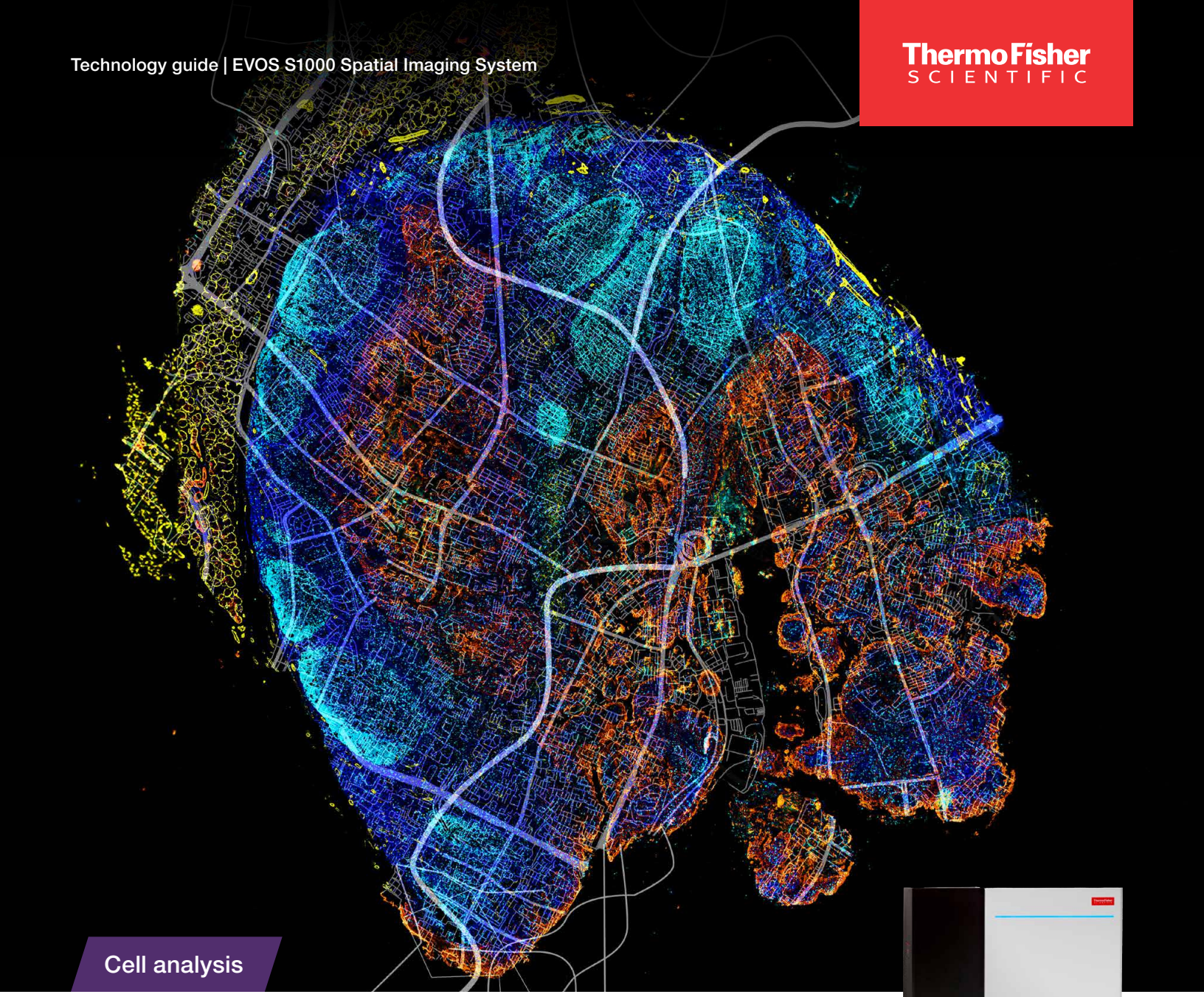
Technology guide | EVOS S1000 Spatial Imaging System

ThermoFisher SCIENTIFIC



Cell analysis

Spatial imaging workflow guide

Advanced multiplex immunohistochemistry (mIHC)

invitrogen

Decoding biological complexity with the EVOS S1000 Spatial Imaging System

Spatial-omics is a revolutionary field that integrates spatial imaging with various omics techniques, such as genomics, transcriptomics, and proteomics. The aim is to study the spatial organization and functional states of biological molecules within tissues and cells. Unlike conventional bulk analysis methods, which average signals across numerous cells, spatial imaging maintains the spatial context of biological samples. This approach allows researchers to understand the organization and interaction of cells and molecules within their natural tissue environments.

Imaging-based immunofluorescence is a widely used technique that relies on the specificity of antibodies to detect and visualize target molecules within cells and tissues. However, the analysis of complex tissues requires the mapping of a relatively high number of protein targets in order to capture the true cellular diversity. This is often limited by the ability of standard microscopy systems to capture more than four or five distinct fluorescence channels.

Enter the Invitrogen™ EVOS™ S1000 Spatial Imaging System, a multimodal instrument designed to resolve signals from nine fluorescence emission spectra in a single image acquisition, allowing crisp imaging, identification, and localization of proteins within tissues. The EVOS S1000 Spatial Imaging System was engineered for efficient imaging times and optimal sample preservation. Additionally, Thermo Fisher Scientific has applied its expertise and knowledge with antibodies, fluorophores, and labeling solutions to create a synergistic offering of reagents that makes designing and developing your experiment just as easy as collecting the images.

Table 1. Benefits of multiplex (≥6-plex) immunofluorescence staining.

	Single stain	2- to 5-plex	Multiplex (≥6 plex)
Localization of protein	•	•	•
Colocalization of proteins		•	•
Biomarker expression	•	•	•
RNA and protein detection in one sample		•	•
Complex cell phenotypes			•
Tissue structure			•
Characterization of cellular neighborhoods			•

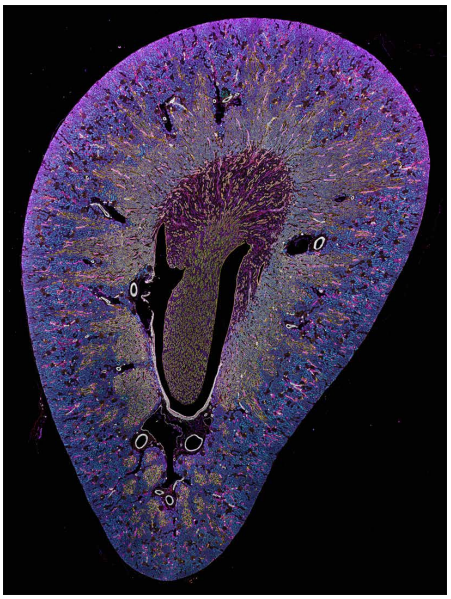


Figure 1. Staining of healthy colon tissue with four different markers and imaging on the Invitrogen™ EVOS™ M7000 Imaging System. A limited number of targets results in limited information being available for understanding the tissue microenvironment.

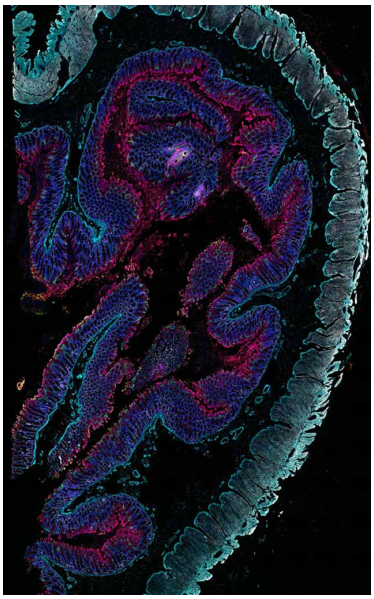


Figure 2. Staining of healthy colon tissue with eight different markers plus DAPI and imaging on the EVOS S1000 Spatial Imaging System. Multiplex immunofluorescence staining enables information to be obtained about the localization and interaction of biomolecules and cells within the context of a tissue.

Key terms and definitions

Spatial biology is a field that studies the spatial organization and interactions of biological molecules, cells, and tissues within their native environments. The goal of spatial biology is to map the localization and interactions of cells, facilitating insights into how spatial context influences biological functions and helping researchers understand spatial diversity.

Spatial transcriptomics is a technique that allows researchers to measure and map the expression levels of genes at specific locations within a tissue sample.

Spatial proteomics focuses on the localization of proteins and their dynamics at the subcellular level. This technique maps where proteins are situated within cells and their locations and interactions within a tissue section.

Multiomics is the field of study in which two or more data sets are generated from a single sample and the data sets come from genomics, transcriptomics, proteomics, epigenomics, lipidomics, and/or metabolomics.

Spatial imaging is a technique in spatial biology that utilizes various technologies to image and analyze single cells within their spatial context. It helps provide a variety of information, such as cell types, cell states, cell functions, cellular identity in time and space, cell-to-cell interactions, cellular “neighborhoods” or networks, and the architecture of tissue microenvironments in their native state.

Multiplex immunofluorescence is a technique that visualizes multiple protein markers within a single tissue sample. Proteins can be labeled directly with fluorophore-conjugated antibodies, or indirectly with primary antibodies bound to fluorophore-conjugated secondary antibodies or horseradish peroxidase–conjugated secondary antibodies that react with fluorescent substrate.

Cyclic imaging is a technique that uses repeated cycles of antibody labeling, imaging, and removing or quenching the original signal to create a multiplex imaging panel.

Simultaneous 9-color tissue imaging

The EVOS S1000 Spatial Imaging System is designed to enhance spatial biology and histology experiments with its advanced features. It streamlines multiplexed immunofluorescent image generation from tissue samples to enable fast insights into the spatial localization of proteins. The EVOS S1000 system can simultaneously image up to eight targets plus nuclear stain in a single scan.

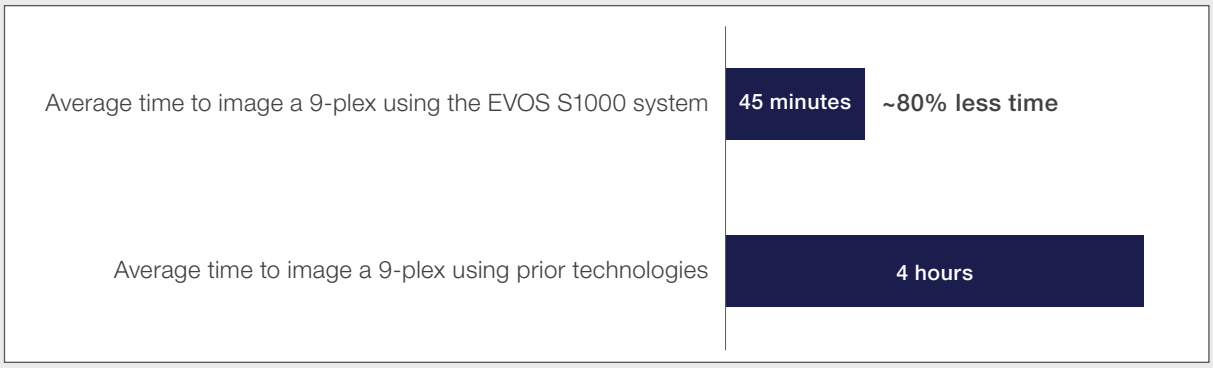
The EVOS S1000 system helps expand multiplexed data collection to broader panels through its spectral unmixing capabilities. The application of this advanced feature allows users to resolve desired protein targets without bleed-through from neighboring channels. In addition, unmixing is performed automatically as part of the image acquisition with the EVOS S1000 system, thus eliminating any need for additional post-processing steps.

Automatically performed as part of image processing, this advanced feature allows for the distinct resolution of signal from neighboring channels without bleed-through. The result is defined images with better data quality for subsequent data analysis. Furthermore, the single-round imaging allows better tissue preservation, in comparison with cyclic imaging systems.

Benefits include:

- Fast acquisition of a 9-plex in a single round, at high resolution
- Simplified unmixing workflow and performed during acquisition; quality is verified
- Not restricted to specific tissue labeling methods or proprietary dyes
- Acquisition of fluorescence and hematoxylin and eosin (H&E) images

Spend more time with your data, less time creating it



Integrated unmixing resolves spectral overlap to generate high-quality images

Leverage spectral signatures from up to nine different fluorophores with spectral unmixing. This proprietary feature allows precise identification and mapping of multiple fluorophores within a single image, despite significant overlap in emission spectra (Figure 3).

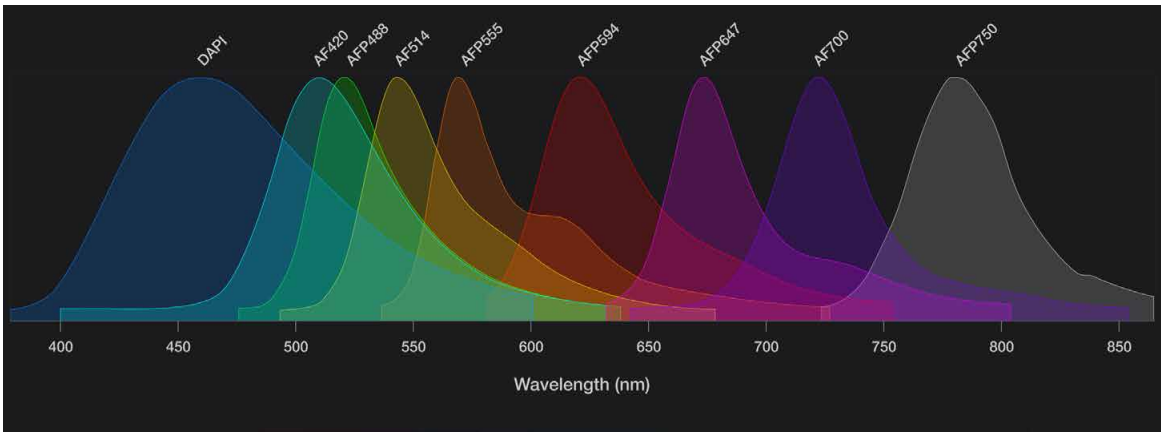


Figure 3. Example of spectral emissions of multiple dyes. These spectra show emissions of eight Invitrogen™ Alexa Fluor™ and Alexa Fluor™ Plus dyes and DAPI. Despite the overlap, EVOS S1000 imaging system software algorithms segregate emission signals into discrete emission channels eliminating bleed-through from neighboring channels.

For the algorithm to function effectively, the spectrum of each fluorophore is extracted by imaging unstained and single-color (individually stained) control samples. Once all these components are collected, the EVOS S1000 system software generates and saves the unmixing matrix to the imaging protocol (Figure 4). This unmixing matrix is then automatically applied each time the selected protocol is used on similarly prepared tissue.

An unmixing metrics report is also generated by the EVOS S1000 system. It allows users to qualitatively and quantitatively assess the quality of the unmixing, prior to initiating multiplex image acquisition. In addition, default protocols, with unmixing matrix and quality metrics reports included, are also available on the instrument software, for selected tissue and fluorophore types.

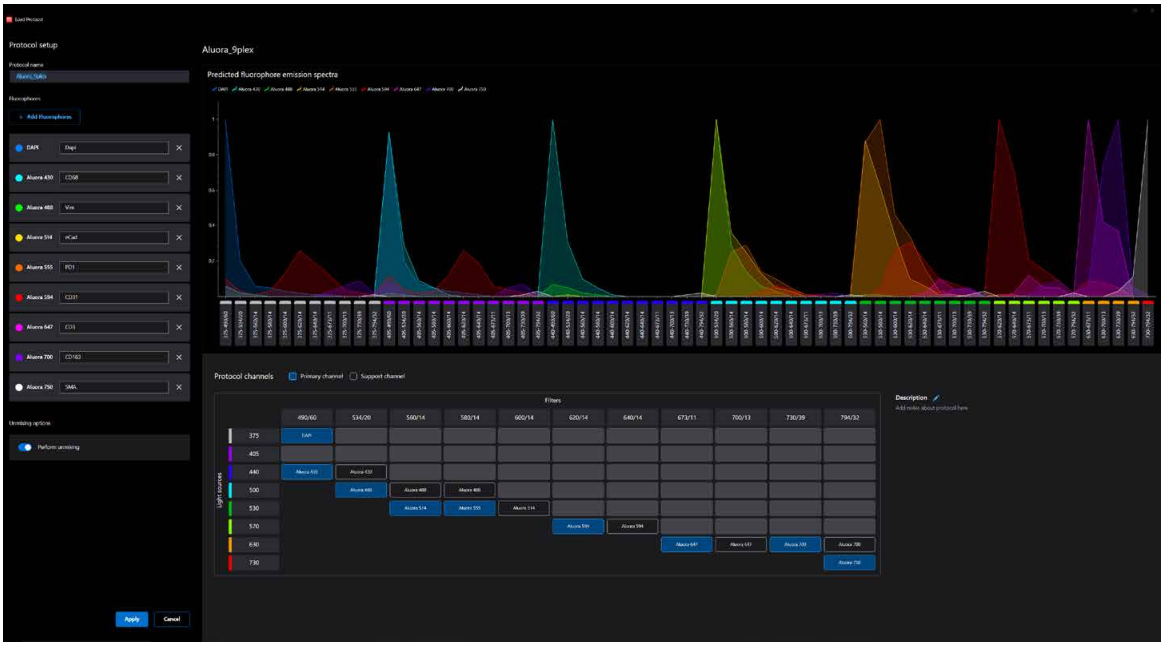


Figure 4. The EVOS S1000 Spatial Imaging System generates multiplexed data through its spectral unmixing capabilities. This software feature allows researchers to easily visualize all channels simultaneously and provides a quality metrics report to facilitate highly resolved data.

Spectral imaging with confidence—unmixing quality metrics report

The unmixing quality metrics report of the EVOS S1000 Imaging System offers transparency into the unmixing process. The report provides an overview of the precision and effectiveness of our spectral unmixing process.

Before image acquisition for a new protocol, researchers can easily navigate through the unmixing matrix generation process with a user-friendly wizard. Briefly, for each unstained and single-color sample, the appropriate excitation LED is used to collect emission spectra across the target as well as support channels. Our advanced algorithm then uses spectral unmixing to effectively establish the relative contribution of each individual fluorophore at every pixel position across an image.

While the raw data may initially show signal bleed-through across emission wavelengths (Figure 5A), the application of the unmixing matrix to the raw images (Figure 5B) demonstrates the algorithm's success in resolving the spectral emission signals and significantly eliminating bleedthrough to help ensure accurate and reliable results.

Our report includes both qualitative and quantitative metrics, providing detailed insights and suggesting areas that may require troubleshooting. This empowers users to optimize their experiments with higher confidence.

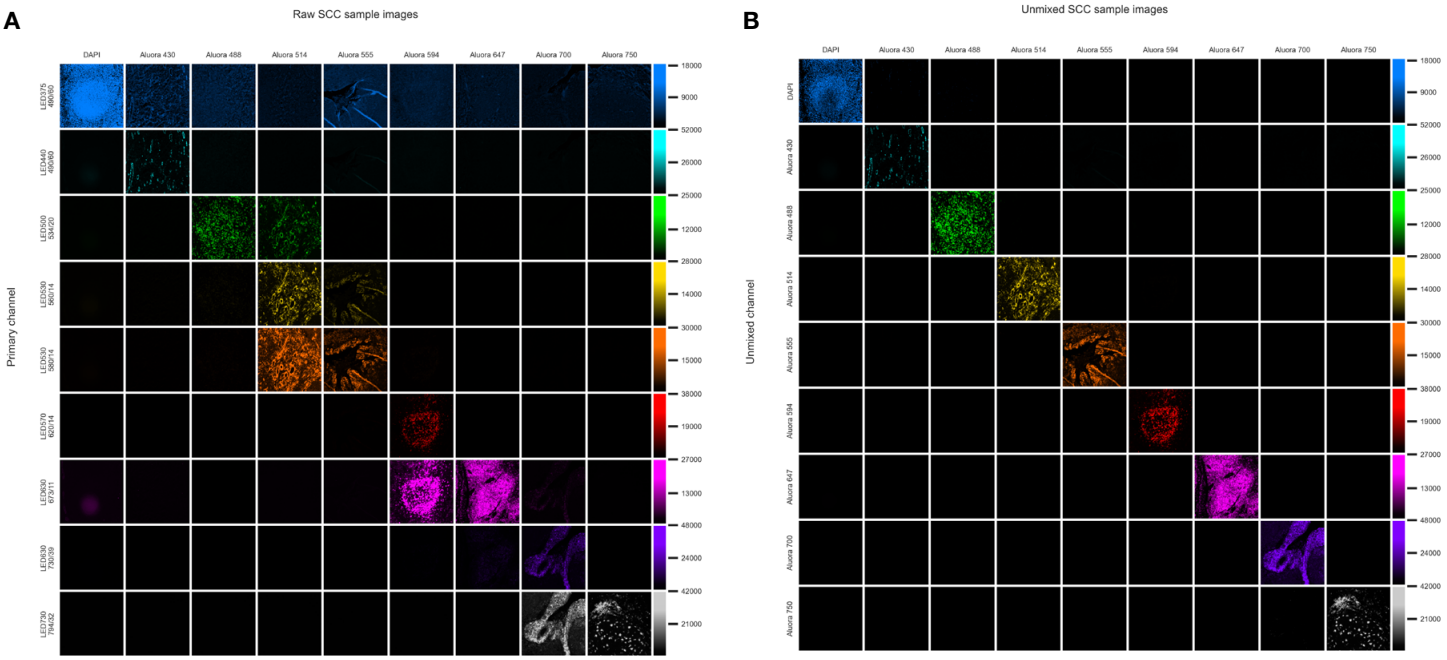


Figure 5. Visualization of the raw images and unmixed images for each single-color control (SCC) sample, displayed in each column, across the primary channels shown in each row. (A) Images on the diagonal line correspond to the raw images acquired for the targets in their primary channels. Spectral overlap is observed in raw images when a fluorophore is detected in off-target channels, outside the diagonal line. **(B)** The unmixing matrix has been applied to each single-color control sample, thus separating signals into their own target channels and eliminating signal bleedthrough.

The resulting data from the EVOS S1000 Spatial Imaging System spectral unmixing software enable high-resolution images (Figure 6).

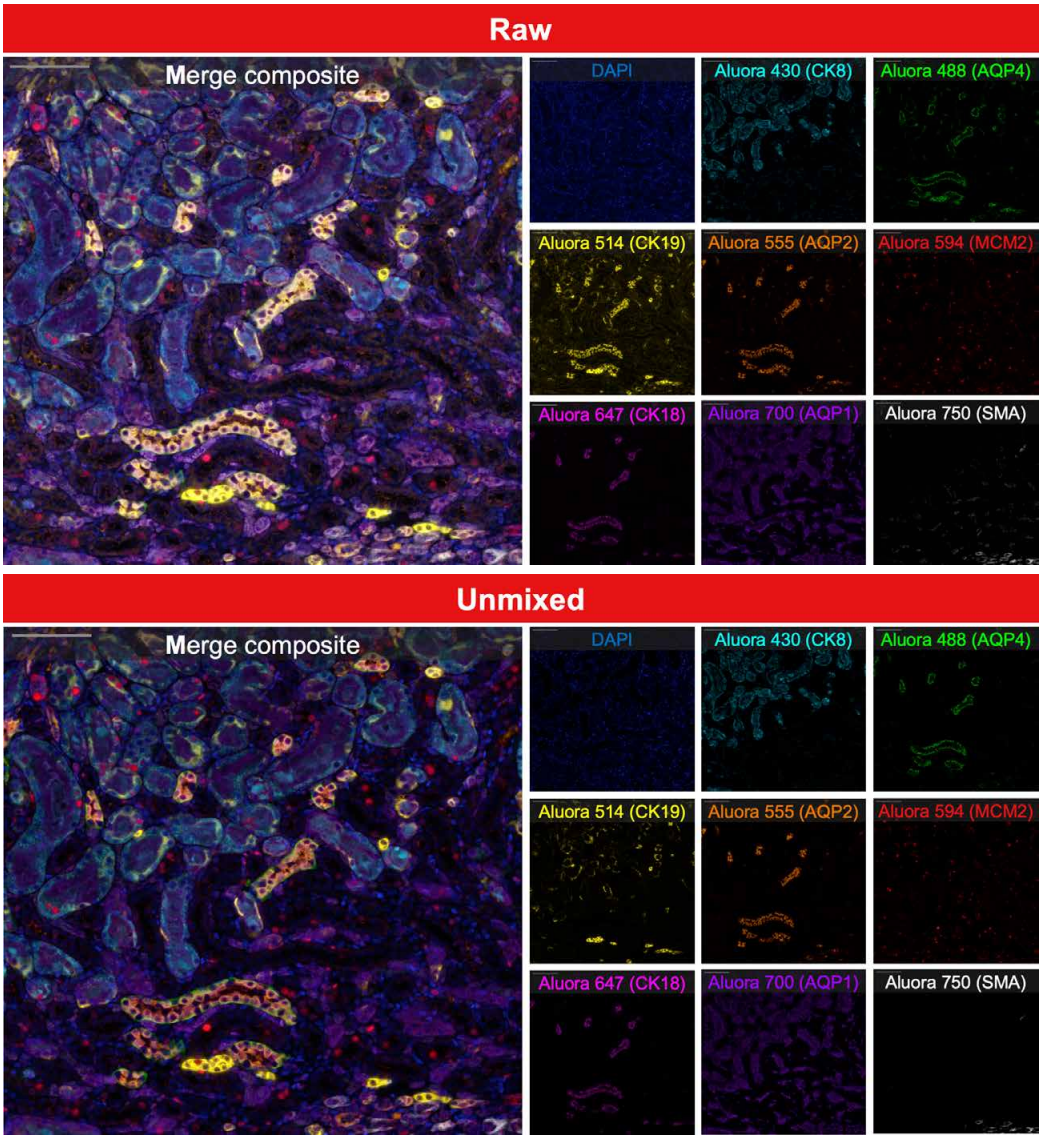


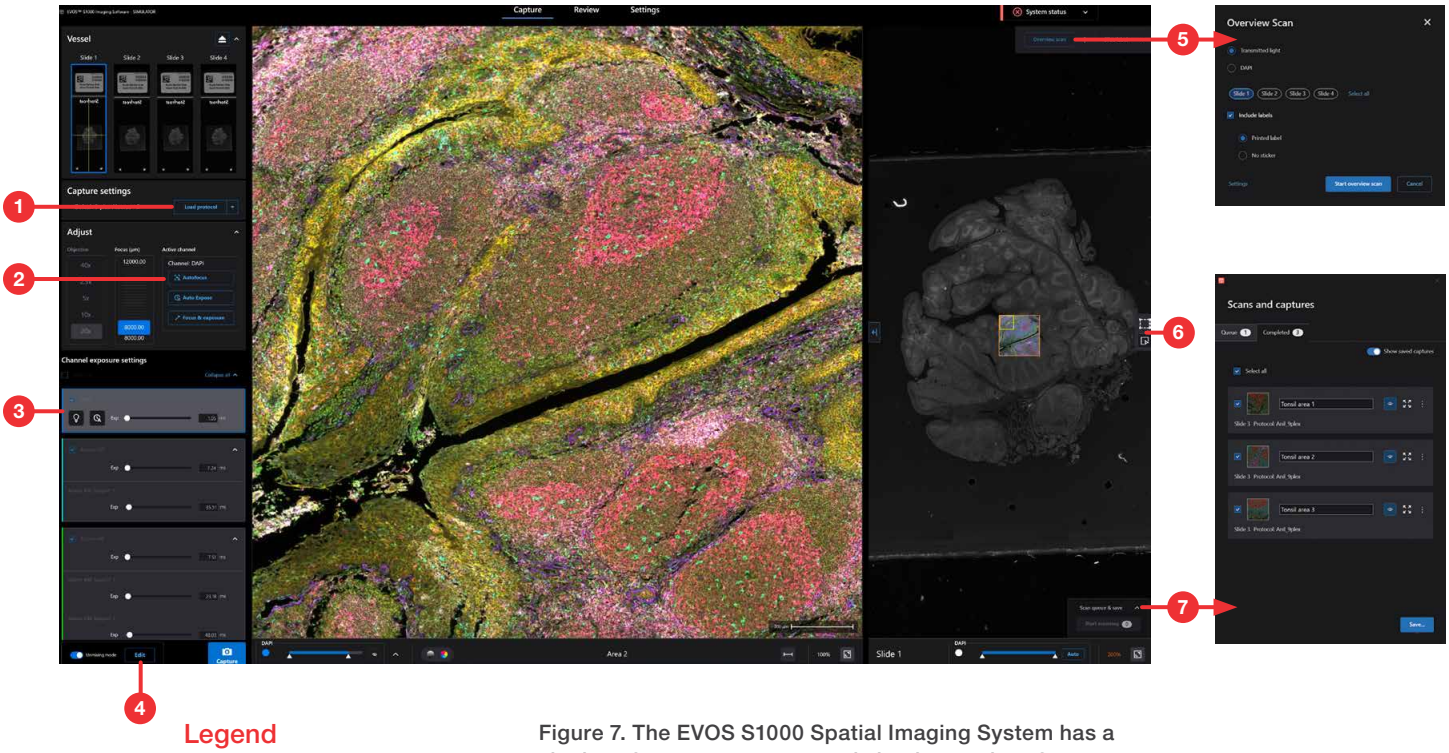
Figure 6. Formalin-fixed, paraffin-embedded (FFPE) kidney sample stained with the Invitrogen™ Aluora™ Spatial Amplification Rainbow Kit (Cat. No. A40002450). Images on the top show raw spectrally mixed data, while images on the bottom show processed and unmixed data.

Observe similar staining of structures in the raw channels capturing Invitrogen™ Aluora™ dyes, including Aluora™ 488, Aluora™ 514, and Aluora™ 555 dyes, as well as Aluora™ 647 and Aluora™ 700 dyes due to the overlap of emission spectra. Automated processing (spectral unmixing) of this image with the EVOS S1000 Spatial Imaging System software allows for the distinct staining across each channel to be revealed in unmixed images. The resulting composite image is more defined and useful for quantitative imaging.

Primary antibodies to each target were detected with Invitrogen™ Aluora™ spatial amplification dyes, including Aluora™ 430 dye with antibody targeting CK8 (blue), Aluora™ 488 dye with antibody targeting AQP4 (green), Aluora™ 514 dye with antibody targeting CK19 (yellow), Aluora™ 555 dye with antibody targeting AQP2 (orange), Aluora™ 594 dye with antibody targeting MCM2 (red), Aluora™ 647 dye with antibody targeting CK18 (violet), Aluora™ 700 dye with antibody targeting AQP1 (magenta), and Aluora™ 750 dye with antibody targeting SMA (white).

Single software ecosystem: from scanning to unmixed images

The EVOS S1000 Spatial Imaging System has a single software designed for a unified and simplified user experience. Utilize the same workflow regardless of plex (Figure 7).



Legend

1. Capture settings
2. Autofocus and exposure
3. Exposure settings
4. Unmixing matrix creation tool
5. Overview scan
6. Tool buttons
7. Scan and capture queue

Figure 7. The EVOS S1000 Spatial Imaging System has a single software ecosystem and simple user interface.

> "With the new EVOS S1000 [system], we can run more projects in parallel. It allows us to achieve multiplexing without needing to remove antibodies or fluorophores and it significantly reduces sample processing time."
>
> Carolina Osés Sepúlveda,
> SciLife
> Stockholm, Sweden

Seamless compatibility with data analysis programs

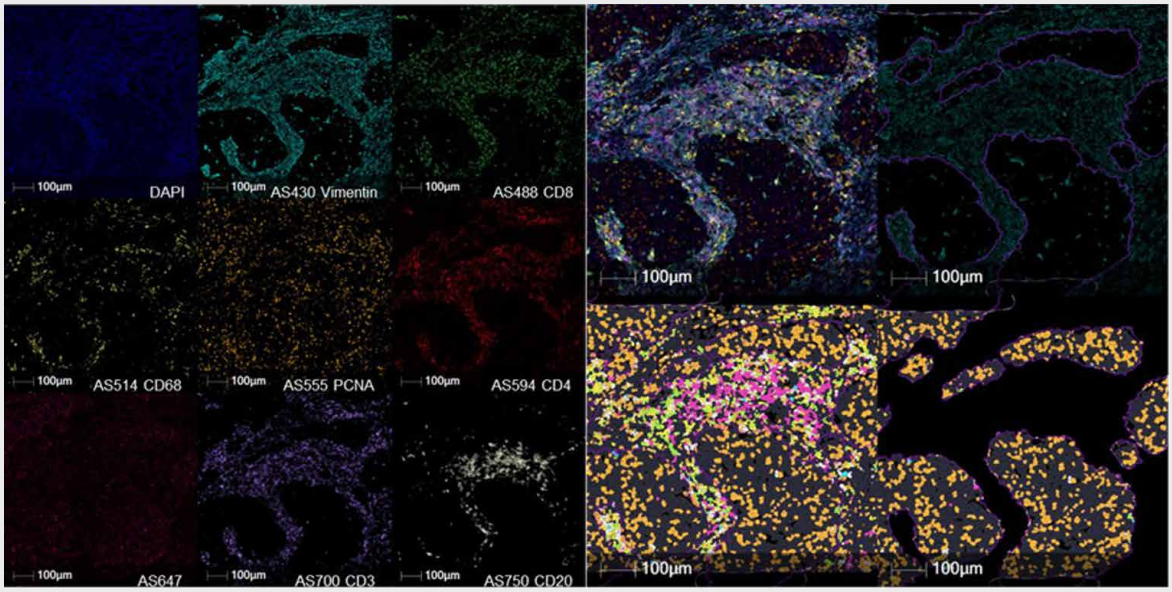
Data analysis is critical to bring context to labeled tissues imaged by the EVOS S1000 Spatial Imaging System. Images are saved as unmixed, stitched OME-TIFF files in either pyramidal or single-layer format. Raw tiles can also be saved, whenever desired. The output unmixed, stitched OME-TIFF files are compatible with several downstream analysis programs, including HALO™, Visiopharm™, and QuPath analysis software.

Case study: Exploring the breast cancer tumor microenvironment using quantitative image analysis

Employing the EVOS S1000 Spatial Imaging System, we successfully generated high-resolution images of a ductal carcinoma tissue section using a 20x objective (not shown). From an 81 mm^2 subset of this tissue image, we were able to distinguish the specific staining patterns of eight different biomarkers and DAPI (Figure 8A, individual channels are shown in the left panel, and composite images are shown in the right panel; see Figure 8B for specific markers).

Image processing using HALO™ Quantitative Image Analysis Software enabled characterization of the 1.06 million cells identified in the 81 mm^2 section. Overall, 25% of cells were classified as immune cells based on positive staining of markers. 23% of the nonimmune cells were classified as proliferating ($PCNA^+$). Furthermore, we were able to characterize the location of these cells finding that while proliferating cells were distributed nondiscriminately throughout the sample, immune cells localized dominantly in areas where the extracellular matrix protein vimentin was present (Figure 8C). This helped provide crucial insights into the peritumoral restriction of immune cell subpopulations within this section, and information that would not have been evident in a nonspatial, bulk phenotyping assay (flow cytometry or single-cell RNA-Seq).

A



B

Phenotype	Target(s)
B cells	$CD20^+$
Macrophages	$CD68^+$
Cytotoxic T cells	$CD3^+$ $CD8^+$
Helper T cells	$CD3^+$ $CD4^+$
Proliferating cells	$PCNA^+$

C

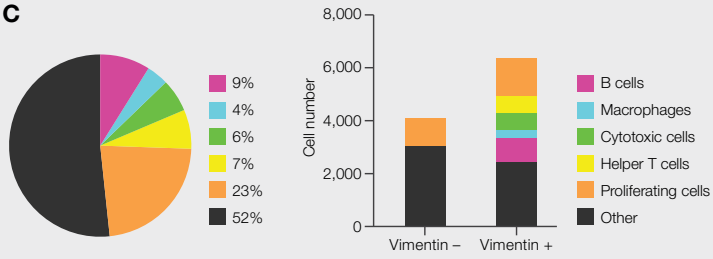


Figure 8. Single cell segmentation and phenotyping reveal spatial distribution of immune cell subpopulations.

Antibody and reagent solutions that simplify spatial imaging experiments

Utilizing the appropriate labeling technique turns the execution of a multiplex imaging experiment for spatial biology into a viable and efficient process.

Our solutions, including IHC-verified primary conjugated antibodies, antibody conjugation kits, and spatial amplification assays, overcome the restrictions imposed by secondary detection methods that stem from a limited range of secondary antibody species. The benefit of our approach lies not only in facilitating multiplex experiments with reduced spectral overlap for high-resolution images, but also in delivering flexibility within experimental design and component interchangeability (Figure 9).

Spatial imaging workflow

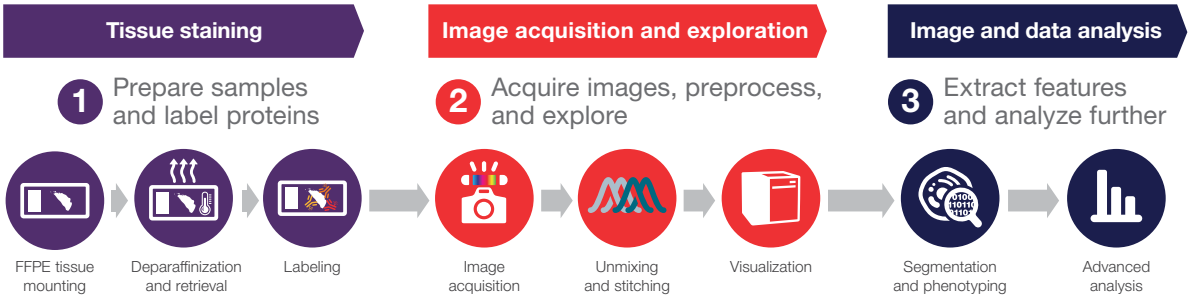


Table 2. Comparison of our labeling technologies.

	Aluora spatial amplification assay	Spatial biology–verified conjugated primary antibody	ReadyLabel Antibody Labeling Kits	Custom conjugation services
Advantages	Greater signal-to-noise and less need for primary antibodies	Fast multiplex workflows	Flexibility to format antibodies	Customization by experienced professionals
Labeling speed (multiplex up to a 9-plex)	12 hours or more	1–2 hours	1–2 hours	1–2 hours
Signal amplification	++++	+++	++	++
Multiplex labeling workflow	Iterative	Single step	Single step	Single step
Primary antibody requirements	Unlabeled or biotin-labeled antibody		Unlabeled antibody	Unlabeled antibody
Detecting high abundance targets	++++	+++	++	++
Detecting low abundance targets	++++	++	++	++
Standard working antibody dilution	1:1,000 to 1:50,000	1:10 to 1:200	1:10 to 1:200	1:10 to 1:200
Automation compatibility	++++	++++	++++	++++

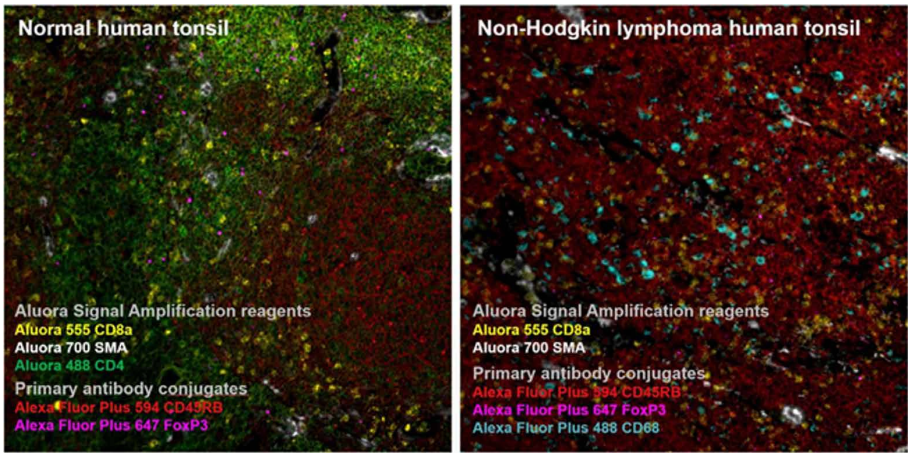


Figure 9. Examples of images collected using a combination of Invitrogen™ spatial imaging antibodies and reagents.

Validated* primary antibody conjugates

Discover the power of precision with Invitrogen™ conjugated primary antibodies, designed and validated for optimal compatibility with the EVOS S1000 Spatial Imaging System. Our catalog contains antibody clones that have been extensively tested in-house on FFPE tissues and are validated for their specificity, sensitivity, and reliability. The use of primary antibody conjugates eliminates the need for secondary antibody incubation steps, simplifying the staining protocol, and helping provide time- and labor-saving advantages by means of a single addition step. Direct binding to target proteins also minimizes cross-reactivity and nonspecific background staining (Figure 10).

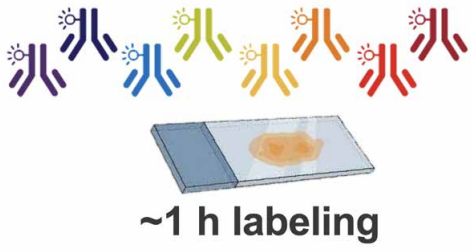
Our antibodies recognize a number of targets including:

- Proliferation markers
- Cluster of differentiation (CD) markers
- Immune checkpoints
- Structural markers
- Transcription factors

Simultaneously using multiple primary antibodies conjugated to fluorophores shortens the time to a stained tissue sample. Primary antibodies conjugated to fluorophores can detect high- to low-abundance proteins and enable sharp staining of proteins (Figure 10).

Primary antibodies conjugated to fluorophores are available in multiple formats:

- Invitrogen™ Alexa Fluor™ 420 Dye
- Invitrogen™ Alexa Fluor™ Plus 488 Dye
- Invitrogen™ Alexa Fluor™ 514 Dye
- Invitrogen™ Alexa Fluor™ Plus 555 Dye
- Invitrogen™ Alexa Fluor™ Plus 594 Dye
- Invitrogen™ Alexa Fluor™ Plus 647 Dye
- Invitrogen™ Alexa Fluor™ 700 Dye
- Invitrogen™ Alexa Fluor™ Plus 750 Dye



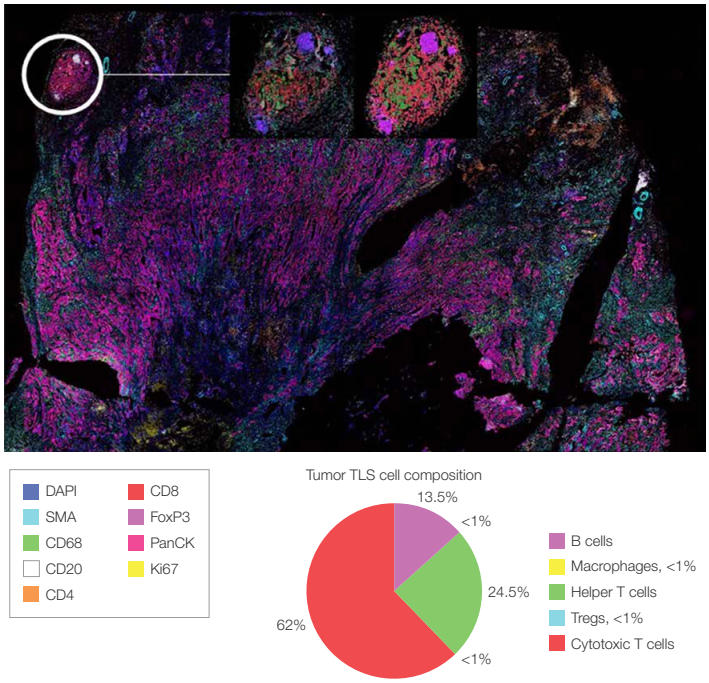
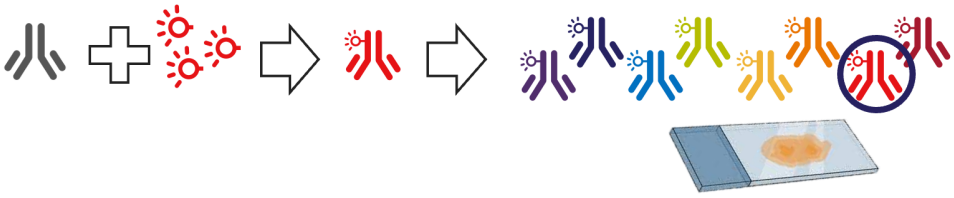


Figure 10. Example data of stained colon adenocarcinoma with spatial imaging antibodies and the EVOS S1000 Spatial Imaging System. Markers CD68, CD20, CD4, CD8, and FoxP3 label macrophages, B cells, and T cell subsets while SMA, PanCK, and Ki67 identify key colon tissue structures and proliferating cells. TLS: tertiary lymphoid structure

* The use or any variation of the word "validation" refers only to research-use antibodies that were subject to functional testing to confirm that the antibody can be used with the research techniques indicated. It does not ensure that the product(s) was validated for clinical or diagnostic use.

Search for your clone at **thermofisher.com/spatialabs**

ReadyLabel Antibody Labeling Kits: conjugate any primary antibody



If a commercially available conjugated antibody is not available or you're using a custom antibody, Invitrogen™ ReadyLabel™ Antibody Labeling Kits offer an easy, do-it-yourself solution for generating covalently labeled probes. These kits include a comprehensive range of EVOS S1000 imaging system–ready Alexa Fluor and Alexa Fluor Plus dyes, enabling you to produce a conjugated, purified antibody in just one hour.

Table 3. Conjugation kits and services.

	Starting material	Starting antibody	Time savings
Do-it-yourself	Provide your own IgG capture spin columns and reactive dyes	Provide your own antibody	++
ReadyLabel Antibody Labeling Kits	ReadyLabel Antibody Labeling Kits have dyes and columns	Provide your own antibody in BSA/other protein stabilizers	++
Custom conjugation services from Thermo Fisher Scientific	Services have all needed materials, equipment, and expertise	Provide your own antibody in BSA/other protein stabilizers	+++

ReadyLabel kits are equipped with a selection of our most popular and trusted Alexa Fluor and Alexa Fluor Plus dyes to produce high yields of bright, covalently bound conjugates (Figure 11).

- No antibody purification needed
- Label 20 µg or 100 µg of IgG antibody
- Five labeling reactions per kit
- Labeled antibodies are ready in 60 minutes
- High signal-to-background ratio
- Single or multiplex staining

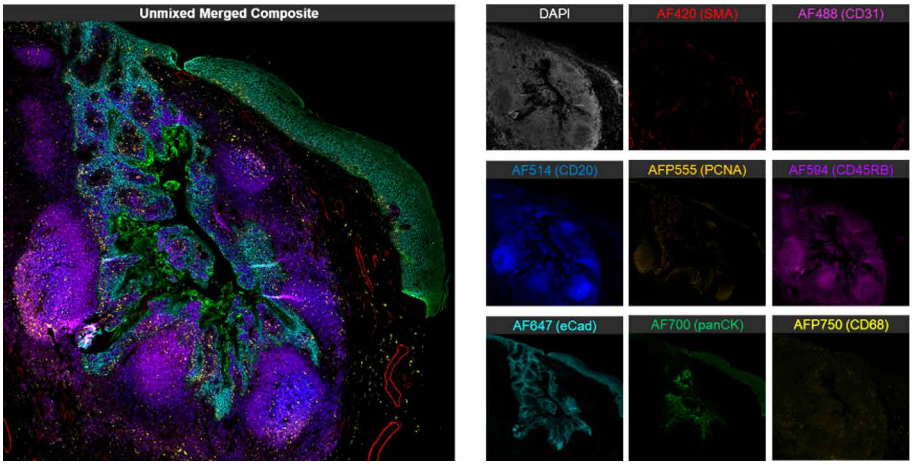


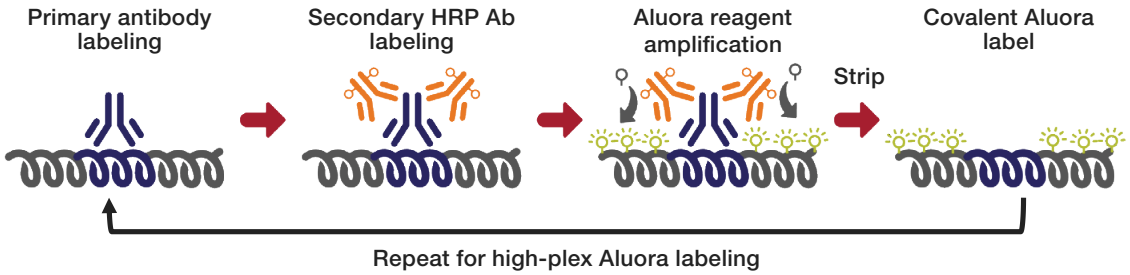
Figure 11. FFPE human tonsil tissue stained with ReadyLabel kit antibody conjugates. Invitrogen™ ReadyLabel™ Alexa Fluor™ 420 smooth muscle actin, ReadyLabel™ Alexa Fluor™ 514 CD20, ReadyLabel™ Alexa Fluor™ Plus 555 PCNA, ReadyLabel™ Alexa Fluor™ 594 CD45RB, ReadyLabel™ Alexa Fluor™ 647 E-cadherin, ReadyLabel™ Alexa Fluor™ 700 cytokeratin, and ReadyLabel™ Alexa Fluor™ Plus 750 CD68 antibody conjugates were used for staining. Images were collected on the EVOS S1000 Spatial Imaging System at 20x.

Table 4. ReadyLabel Antibody Labeling Kits ordering information.

ReadyLabel kit	Alexa Fluor 420 kit	Alexa Fluor 488 kit	Alexa Fluor 514 kit	Alexa Fluor Plus 555 kit	Alexa Fluor 594 kit	Alexa Fluor 647 kit	Alexa Fluor 700 kit	Alexa Fluor Plus 750 kit	Flex kit	Biotin kit
Cat. No. (5 x 20 µg of IgG)	R10725	R10709	R10720	R10721	R10722	R10710	R10723	R10724	R10701	R10711

Get your kit at thermofisher.com/readylabel

Aluora spatial amplification reagents: flexible multiplexing of eight biomarkers



When antibody targets are in low abundance or primary antibody supply is limited, Aluora spatial amplification reagents offer a flexible labeling approach compatible with EVOS S1000 and other spatial imaging systems. Available in eight colors, these reagents can be combined with DAPI for a complete 9-plex panel or used interchangeably with other labeling methods. Aluora reagents enhance fluorescent signals using exceptionally bright fluorophores and enzyme-mediated attachment of multiple fluorophores to target proteins. This covalent labeling is resistant to stripping and relabeling, making it compatible with primary antibodies of the same species without cross-reactivity concerns. Individual dyes or preconfigured kits are available for detecting mouse, rabbit, or biotin-labeled antibodies at working concentrations as low as 1:50,000.

Benefits include:

- **Detection of low protein expressors**—amplification of fluorescence enables the detection of low-abundance targets above background noise; targets such as transcription factors, membrane receptors, and other proteins (Figure 12)
- **Antibody flexibility**—use primary antibodies from the same host species, as enzyme-mediated signal amplification of the target requires primary antibody stripping between rounds of labeling
- **Optimized dyes**—eight Invitrogen™ Aluora™ fluorophores with similar brightness and distinct emission spectra are compatible with both spectral and cyclic imaging systems; DAPI is included as the ninth marker
- **Instrument compatibility**—specifically designed for fluorescence spectral imaging on most fluorescent multiplex imagers, including the EVOS S1000 Spatial Imaging System and other microscopes and spatial platforms with similar laser excitations

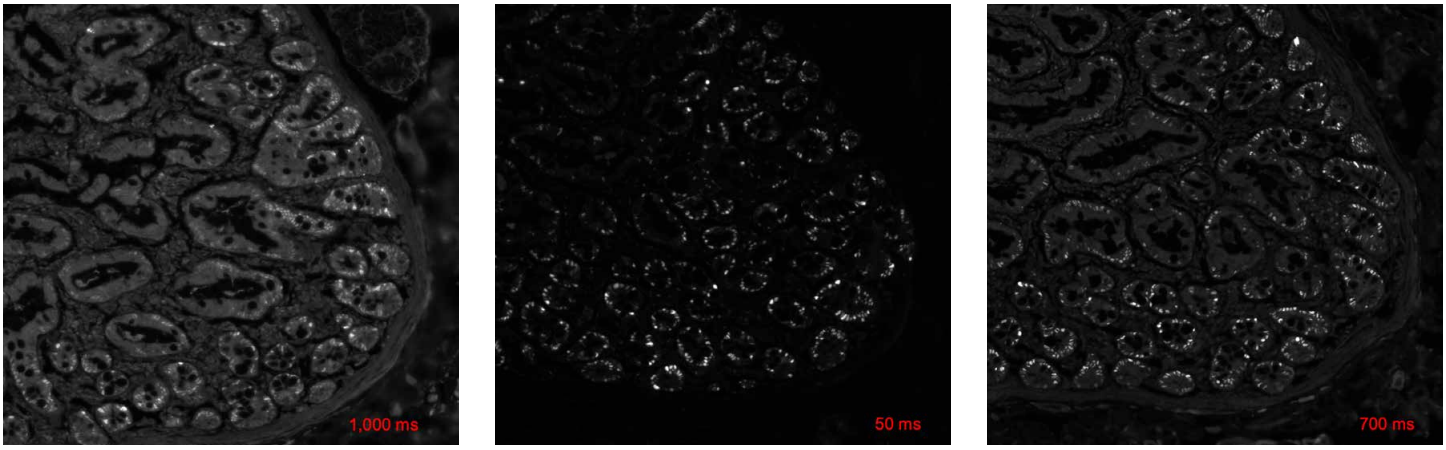


Figure 12. Reduced exposure times result in less background noise and autofluorescence interference. An FFPE intestine sample was stained with Invitrogen™ PCNA monoclonal antibody (PC-10) (Cat. No. 13-3900) diluted 1:1,000 and then detected with Invitrogen™ Alexa Fluor™ 594 secondary antibody (left), Aluora™ 594 spatial amplification reagents (center), or Akoya™ Opal™ 620 reagents (right). Exposure times listed for each were for optimal signal detection.

Detection of low protein expressors

Amplification of fluorescence enables the detection of low-abundance targets above background noise. Examples are transcription factors, such as REST (RE1-silencing transcription factor) or NR2F1 (a nuclear receptor subfamily member), or membrane receptors such as GPR37 (G-protein–coupled receptor 37), among others (Figure 13).

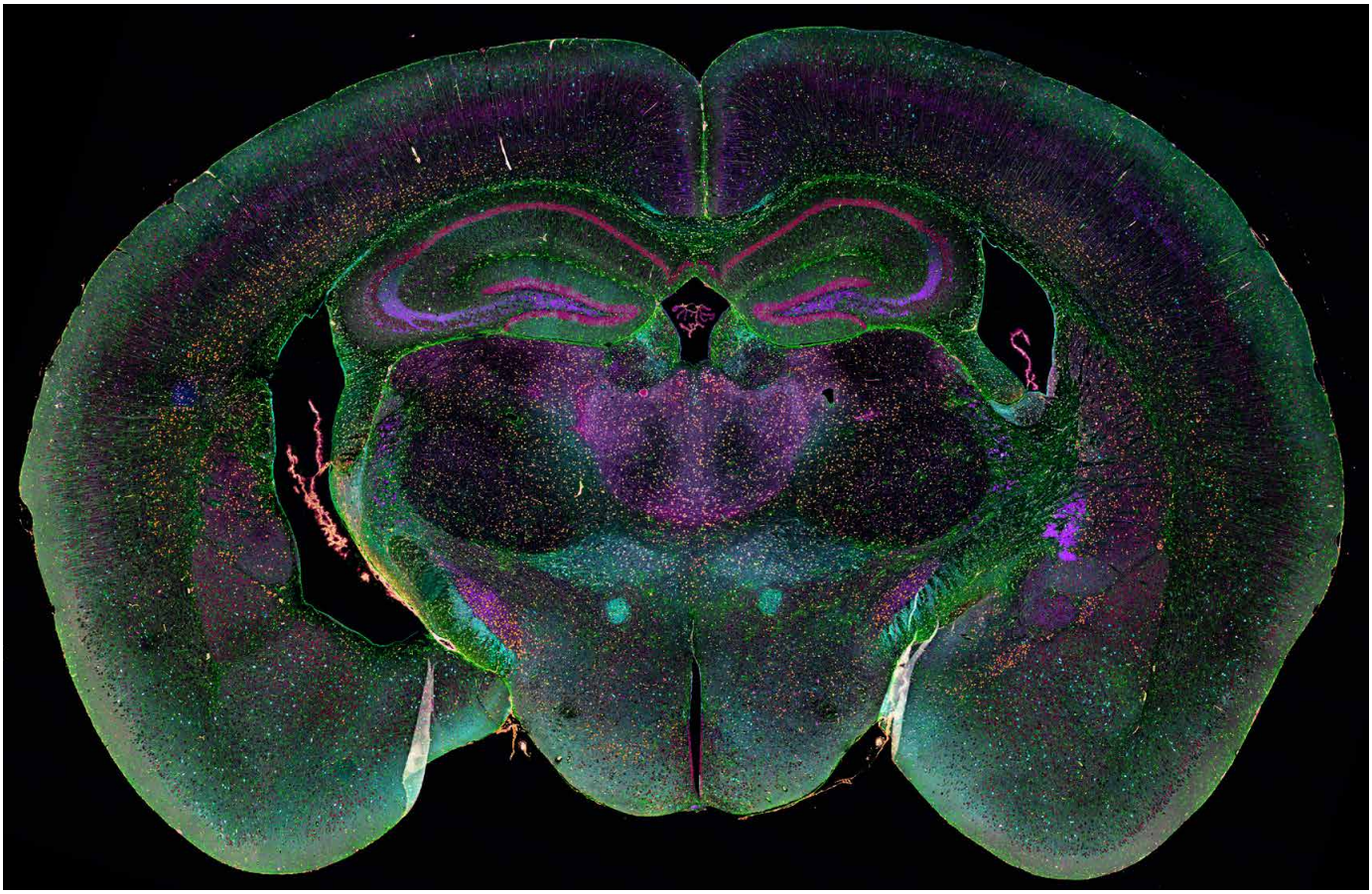


Figure 13. FFPE brain tissue stained with the Aluora Spatial Amplification Rainbow Kit (Cat. No. A40002450) and imaged on the EVOS S1000 Spatial Imaging System. The following Invitrogen antibodies and Aluora dyes were used for staining: Calbindin D28K Recombinant Polyclonal Superclonal™ Antibody (15HCLC) (1:500, Cat. No. 711443) with Aluora 430 dye; GFAP Antibody (1:1,000, Cat. No. AB7260) with Aluora 488 dye; TLE1 Recombinant Rabbit Monoclonal Antibody (ARC0793) (1:5,000, Cat. No. MA5-35377) with Aluora 514 dye; MAP2 Monoclonal Antibody (AP18) (1:1,000, Cat. No. MA5-12826) with Aluora 555 dye; Olig2 Antibody (211F1.1) (1:1,000) with Aluora 594 dye; NECAB1 Polyclonal Antibody (1:500, Cat. No. PA5-54734) with Aluora 647 dye; FOXP2 Monoclonal Antibody (CL5312) (1:5,000, Cat. No. MA5-31419) with Aluora 700 dye; and GAD67 Antibody (1G10.2) (1:500, Cat. No. MAB5406) with Aluora 750 dye.

Table 5. Aluora spatial amplification reagent ordering information.

	Spatial amplification reagent or kit (Cat. No.)							
	Aluora 430	Aluora 488	Aluora 514	Aluora 555	Aluora 594	Aluora 647	Aluora 700	Aluora 750
Spatial amplification dye	AS430HRP	AS488HRP	AS514HRP	AS555HRP	AS594HRP	AS647HRP	AS700HRP	AS750HRP
Spatial amplification goat anti-mouse HRP kit	A40001329	A40001330	A40001331	A40001332	A40001333	A40001334	A40001335	A40001336
Spatial amplification goat anti-rabbit HRP kit	A40001337	A40001338	A40001339	A40001340	A40001341	A40001342	A40001343	A40001344
Spatial amplification streptavidin HRP kit	A40001345	A40001346	A40001347	A40001348	A40001349	A40001350	A40001351	A40001352

See the difference at **thermofisher.com/aluora**

Antifade mountants for stabilizing and preserving fluorescent signals in labeled tissue samples

Irreversible photobleaching can significantly reduce fluorescence sensitivity. To address this, Invitrogen™ ProLong™ and SlowFade™ glass antifade mountants are engineered to provide exceptional protection against photobleaching for fluorophores across the visible and near-infrared spectra. With a refractive index (RI) of 1.52, similar to glass coverslips and closely matching tissue components, these mounting media facilitate high-resolution multiplexed imaging (Figure 14).

Our antifade mountants offer excellent photobleach protection, enabling:

- Long and repeat imaging sessions
- High sensitivity
- The highest refractive index for crisper images and few aberrations

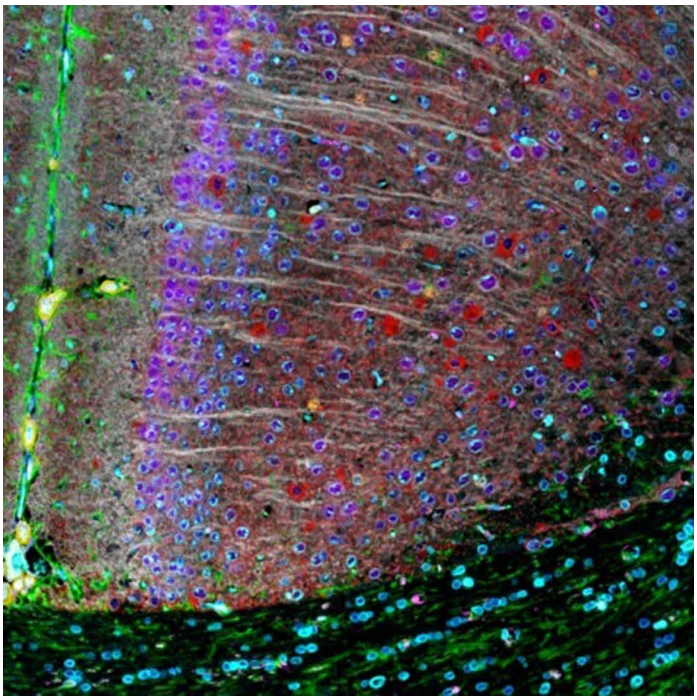


Figure 14. FFPE mouse brain tissue stained with primary antibodies and Aluora spatial amplification reagents. The labeled sample was mounted with ProLong Glass Antifade Mountant and imaged on the EVOS S1000 Spatial Imaging System.

Table 6. Antifade ordering information.

Description	Cat. No.
ProLong Glass Antifade Mountant	P36980
SlowFade Glass Soft-Set Antifade Mountant	S36917

Protect your samples at **thermofisher.com/antifades**

"The EVOS S1000 [system] has a very fast software, I like the live [periscope] mode. I also like the simplicity of the unmixing workflow. It is really compatible with analysis software like QuPath."

Giulia Bergamaschi,
Amsterdam Universitair Medische Centra (UMC)
Amsterdam, The Netherlands

Additional information

Table 7. EVOS S1000 Spatial Imaging System ordering information.

Description	Quantity	Cat. No.
EVOS S1000 Spatial Imaging System	1 unit	AMFS1000
External Dell XE4 Computer, i9-12900 processor, 128 GB DDR4 RAM, 16.5 TB NVMe, NVIDIA Quadro RTX A4000 graphics card	Included	AMFS1000PC
External Dell Ultrasharp 32-inch 4K HDR LCD display	Included	AMFS1000D
ZEISS OBJ EC Plan-Neofluar 2.5x/0.085	Included	AMEP4995
ZEISS OBJ EC Plan-Apochromat 10x/0.45	Included	AMEP4997
ZEISS OBJ EC Plan-Apochromat 20x/0.8	Included	AMEP4998
ZEISS OBJ EC Plan-Apochromat 5x/0.16	Each (optional)	AMEP4999
ZEISS OBJ EC Plan-Neofluar 5x/0.16 Ph1	Each (optional)	AMEP5000
ZEISS OBJ EC Plan-Apochromat 10x/0.45 Ph 1	Each (optional)	AMEP5001
ZEISS OBJ EC Plan-Apochromat 40x/0.95 Corr	Each (optional)	AMEP5002
EVOS S1000 Four Slides Holder	4 units	AMEPVH115
EVOS Calibration Slide	Included	AMEP4720

EVOS S1000 Spatial Imaging System

Spatial biology resource center

Imaging protocol handbooks

Spatial amplification assays

Primary conjugated antibodies

ReadyLabel Antibody Labeling Kits

Learn more at **thermofisher.com/evoss1000**