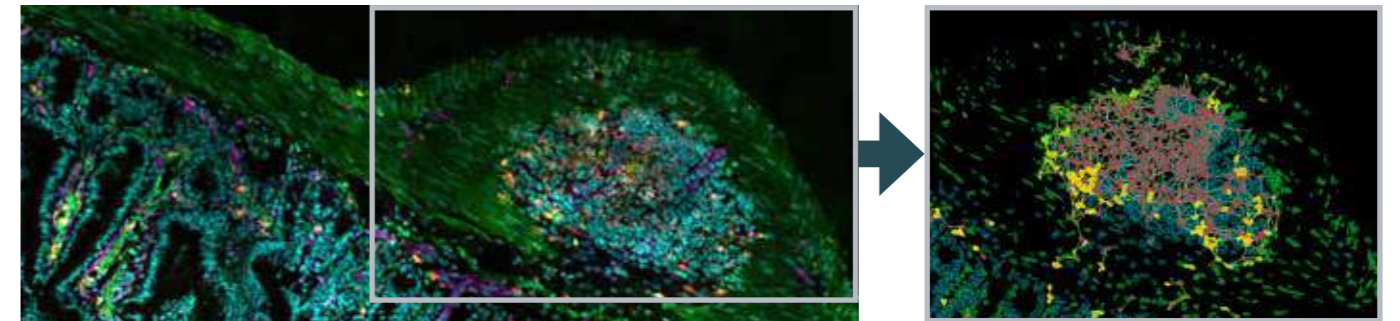
TissueFAXS CHROMA

HIGH-SPEED MULTISPECTRAL TISSUE CYTOMETER



TissueFAXS CHROMA focuses on increasing sample throughput by maximizing multispectral scanning speeds without compromising spectral specificity and data integrity by using an optimized set of Spectra-Split filters, eliminating channel bleed-through. This cost-effective high-speed whole-slide scanner reaches its full potential when supplemented with single cell and contextual image analysis. TissueFAXS CHROMA enables the automated scanning for up to 7 markers at a time without the necessity of building lambda stacks or spectral unmixing.

HIGH-CONTENT CELLULAR PHENOTYPING AND SPATIAL ANALYSIS



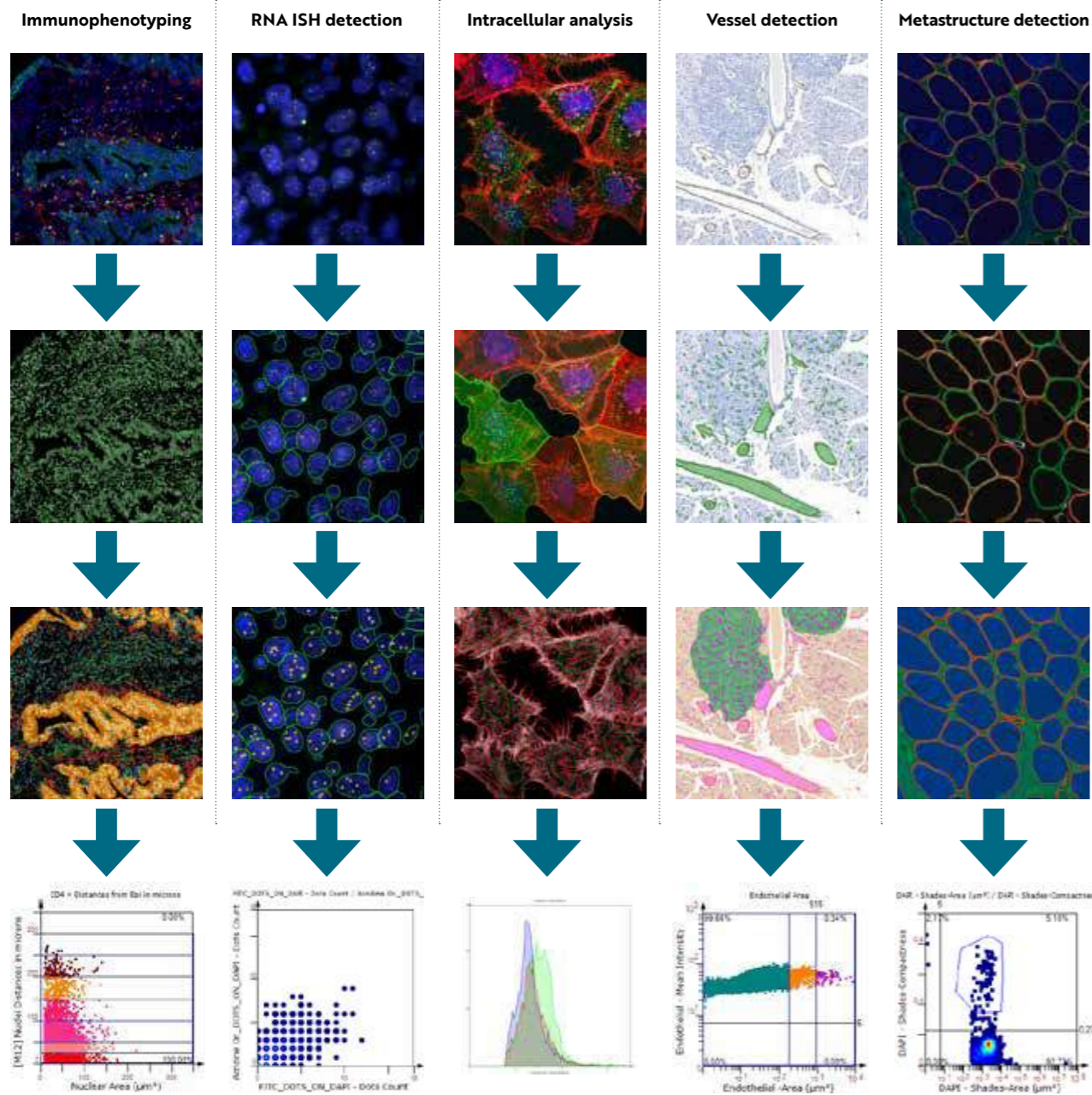
Mouse colon section stained with 7 markers

TissueFAXS MULTISPECTRAL CONFIGURATIONS

	TF SPECTRA	TF SL SPECTRA	TF CHROMA
Technology	Liquid crystal tunable filter, spectral unmixing engine	Liquid crystal tunable filter, spectral unmixing engine	Special SpectraSplit filters
Special feature	Multispectral imaging	Bulk scanning in multispectral mode	Multispectral widefield imaging
Microscope stand	Upright	Upright	Upright
Microscopy mode	Multispectral imaging, wide field fluorescence, brightfield	Multispectral imaging, wide field fluorescence, brightfield	Multispectral widefield fluorescence imaging
Compatible slide formats	All standard and over-sized slides	All standard and double-sized slides	All standard and over-sized slides
Slide capacity	8	120	8
Objectives	Up to 7	Up to 7	Up to 7
Camera fluorescence	sCMOS (16-bit, 2304x2304, QE 95%)	sCMOS (16-bit, 2304x2304, QE 95%)	sCMOS (16-bit, 2304x2304, QE 95%)
Camera brightfield	CMOS camera (color camera)	CMOS camera (color camera)	CMOS camera (color camera)
Light sources	Solid-state multicolor LED VIS-LED	Solid-state multicolor LED VIS-LED	Solid-state multicolor LED VIS-LED

BIOMEDICAL IMAGE ANALYSIS

TissueGnostics offers powerful integrated image analysis software for single cell quantification (HistoQuest and TissueQuest) and/or contextual image analysis with integrated AI modules (StrataQuest). Perform high-dimensional analyses of your multispectral samples with TissueFAXS SPECTRA in combination with TissueGnostics' image cytometry tools.

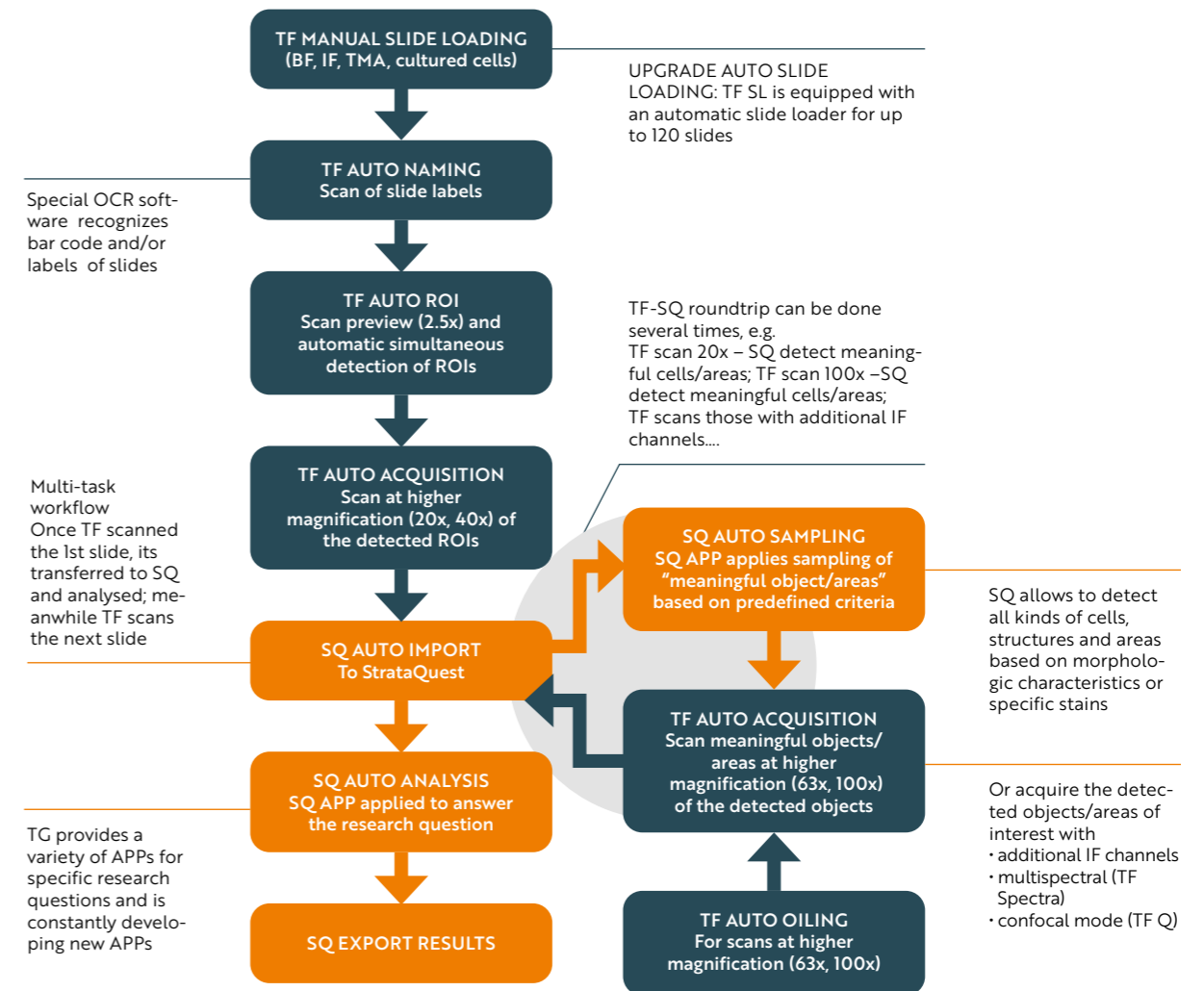


STREAMLINED ANALYSIS SOLUTIONS - APPS

TissueGnostics offers StrataQuest Apps for a variety of biomedical image analysis applications. If you cannot find the perfect solution for your research question, please contact us. TissueGnostics offers the development of customized Apps for your specific analysis needs.

INTELLIGENT SCANNING

This workflow displays the power of TissueFAXS (TF) and StrataQuest (SQ) operated in tandem as one fully automated system. This highly versatile workflow is based on the modular TissueFAXS systems and the advanced image processing capabilities of StrataQuest and permits iterative scanning, analysis and rescanning under different and/or refined conditions (e.g. higher magnification).



TG USER EXPERIENCES

»The addition of the TissueFAXS INVERTED PLUS to our core facilities' repertoire has made a world of difference to the ease of data collection and processing. The acquisition software is remarkably well-designed, offering extreme flexibility without compromising on the robustness and ease of use for the whole system.«

(Dr. Jan Soetaert, Queen Mary University of London)

MEET US GLOBALLY



REFERENCE PUBLICATIONS

TissueGnostics systems produce valuable research on six continents around the world and the list of publications grows daily. Check TG's searchable online database of publications to see how TissueGnostics can support you!

www.tissuegnostics.com



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