invitrogen

Guide to EVOS imaging systems

Clarity, brilliance, and simplicity

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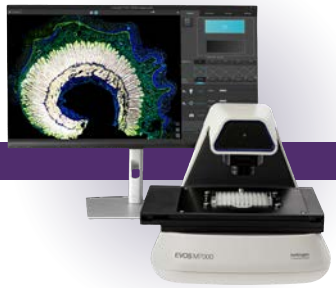
Simple yet powerful imaging systems

Invitrogen™ EVOS™ imaging systems help eliminate the complexities of microscopy without compromising performance. The exceptionally versatile and intuitive EVOS microscopes are designed for ease of use, speed, and reliable results across a broad range of imaging applications—including cell culture, time-lapse, and multiplex immunofluorescence imaging, as well as high-resolution image capture from slides, dishes, flasks, and microplates. EVOS systems deliver publication-quality images and data every time at an exceptional value.

Invitrogen™ EVOS™ S1000 Spatial Imaging System

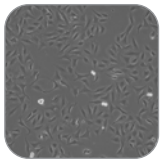


Invitrogen™ EVOS™ M7000 Imaging System

Invitrogen™ EVOS™ M5000 Imaging System

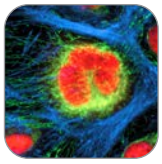
Invitrogen™ EVOS™ M3000 Imaging System

Brightfield, phase contrast, true color, and fluorescence

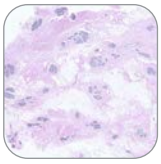


Cell culture

Live-cell imaging



Fixed-cell imaging



Color tissue staining

Multiplex tissue staining

Publication-quality imaging

In today's competitive scientific environment, generating publication-quality images is critical to your success. Premium imaging components enable direct output of high-resolution images suitable for figures and data presentation, improving post-processing efficiency and data integrity.

- High-quality cameras and optics that capture high-resolution images and videos
- LED illumination sources that enable exceptional signal-to-noise ratios
- Easy-to-use image processing and analysis software for images that are ready to publish

Easy, reliable operation

With quick setup and intuitive controls, EVOS microscopes are designed for straightforward operation, consistent performance, and long-term reliability—enabling you to go from sample to results faster.

- No darkroom required
- On-screen display (no oculars)
- Automated controls and minimal handling
- Optimized footprint
- Ability to switch between fluorescence channels in real time
- Connectivity to the Invitrogen™ EVOS™ Onstage Incubator for time-lapse imaging

Simplicity and sophistication

The easy-to-use software allows both novice and advanced users to take brilliant images within minutes. EVOS microscopes include many standard features such as:

- Multichannel image acquisition
- Onboard applications for cell counting, confluency, and transfection efficiency
- 2D deconvolution
- Area view to easily define and capture the area of interest
- Spectral unmixing
- Periscope mode for live tissue navigation

Which EVOS imaging system is right for you?

All EVOS imaging systems share common features: high-quality LED light sources, cameras, and optics for high-resolution imaging; efficient, simple-to-use design for minimal handling and faster results; and powerful, intuitive software for enhanced productivity and reproducibility.

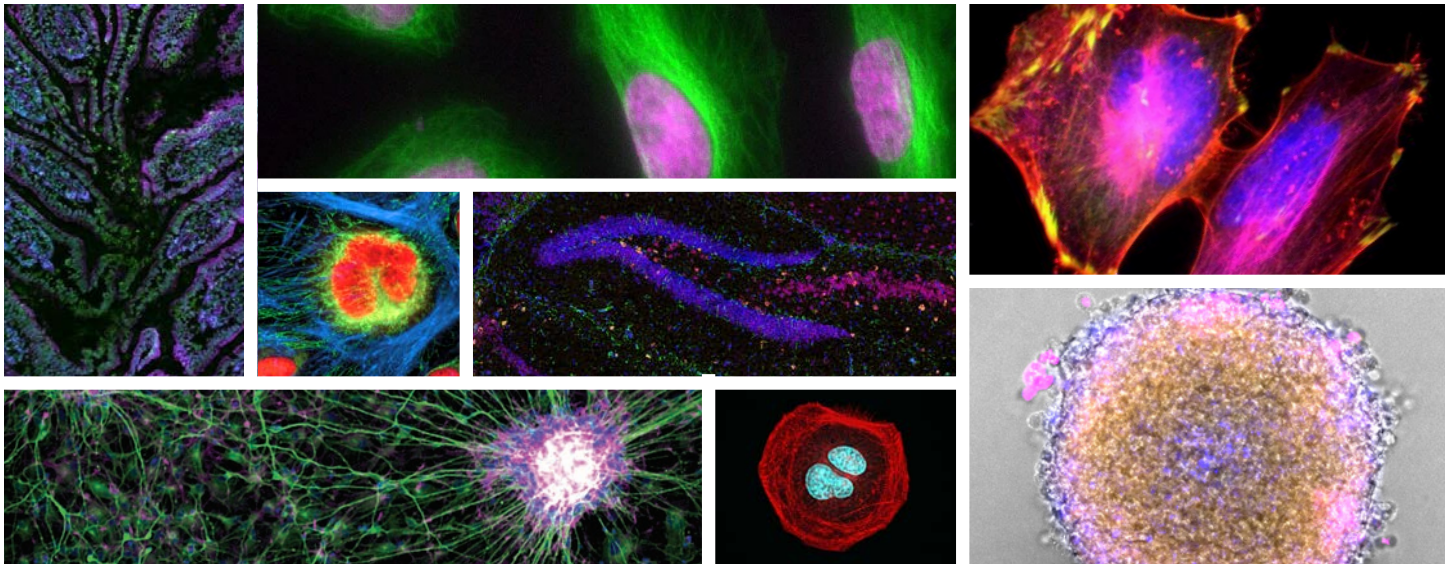
The EVOS lineup includes three digital fluorescence microscopes (EVOS "M") and one spatial imaging system (EVOS "S")—each engineered to empower your research with clarity, consistency, and confidence. Choose the right system based on your research needs and applications.

Table 1. Brief comparison of EVOS M and S microscopes.

	EVOS M	EVOS S
Sample types	Cells and tissues	Tissues only
Number of fluorescent colors	1 to 4	Up to 9
Illumination source	Interchangeable LED cubes	LED light engine
Compatible objectives	EVOS and Olympus	Zeiss
Live-cell imaging	Yes	No

Table 2. Brief comparison of EVOS M microscopes.

		EVOS M7000	EVOS M5000	EVOS M3000
Number of fluorescence channels		4	4	2
Number of objectives		5	5	4
High-resolution imaging	2D samples (cells, thin tissue)	+++	+++	+++
	3D samples (organoids or tumoroids; thick tissue)	+++	++	+
Cell culture monitoring		++	++	+++
Automated image acquisition and autofocus		+++	++	–
Time-lapse imaging		+++	++	–
Stitching and tiling		+++	–	–
Optimized footprint fits in cell culture hood		+	++	+++



EVOS S1000 Spatial Imaging System

Unlock 9-plex tissue imaging for deeper discovery with ease

The EVOS S1000 Spatial Imaging System redefines tissue imaging with powerful multiplexing capabilities. Capture up to 9 markers in a single round and visualize complex cellular neighborhoods, interactions, and spatial relationships with ease. With intelligent, automated spectral unmixing, the EVOS S1000 system accelerates the imaging acquisition workflow and provides accurate marker localization for more informed conclusions.

- **Simple**—performs automated 9-plex imaging with high fidelity and no need for additional steps
- **Fast**—delivers fully stitched and unmixed multiplex images across multiple samples in a fraction of the time
- **Flexible**—compatible with your preferred fluorophores, antibodies, reagents, and analysis software

Features

- Scan, spectrally unmix, stitch, and save a 9-plex fluorescence image of 1 cm^2 of tissue at 20x in under 1 hour
- Perform spectral fluorescence, transmitted brightfield, phase-contrast, and color brightfield imaging
- Detect intricate multiplex staining patterns within tissues with a 4.2 megapixel, 16-bit scientific CMOS (sCMOS) camera
- Select 2.5x–40x objectives that can be accommodated on the 5-position objective slider
- Experience navigation, live tissue exploration, spectral extraction, image collection, and data retrieval in a simple way, for users with different levels of experience
- Resolve spectrally overlapping fluorophore signals with automated unmixing that is integrated as part of the image acquisition

Figure 1. FFPE mouse brain tissue stained for 9 markers with the Invitrogen™ Aluora™ Spatial Amplification Rainbow Kit (Cat. No. A40002450) and imaged on the EVOS S1000 Spatial Imaging System, revealing detailed spatial context of the healthy tissue.

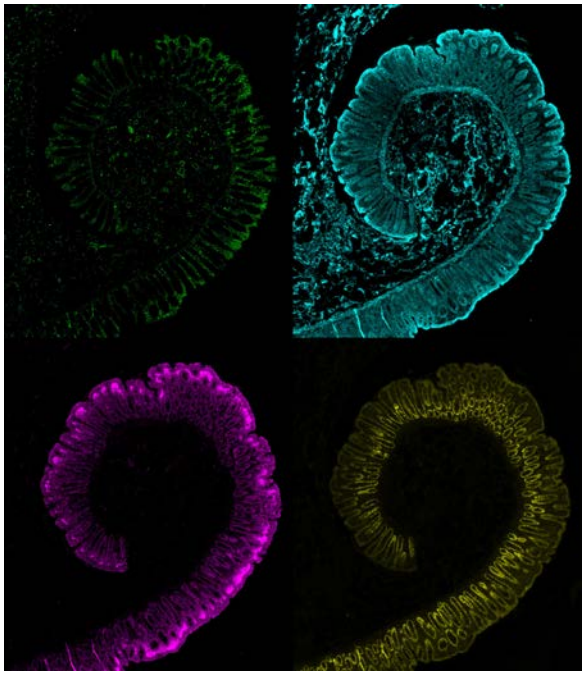
More colors, more context, more insights

The analysis of complex tissues requires the mapping of a relatively high number of protein targets to capture the true cellular diversity. This is often limited by the ability of standard microscopy systems to detect more than four or five distinct fluorescence targets.

Designed for multiplex fluorescence and color imaging of whole tissue sections, the EVOS S1000 Spatial Imaging System offers speed, high resolution, reliability, and workflow simplicity in spatial protein localization. The system provides flexibility in reagent selection, seamless single-round spectral unmixing of up to 9 signals, and powerful image visualization, all within a user-friendly platform.

Unlike existing technologies that can take days or even weeks, the EVOS S1000 system can complete the entire imaging process in hours—producing fully stitched, unmixed multiplex images for multiple samples with significant time savings.

A



B

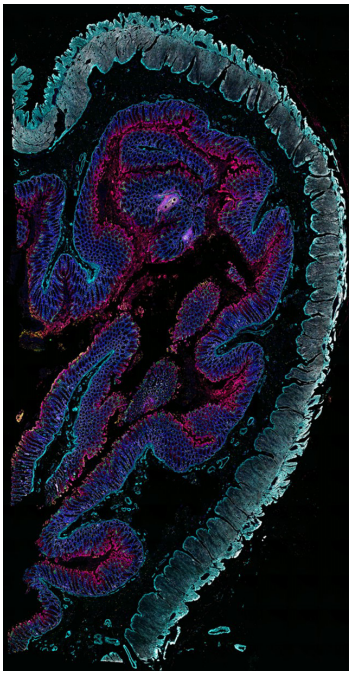


Figure 2. Detecting more targets helps provide more details about the tissue microenvironment and highlights the complexity of biological systems within tissues. (A) Staining of healthy colon tissue with four different fluorophores is imaged on the EVOS M7000 Imaging System. A limited number of targets results in limited information available for understanding the tissue microenvironment. **(B)** Staining of healthy colon tissue with nine different fluorophores is simultaneously imaged on the EVOS S1000 Spatial Imaging System. Multiplex immunofluorescence staining enables information can be obtained about the localization and interaction of biomolecules and cells within the tissue microenvironment.

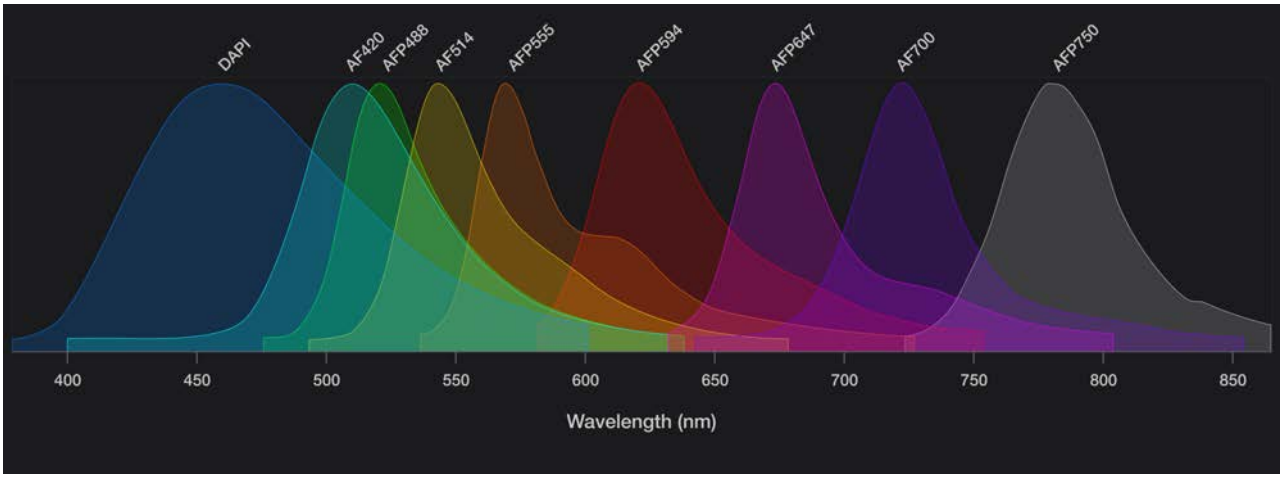


Figure 3. The EVOS S1000 Spatial Imaging System allows capture of multiplex immunofluorescence images through its spectral unmixing capabilities. These spectra show emissions of eight Invitrogen™ Alexa Fluor™ and Alexa Fluor™ Plus dyes and DAPI. Despite the overlaps, the built-in algorithms in the EVOS S1000 spatial imaging software can determine the relative contribution of each fluorophore to every pixel of the image and eliminate spectral bleedthrough from overlapping channels.

The EVOS S1000 system performs spectral unmixing automatically whenever needed. Unmixing resolves signals from fluorophores with significant spectral overlap, enabling higher multiplexing than conventional fluorescence microscopy and expanding the number of targets that can be resolved in a single imaging acquisition round.

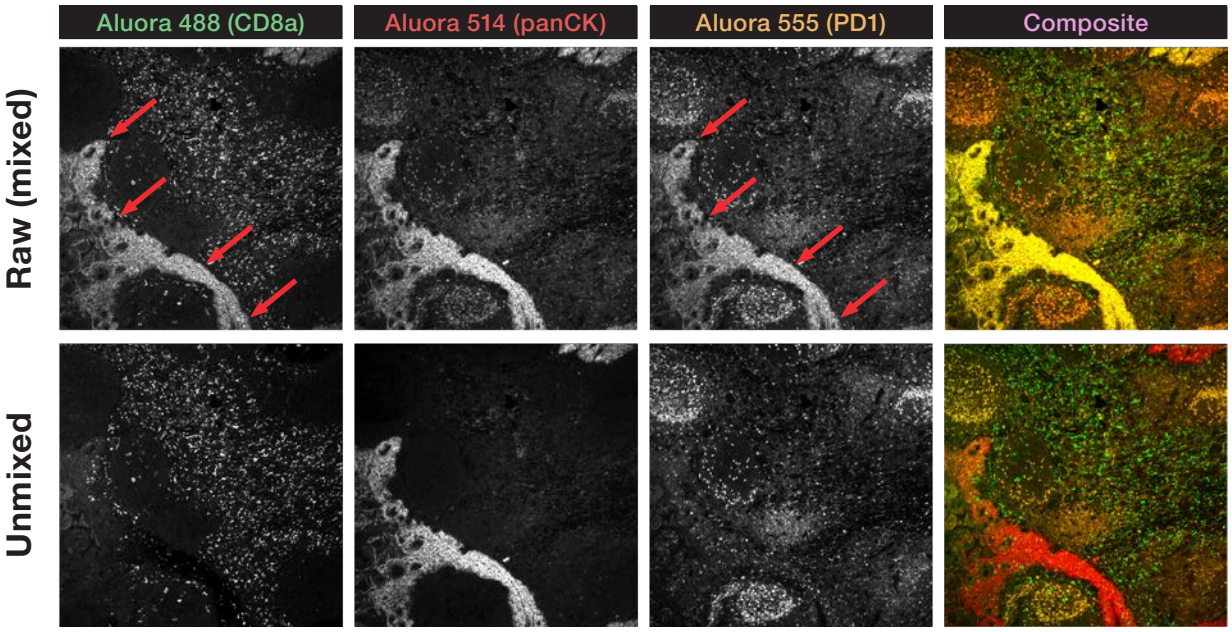


Figure 4. The EVOS S1000 Spatial Imaging System allows researchers to easily capture and visualize all nine targets simultaneously before and after unmixing has taken place. Top row: In the raw images, the fluorescence signal from Aluora 514 dye associated with panCK shows up as bleedthrough in neighboring channels, as indicated with the arrows. Bottom row: Spectral unmixing automatically performed by the EVOS S1000 system resolves signal from overlapping dyes.

Flexibility in every experiment with antibody and reagent solutions

The EVOS S1000 Spatial Imaging System offers the flexibility to use a variety of labeling technologies, allowing you to select and utilize your preferred antibodies and reagents. Compatible with both primary antibody conjugates and spatial amplification reagents, the system supports a wide range of antibodies and reagents. This flexibility allows users to select the best possible labeling strategy for their samples prior to imaging with the EVOS S1000 system, to confidently detect any protein targets regardless of their tissue expression levels.

Learn more at
thermofisher.com/spatial-biology

Free multiplex imaging design support

Planning a multiplex imaging experiment can be complex—it involves choosing fluorophores, optimizing antibody panels, and ensuring reagents and imaging solutions work seamlessly together.

If you need help, our spatial imaging specialists can:

- Help design and optimize your antibody panel
- Recommend compatible fluorophores and reagents
- Guide you toward solutions that streamline preparation and enable high-quality data

Learn more at
thermofisher.com/multiplex-imaging-help

Ordering information

Product	Cat. No.
EVOS S1000 Spatial Imaging System	AMFS1000

Learn more at
thermofisher.com/evoss1000

EVOS M microscopes

The EVOS M7000 Imaging System is a fully automated, high-performance microscope designed for advanced 2D and 3D cell and tissue applications that demand speed, precision, and reproducibility. The EVOS M5000 Imaging System is a versatile digital microscope with built-in quantitative analysis tools, adaptable from everyday cell imaging to complex tissue analysis with ease. The EVOS M3000 Imaging System is a compact cell culture microscope for reliable brightfield, phase-contrast, and fluorescence imaging that streamlines routine cell monitoring.

Table 3. Selection guide for EVOS M microscopes.

	M7000	M5000	M3000
	Cat. No. AMF7000	Cat. No. AMF5000SV	Cat. No. AMF3000
Hardware attributes			
Stage operation	Motorized	Manual (stage tracking)	Manual
Objective turret positions	5	5	4
Objective range (magnification)	1.25–100x	1.25–100x	1.25–60x
Fluorescence channels	4	4	2
Customizable fluorescence LED light cubes	✓	✓	✓
Monochrome or color camera	Both	Mono with LED-based RGB illumination scheme	Color
Fluorescence, phase-contrast, brightfield, and color imaging	✓	✓	✓
Onstage incubator for time-lapse imaging	Optional	Optional	–
Time-lapse imaging	Multichannel	Multichannel	–
Autofocus	✓	✓	–
Z-stacking capability	✓	✓	–
Automated multiwell plate screening	✓	–	–
Suitable for use in cell culture hood	–	✓	✓
Darkroom required	–	–	–
Installation and training	Service team	User or service team	User
External monitor support	✓	✓	✓
Software attributes			
Intuitive onboard software	✓	✓	✓
Celleste Image Analysis Software	Optional	Optional	Optional
Cell counting application	✓	✓	–
Cell confluency application	✓	✓	✓ (real-time confluency)
Transfection efficiency application	✓	✓	–
Stage-tracking intelligence	✓	✓	–
Cloud connectivity	✓*	✓	✓
Networking capability	✓	✓	✓

* Available with a networked computer.

EVOS M7000 Imaging System

Advanced imaging simplified

The EVOS M7000 Imaging System is a fully automated, high-performance microscope built for researchers who demand more—without added complexity. Supporting up to 4-color fluorescence, it simplifies sophisticated 2D and 3D cell and tissue applications, including time-lapse imaging, image tiling, and Z-stacking, with automation, reproducibility, and intuitive software control.

Features

- **Full automation**—automated routines help streamline workflows and improve experimental reproducibility
- **Speed**—scan a 96-well plate in 3 fluorescence channels in less than 5 minutes
- **Time-lapse imaging**—optional onstage incubator enables precise control over temperature, humidity, and gas levels
- **2D deconvolution**—capture images with exceptional clarity and detail with increased signal-to-noise ratio
- **Area view**—move rapidly and seamlessly between single-field mode and low- and high-magnification scan modes to easily define and capture the area of interest
- **Data analysis**—seamlessly transfer images to optional Celleste Image Analysis Software for access to powerful tools for image segmentation, classification, and cell-based assays
- **Two cameras, no compromises**—dedicated cameras for color and fluorescence produce high-resolution images and data

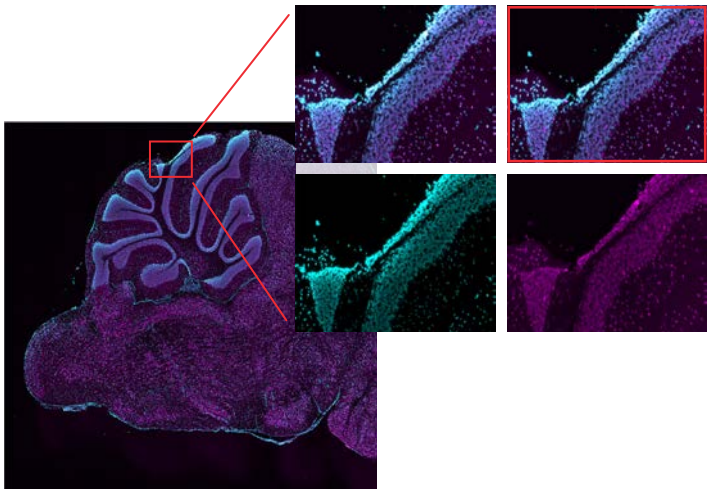


Figure 5. Stitching of images of sagittal mouse brain section stained for neuronal and glial markers.

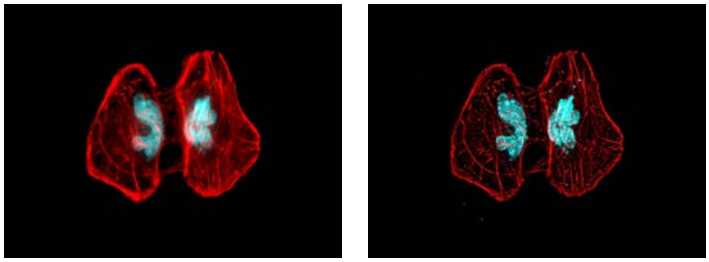


Figure 6. Image of HeLa cells labeled with Invitrogen™ Alexa Fluor™ Plus 555 Phalloidin (Cat. No. A30106) and Invitrogen™ NucBlue™ Live ReadyProbes™ Reagent (Cat. No. R37605), before and after 2D deconvolution.

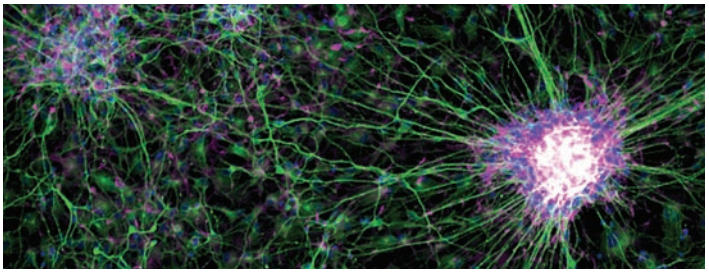


Figure 7. Compact LED light cubes are easy to change and produce excellent signal-to-noise ratios. Neural stem cell colony imaged with a 10x objective, using Green Fluorescent Protein (GFP, Cat. No. AMEP4951) and Red Fluorescent Protein (RFP, Cat. No. AMEP4955) light cubes.

Table 4. EVOS M7000 Imaging System specifications.

Attribute	Details
Optics	Infinity-corrected optical system; RMS-threaded objectives with a 45 mm parfocal distance
Imaging modes	Fluorescence, brightfield, color brightfield, and phase contrast
Illumination	5-position chamber for 4 fluorescent light cubes plus brightfield imaging; adjustable-intensity LED light cubes have >50,000-hour lifetimes
Imaging methods	Single color; multicolor; area scan with montage or tile stitch; time-lapse; Z-stacking; movie capture
Objective capacity	5-position automated turret
Condenser	60 mm LWD condenser; 4-position turret with a clear aperture and 3-phase annuli
Stage	Motorized X/Y scanning stage; 120 x 80 mm travel range with submicron resolution; drop-in inserts for vessel holders; lockdown holders to fix samples in place during long scans
Autofocus	Automated focus with submicron resolution
Display	27-inch high-resolution 4K color monitor; 3,840 x 2,160 resolution
Cameras	High-sensitivity 3.2 MP (2,048 x 1,536 pixel) monochrome CMOS sensor with 3.45 µm pixel resolution; high-sensitivity 3.2 MP (2,048 x 1,536 pixel) color CMOS sensor with 3.45 µm pixel resolution
Computer	External Dell™ PC with Intel™ Core™ 12th generation processor with 128 GB memory and 4 TB storage; NVIDIA™ Quadro RTX™ A4000 graphics card
Captured images	8-bit TIFF, PNG, and JPG images; 16-bit RAW monochrome images (TIFF, PNG); movies and time-lapse images (AVI, WMV)
Output ports	Microscope: USB 3.1 Type B 4-pin power port. Computer: one USB 3.1 Gen 2 Type C; five USB 3.1 Gen 1 Type A; four USB 2.0 Type A; one serial; two 1.2 display; one RJ45; two PS/2; one UAJ; 1 line out
Networking capability	Ethernet capability or Wi-Fi dongle
Power supply	24 V AC adapter with country-specific power cord
Dimensions (W x H x D)	18 x 14 x 13 in. (45.7 x 33 x 35.6 cm)
Weight	26 lb (11.8 kg)
Onboard applications	Cell counting, cell confluency, transfection efficiency, 2D deconvolution

Ordering information

Product	Cat. No.
EVOS M7000 Imaging System	AMF7000
EVOS M7000 Imaging System, High-Content Analysis Package with 3D	AMF7000HCA3D
EVOS M7000 Imaging System, High-Content Analysis Package	AMF7000HCA

Learn more at
thermofisher.com/evosm7000

EVOS M5000 Imaging System

Versatility that keeps pace with your evolving research

The EVOS M5000 Imaging System is designed for research laboratories seeking a digital microscope for advanced imaging performance with the flexibility to support diverse imaging needs—from everyday cell imaging to more complex tissue analysis. Featuring up to 4-color fluorescence and integrated quantitative analysis tools such as autofocus and Z-stacking, the EVOS M5000 system streamlines image capture and analysis with ease and precision.

Features

- **Stage-tracking intelligence**—effortlessly locate, track, record, and return to precise areas of interest at any time
- **Quantitative tools**—autofocus, Z-stack capability, time-lapse imaging, and multichannel capture with a single click
- **Onboard analytics**—easy access to machine learning–based bioapplications for cell counting, transfection efficiency, and confluency
- **True color**—proprietary RGB illumination mode renders true color in transmitted light
- **Easy installation**—unbox and start using it immediately with no need for assembly, alignment, or calibration
- **Connectivity**—access images and data anytime, anywhere with internet access to the Thermo Fisher™ Connect Platform

Figure 8. Easily return to the same cells using location intelligence of the Stage View feature on the EVOS M5000 Imaging System. U2OS cells incubated with Invitrogen™ CellLight™ Tubulin-GFP, BacMam 2.0 (Cat. No. C10613) and CellLight™ Nucleus-RFP, BacMam 2.0 (Cat. No. C10603) were treated with 1 mM paclitaxel. Multiple pins were placed using Stage View at time 0; cells located at pin 9 were easily located and imaged from 2.5 to 12 hours.

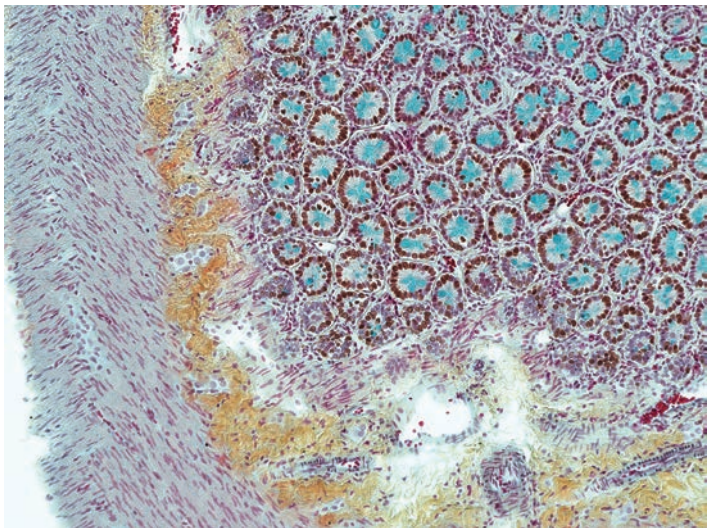


Figure 9. Proprietary color illumination mode enables rendering of true color in transmitted light.

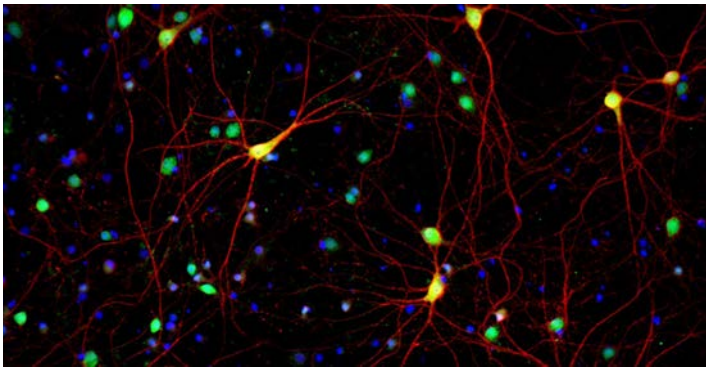


Figure 10. Primary rat cortex neurons (E18) cultured for 28 days in the Gibco™ B-27™ Plus Neuronal Culture System (Cat. No. A3653401) and stained with Invitrogen™ HuC/HuD Monoclonal Antibody (Cat. No. A-21271) (green) and MAP2 Polyclonal Antibody (Cat. No. PA5-17646) (red).

Table 5. EVOS M5000 Imaging System specifications.

Attribute	Details
Optics	Infinity-corrected optical system; RMS-threaded objectives with a 45 mm parfocal distance
Imaging modes	Fluorescence, brightfield, color brightfield, and phase contrast
Illumination	4-position chamber for 4 fluorescent light cubes plus brightfield/phase imaging, or 3 fluorescent light cubes plus brightfield/phase/color imaging; adjustable-intensity LED light cubes have >50,000-hour lifetimes
Imaging methods	Single color; multicolor; time-lapse; Z-stacking; movie capture
Objective capacity	5-position manual turret
Fluorescence channels	Simultaneously accommodates up to 4 fluorescent light cubes
Condenser	60 mm LWD condenser; 4-position turret with a clear aperture and 3-phase annuli
Stage	Mechanical stage with x- and y-axis fine positioning controls; interchangeable vessel holders available; proprietary functionality to track stage locations in the EVOS Stage View software
Autofocus	Available for both fluorescence and brightfield modes with the ability to save settings
Display	18.5-inch high-resolution articulated LCD monitor
Camera	Highly sensitive 3.2 MP monochrome CMOS camera (2,048 x 1,536 pixel) with 3.45 µm pixel resolution
Captured images	16-bit RAW monochrome: TIFF, PNG (12-bit dynamic range); 8-bit color: TIFF, PNG, JPG; movies and time-lapse: AVI, WMV
Output ports	4 USB ports; 1 DisplayPort; 1 Ethernet port for direct output to an external USB device, monitor, or network; Wi-Fi connectivity via a USB Wi-Fi dongle
Network capability	Ethernet capability or Wi-Fi dongle
Power supply	12 V AC adapter with country-specific power cord
Dimensions (W x H x D)	18 x 23 x 18 in. (45.7 x 58.4 x 45.7 cm)
Weight	36 lb (16.4 kg)
Onboard applications	Cell counting, cell confluency, transfection efficiency, stage-tracking intelligence

Ordering information

Product	Cat. No.
EVOS M5000 Imaging System	AMF5000SV

Learn more at
thermofisher.com/evosm5000

EVOS M3000 Imaging System

Your everyday digital cell culture microscope

The EVOS M3000 Imaging System is designed to be the dependable workhorse of any cell culture laboratory. Compact enough to fit inside a hood, it supports brightfield, phase-contrast, and fluorescence imaging for routine cell monitoring—such as assessing cell confluency and transfection efficiency. With an upgradeable design, the EVOS M3000 system evolves with your workflow, offering flexibility as your imaging needs grow.

Features

- **Cell confluency in seconds**—measure cell confluency seen in the field of view in less than one second with innovative, pretrained machine-learning model
- **Space-saving design**—smallest EVOS system, with a footprint that fits easily on the lab bench or in a cell culture hood
- **Versatile**—capture images in brightfield, phase contrast, color imaging, and fluorescence
- **Flexible**—compatible with EVOS system objectives (1.25–60x) and light cubes
- **Connectivity**—networking capabilities facilitate easy data transfer, long-term data storage, and collaboration, helping enhance productivity and data management
- **No training required**—simple user interface (UI) with touchscreen display

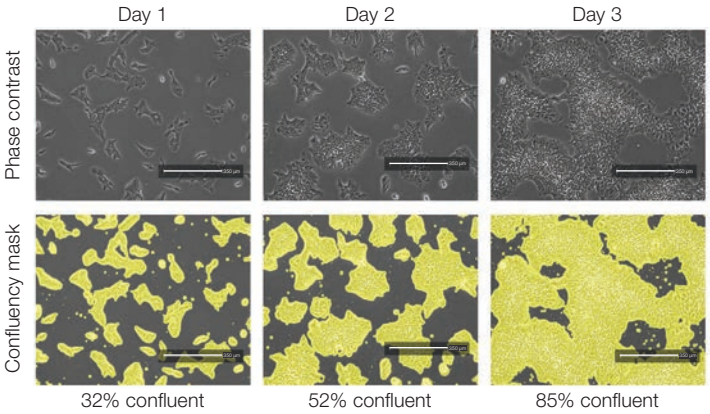


Figure 11. Induced pluripotent stem cells (iPSCs) imaged over time with the EVOS M3000 Imaging System. Human fibroblast-derived iPSCs were cultured on a vitronectin-coated 6-well plate in Gibco™ Essential 8™ Flex Medium (Cat. No. A1517001) for 3 days. Cells were imaged with the EVOS M3000 system under phase-contrast microscopy with and without the automatically generated confluency mask and measurement.

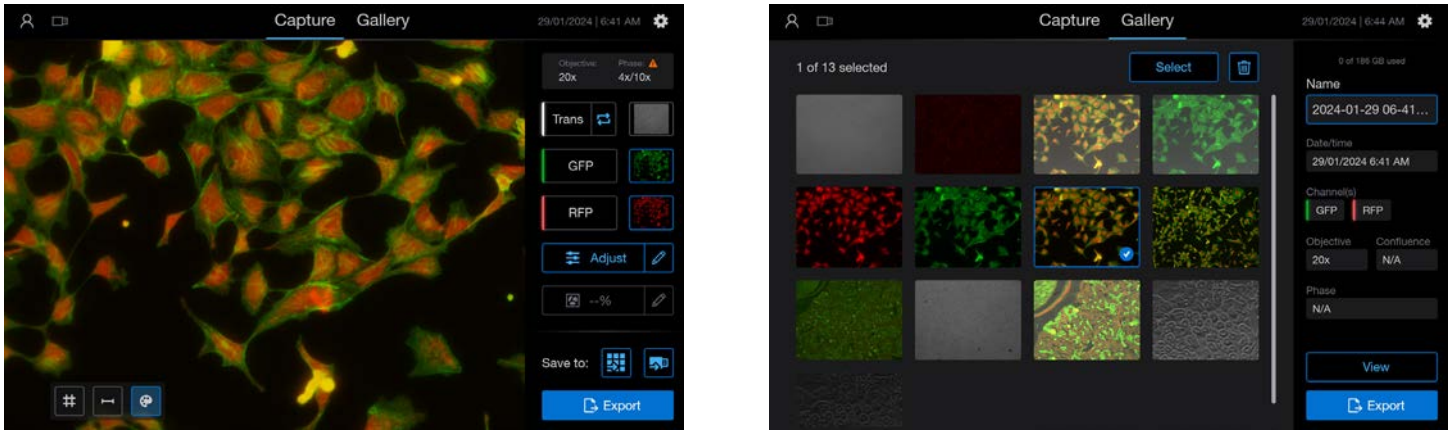


Figure 12. Powerful onboard software with image processing tools built in. The easy-to-use EVOS M3000 Imaging System UI enables you to easily capture images in transmitted light or fluorescence (left) and explore saved images with the image gallery (right).

Table 6. EVOS M3000 Imaging System specifications.

Attribute	Details
Optics	Infinity-corrected optical system; RMS-threaded objectives with a 45 mm parfocal distance
Imaging modes	Fluorescence, brightfield, color brightfield, and phase contrast
Illumination	2-position chamber for 2 fluorescent light cubes; adjustable-intensity LED light cubes have >50,000-hour lifetimes
Imaging methods	Single color; multicolor; transmitted light movie capture
Objective capacity	4-position manual turret
Fluorescence channels	Simultaneously accommodates up to 2 interchangeable fluorescent light cubes
Condenser	76 mm long working distance condenser, 4-position turret with a clear aperture and 3-phase annuli
Stage	Fixed X–Y stage with stage size of 179 x 229 mm; optional mechanical stage with travel range of 127 x 76 mm
Display	10.1-inch high-resolution LCD touchscreen display (1,920 x 1,200-pixel resolution)
Camera	High-sensitivity color CMOS camera (2,064 x 1,536-pixel resolution, 3.2 megapixels) with 3.45 µm pixel resolution
Captured images	8-bit OME-TIFF, PNG, and JPG images; brightfield movies (MP4)
Video capture	Up to 5 minutes of continuous, real-time, transmitted-light video capture
Output ports	1 USB 3.0, 2 USB 2.0, 1 DisplayPort
Networking capability	Ethernet capability via USB-to-Ethernet adapter, or Wi-Fi dongle
Power supply	12 V AC adapter with country-specific power cord
Dimensions (W x H x D)	11.7 x 12.7 x 19.1 in. (29.6 x 32.3 x 48.6 cm)
Weight	18.4 lb (8.3 kg)
Onboard applications	Real-time cell confluency, contrast adjustment

Ordering information

Product	Cat. No.
EVOS M3000 Imaging System	AMF3000
EVOS M3000 Imaging System with Mechanical Stage	AMF3000S
EVOS M3000 Attachable Mechanical Stage	AMEP5011
EVOS Objective Starter Kit for Brightfield/Phase (includes 4x, 10x, and 20x achromat, long working distance, phase-contrast objectives)	AMEP5009
EVOS Objective Starter Kit for Fluorescence/Brightfield/Phase (includes 4x, 10x, and 20x fluorite, long working distance, phase-contrast objectives)	AMEP5010
EVOS Light Cube Starter Kit, GFP, Texas Red	AMEP5015
EVOS Light Cube Starter Kit, DAPI, GFP, Texas Red	AMEP5016
EVOS Light Cube Starter Kit, DAPI, GFP	AMEP5018

Learn more at
thermofisher.com/evosm3000

EVOS Onstage Incubator

All-in-one solution for time-lapse imaging

The Invitrogen™ EVOS™ Onstage Incubator (OSI-2) can be paired with the EVOS M7000 or M5000 imaging systems for long-term monitoring of cell cultures and time-lapse imaging at high resolution. The environmental chamber enables precise control over temperature, humidity, and CO_2 levels for incubating cells under physiological and nonphysiological conditions over long periods of time, making it excellent for demanding live-cell imaging experiments including hypoxia and neurite outgrowth studies. Nitrogen control can also be used to modulate oxygen levels for hypoxia studies.

Features

- **Intuitive UI**—simplifies experiment setup and monitoring of experimental conditions and enables adjustments while experiments are running
- **Compact**—small footprint and sleek design saves lab space
- **Onboard air compressor**—eliminates need for separate air tank; quiet at 42 dB

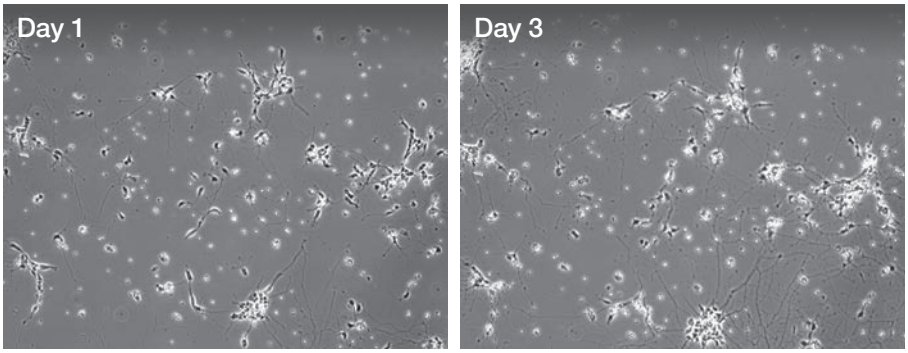


Figure 13. Time-lapse imaging of neurite outgrowth from neurons over several days using an EVOS M7000 Imaging System equipped with an EVOS OSI-2. Rat hippocampal neurons were grown on plates coated with Gibco ™ Poly-D-Lysine (Cat. No. A38904), in Gibco ™ Neurobasal ™ Plus Medium (Cat. No. A3582901) with B-27 ™ Plus Supplement (Cat. No. A3582801). They were incubated in an EVOS OSI-2 (Cat. No. AMC2000) with 5% CO_2 at 37°C and 80% humidity. The cells were imaged every 15 minutes for 72 hours with an EVOS M7000 Imaging System (Cat. No. AMF7000) equipped with a 20x objective (Cat. No. AMEP4734).

Table 7. EVOS Onstage Incubator (OSI-2) specifications.

Attribute	Details
Compatible vessels	Multiwell plates; 35, 60, and 100 mm Petri dishes; T-25 flasks; chamber slides
Temperature range	30–40°C
CO_2 range	0–20%
O_2 range	0% to ambient
Humidity range	70–90% relative humidity at 37–40°C
Dimensions (W x H x D)	17 x 4.1 x 27 cm (environmental chamber); 21 x 23 x 45 cm (control unit)
Weight	0.73 kg (environmental chamber); 6.7 kg (control unit)
Compatible instruments	EVOS M5000 and EVOS M7000 imaging systems

Ordering information

Product	Cat. No.
EVOS Onstage Incubator	AMC2000

Learn more at thermofisher.com/evososi

Celleste Image Analysis Software

An image-centric analysis solution

For advanced image processing and analysis, the optional Invitrogen™ Celleste™ 6 Image Analysis Software offers additional tools for classification, segmentation, and analysis of complex images using preconfigured templates with a wizard-based workflow to help simplify batch analysis. These tools are useful in a broad range of applications (Figure 14), such as cell viability, cell counting, apoptosis, and live/dead analysis.

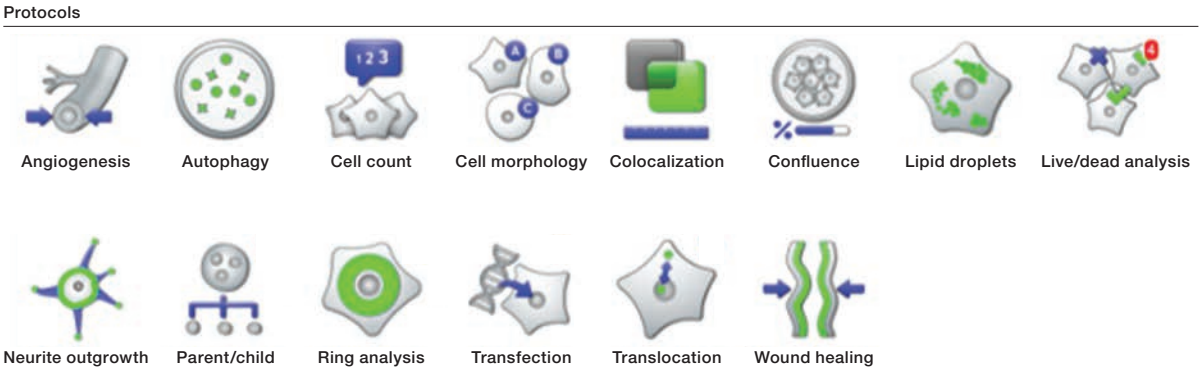


Figure 14. Commonly used Celleste 6 Multi Channel Analysis (MCA) software templates for simplified batch analysis.

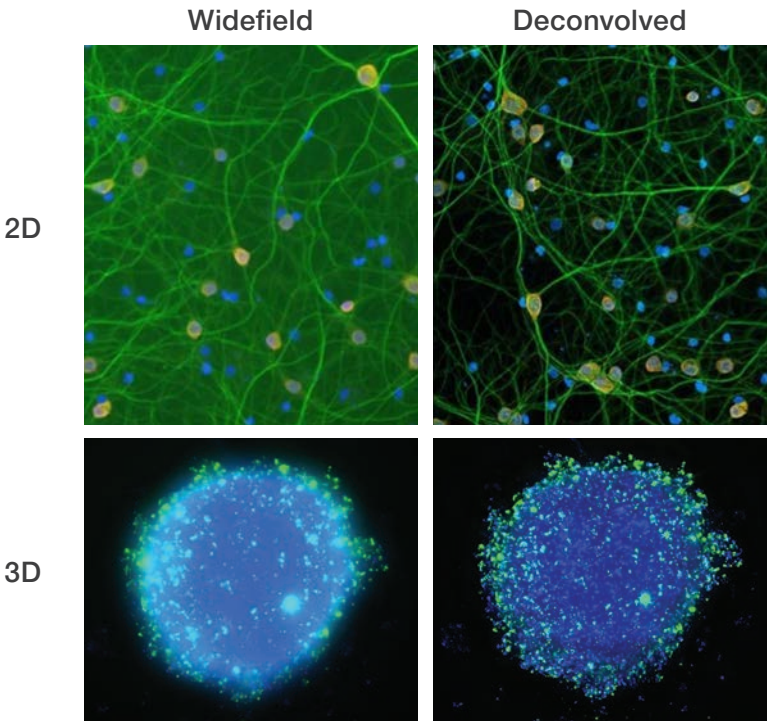


Figure 15. Improved image quality with Celleste Image Analysis Software. Available 2D (top) and 3D (bottom) deconvolution reduces background haze, offering better resolution.

Ordering information

Product	Cat. No.
Celleste 6 Image Analysis Software	AMEP4942
Celleste 6 Image Analysis Software, network license, one seat	AMEP4941
Celleste 2D Deconvolution Package	AMEP4991
Celleste 3D Deconvolution Package	AMEP4992

Learn more at thermofisher.com/celleste

EVOS light cubes

Exceptional fluorescence imaging and illumination

Invitrogen™ EVOS™ light cubes have been optimized to take cell imaging to the next level for publication-quality images. These interchangeable LED cubes enable precise control with plug-and-play capability across the spectrum. Light cube starter kits (Table 9) and custom light cubes are also available.

Features

- Exceptional illumination uniformity across the field of view (FOV)
- Spectral fidelity across channels to help eliminate undesirable bleedthrough
- Maximum signal-to-background ratios, even with dim images

Table 8. EVOS light cubes and compatible dyes.

Light cube	Excitation*	Emission*	Compatible dyes**	Cat. No.
DAPI	357/44	447/60	DAPI, Alexa Fluor 350, Hoechst, LysoTracker Blue, NucBlue Dead, NucBlue Live	AMEP4950
TagBFP	390/18	447/60	TagBFP, Alexa Fluor 405, Cascade Blue, Pacific Blue	AMEP4968
CFP	445/45	510/42	CellLight CFP, eCFP, Lucifer Yellow	AMEP4953
GFP	482/25	524/24	Alexa Fluor 488, CellROX Green, CellTracker Green, CyQuant Direct	AMEP4951
YFP	500/24	542/27	eYFP, acridine orange plus DNA	AMEP4954
RFP	531/40	593/40	Alexa Fluor 555, RFP, Cy3, pHrodo, MitoTracker Orange CMTMRos, CellMask Orange, CellROX Orange	AMEP4952
Texas Red	585/29	628/32	Alexa Fluor 594, CellTracker Red CMTPX, Texas Red, LysoTracker Red, LIVE/DEAD Fixable Red	AMEP4955
Cy5	628/40	692/40	Alexa Fluor 647, Cy5, DRAQ5, NucRed Live 647, SYTO 60, TO-PRO-3, MitoTracker Deep Red FM	AMEP4956
Cy5.5	655/40	725/40	Alexa Fluor 680, Cy5.5, ATTO 680	AMEP4973
Cy7	716/40	794/32	Alexa Fluor 750, Cy7, LIVE/DEAD Fixable Near-IR	AMEP4967
CYP-YFP	445/45	542/27	CFP with control YFP emission	AMEP4969
AO	482/25	488LP	Alexa Fluor 430, acridine orange plus DNA or RNA	AMEP4970
Qdot 525–800	445/45	525–800	Qdot 525 through Qdot 800, FM 1-43, FM 4-64	AMEP4966

* In nanometers (nm).

** This is not a complete list of compatible dyes; the SpectraViewer tool (thermofisher.com/spectraviewer) is designed to help optimize light cube and dye compatibility for your EVOS imaging system.

Table 9. Convenient EVOS light cube starter kits.

Product	Cat. No.
EVOS Light Cube Starter Kit, GFP, Texas Red	AMEP5015
EVOS Light Cube Starter Kit, DAPI, GFP, Texas Red	AMEP5016
EVOS Light Cube Starter Kit, DAPI, GFP	AMEP5018

EVOS light cubes and Countess 3 FL instrument

EVOS light cubes are compatible with the two fluorescence channels of the Invitrogen™ Countess™ 3 FL Automated Cell Counter. In addition to counting cells, the Countess 3 FL counter can be used to assess cell viability, apoptosis, transfection efficiency, and fluorescent protein expression.

Learn more at thermofisher.com/evoslightcubes

EVOS objectives

Outstanding optical performance from visible light to near-infrared light

All Invitrogen™ EVOS™ objectives offer outstanding optical performance with visible light to near-infrared light. Choose from more than 40 high-performance objective lenses ranging from 1.25x to 100x. Long working distance (LWD) objectives are optimized for vessels with a nominal wall thickness of 0.9–1.5 mm, such as slides, cell culture dishes and flasks, and microtiter plates. For applications using #1.5 coverslips (approximately 0.17 mm thick), coverslip-corrected (CC) objectives have a higher ratio of magnification to numerical aperture and enable higher resolution than LWD objectives. EVOS objective starter kits are also available for your convenience (Table 10).

Objective type	Achromat	Fluorite	Semi-apochromat	Apochromat
Recommended applications	Designed for general applications. Color and focus have standard correction compared to apochromat and fluorite objectives.	Designed for fluorescence and demanding transmitted-light applications. They enable excellent resolution, resulting in bright fluorescence signals and high-contrast imaging.	Designed for all fluorescence applications, with only slightly lower image quality than apochromat objectives. They are a more affordable alternative to apochromat while still delivering excellent image quality compared to most other fluorite objectives.	Designed for the most demanding applications, especially capturing color images in white light. They provide exceptional resolution, fluorescence brightness, contrast, and chromatic correction compared to achromat and fluorite objectives.
Color/brightfield	Yes			
Coverslip	No	Yes		
Plastic	Yes*		Lower magnification only	
Fluorescence	No	Yes, good image quality	Yes, better image quality	Yes, best image quality

* While possible with specialty plastics, apochromat objectives are traditionally used with glass coverslip samples due to working distance and image quality limitations.

Table 10. Convenient EVOS objective starter kits.

Product	Cat. No.
EVOS Objective Starter Kit for Brightfield/Phase Contrast (includes 4x, 10x, and 20x achromat, long working distance, phase-contrast objectives)	AMEP5009
EVOS Objective Starter Kit for Fluorescence/Brightfield/Phase Contrast (includes 4x, 10x, and 20x fluorite, long working distance, phase-contrast objectives)	AMEP5010

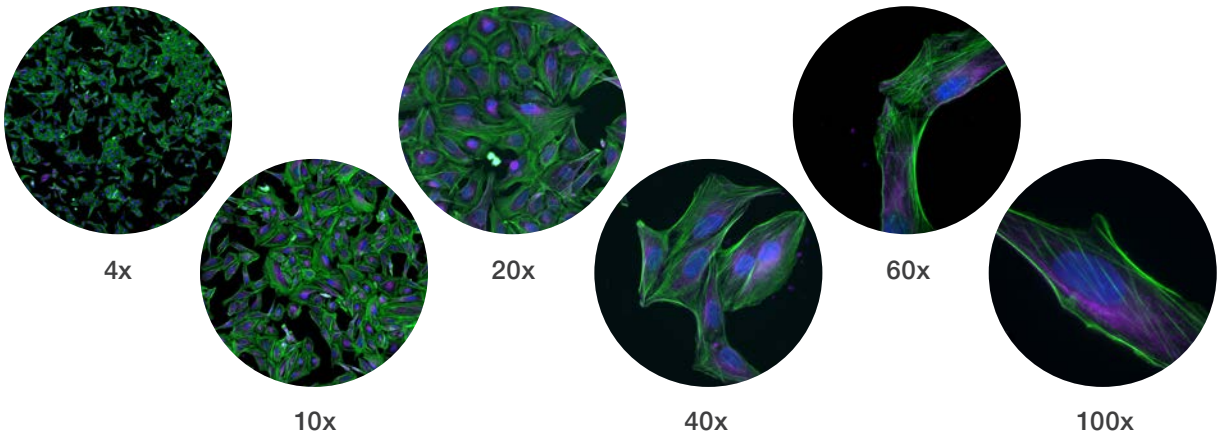


Figure 16. U2OS cells with stained nuclei (blue, DAPI), actin (green, Alexa Fluor 488 dye), and alpha-tubulin (purple, Cy5 dye) were imaged with an EVOS M7000 Imaging System equipped with EVOS light cubes and objectives ranging from 4x to 100x.

Learn more at thermofisher.com/evosobjectives

EVOS vessel holders and stage plates

Designed to hold a wide range of vessels, flasks, plates, dishes, and slides

Invitrogen™ EVOS™ vessel holders allow an excellent fit of your microscope slide, cell culture flask or dish, or microwell plate to the stage of the EVOS imaging systems for increased precision in sample alignment. The numerous vessel holder options are specifically designed to fit various brands of plates, flasks, and dishes, helping ensure that your preferred brand is accommodated.

With over 50 vessel holders and stage plates to choose from, our convenient selection guide and online selection tool help make it easy to find the right holder or stage plate for your EVOS microscope, vessel, and application—including vessel holders optimized for the Stage View feature of EVOS M5000 systems and for performing time-lapse imaging with the EVOS Onstage Incubator. For convenience, we offer the Invitrogen™ EVOS™ Vessel Holders Pack that provides 10 of our most popular EVOS vessel holders (Cat. No. AMEP4619).

Table 11. EVOS vessel holders optimized for the Stage View feature and OSI-2.

Vessel	Retention clip	Stage View map	OSI-2 compatible	Cat. No.
One 75 mm x 25 mm glass slide; extra clearance for oil objectives	Yes	Yes	No	AMEPVH044
One 75 mm x 25 mm glass slide	Yes	No	Yes	AMEPVH058
One Nunc Lab-Tek coverglass chamber slide	Yes	No	Yes	AMEPVH055
One Nunc Lab-Tek II chambered coverglass	Yes	No	Yes	AMEPVH039
One Nunc 35 mm dish	Yes	No	Yes	AMEPVH029
One 128.2 mm x 86.2 mm multiwell plate	Yes	Yes	Yes	AMEPVH028
One Nunc multiwell dish	Yes	Yes	Yes	AMEPVH040
One 128.2 mm x 86.2 mm multiwell plate	Yes	Yes	No	AMEPVH022
One Nunc multiwell dish with retention clip	Yes	Yes	No	AMEPVH061

Looking for a vessel holder for your specialized plate, slides, culture dishes, or flasks? Custom vessel holders are available. Contact us to create a specialty vessel holder for your EVOS imaging system.

For a complete list of vessel holders, visit **thermofisher.com/evosvesselholders**

The anatomy of EVOS microscopes—from the outside in

Inside

Designed with premium imaging components, including high-quality cameras and optics that capture high-resolution images and videos.

Innovative LED light cube technology

- Easily interchangeable to match specific dyes and fluorophores
- Superior spectral fidelity and differentiation
- Visualization across the entire light spectrum
- Each cube incorporates excitation filter, dichroic beam splitter, and emission filter

Objectives with outstanding optical performance

- Up to 40 objective lenses ranging from 1.25x to 100x magnification
- Long working distance (LWD) and coverslip corrected (CC) options

Outside

Designed with scientists' workplace and workflow needs in mind.

Compact and efficient design

- On-screen display eliminates the need for oculars
- Automated controls and minimal handling
- No darkroom required
- Fits in cell culture hood or on lab bench

Image generation

- Capable of multiplexed brightfield, phase-contrast, color, and fluorescence imaging in one system

Intended applications

- Cell and tissue imaging
- Time-lapse imaging
- Image capture

User interface

Designed to enable both novice and advanced users to take brilliant images in minutes.

Enhanced safety with minimal handling

- Software-controlled microscope operation
- Focus, zoom, pan, and move stage remotely
- Capable of automated routines such as multi-well plate scanning

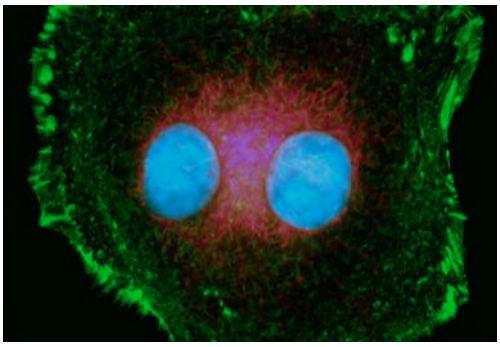
Onboard applications

- Cell counting
- Cell confluency
- Transfection efficiency
- Stage tracking intelligence
- 2D deconvolution

Mounting media and antifades

Prevent fluorescence photobleaching and maximize refractive index

Loss of fluorescence through irreversible photobleaching processes leads to a significant reduction in sensitivity, particularly when target molecules are of low abundance. Invitrogen™ ProLong™ and SlowFade™ glass reagents are designed to provide excellent photobleach protection across the visible and near-infrared spectra. They have a refractive index (RI) of 1.52, similar to glass coverslips, and are compatible with oil-immersion microscope optics to enable exceptional resolution and sensitivity.



Key benefits of antifade mountants for fixed cells:

- Up to 3 times improvement in axial resolution at 150 µm focal depth
- Up to 4 times more imageable focal depth (500 µm) compared to mountants with 1.47 RI
- Ready-to-use benchtop formulations with or without nuclear counterstain

Key benefits of antifade mountants for live cells:

- Compatible with fluorescent dyes and proteins across the spectrum
- Extends imaging times in time-lapse experiments
- Minimal effect on cell viability or proliferation using protocol
- Ready-to-use formulation

Table 12. ProLong and SlowFade mountants.*

Mountant	Preparation	Includes counterstain	RI	3D compatible	Cat. No.
ProLong Glass Antifade Mountant	Hard setting	No	1.52	Yes	P36980
ProLong Glass Antifade Mountant with NucBlue Stain	Hard setting	Yes	1.52	Yes	P36981
SlowFade Glass Soft-Set Antifade Mountant	Soft setting	No	1.52	Yes	S36917-5X2ML
SlowFade Glass Soft-Set Antifade Mountant, with DAPI	Soft setting	Yes	1.52	Yes	S36920-5X2ML
ProLong Live Antifade Reagent	Live cell	No	N/A	Yes	P36974

* This is not a complete list of mountants and antifades.

Learn more at thermofisher.com/prolong and thermofisher.com/slowfade

Rapid hard-setting mountants improve the speed of imaging data analysis workflows

Invitrogen™ ProLong™ RapidSet™ Antifade Mountant is an advanced, hard-setting mounting medium designed to expedite the imaging process for fluorescently labeled samples. This aqueous two-component system hardens in less than one hour, with high refractive index, enabling rapid preparation times.

- Rapid curing within one hour, reducing the time needed before imaging and enhancing workflow efficiency
- Exceptional fluorophore protection across the entire visible and near-infrared spectra
- Optimal refractive index of approximately 1.5 after one hour (1.52 after 48 hours), matching glass and immersion oil
- Sample archivability designed for long-term storage of slides, maintaining sample integrity for weeks or even months

Table 13. ProLong RapidSet mountants.

Product	Quantity	RI	Sample thickness	Cat. No.
ProLong RapidSet Antifade Mountant, 1 pack	50 tests	1.52	Up to 80 µm	P38930
ProLong RapidSet Antifade Mountant, 5 pack	5 x 50 tests	1.52	Up to 80 µm	P38931

Learn more at thermofisher.com/rapidset

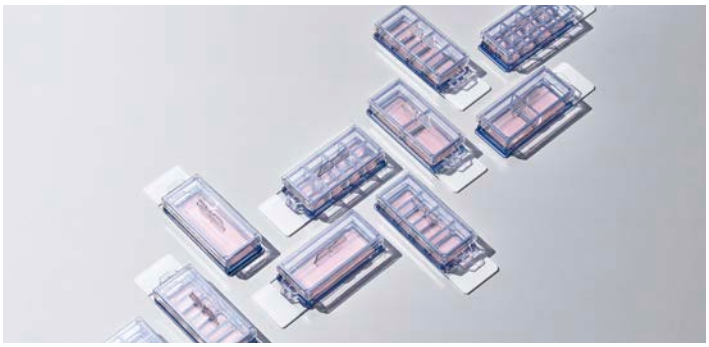
Culture and image with confidence

The clear choice for high-quality imaging applications

Better cultures lead to better performance, and the convenience of purchasing from among the best products in one place can help save time, energy, and money. Trusted Gibco™, Invitrogen™, and Thermo Scientific™ Nunc™ products are optimized and evaluated to help you achieve improved productivity.

Media, FBS (sera), and imaging cultureware for imaging systems are verified together to help ensure you have the confidence to culture your cells with Thermo Fisher Scientific.

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



Nunc imaging cultureware

Nunc cell culture imaging products offer comprehensive solutions with flexibility and consistency to help meet your needs in cell imaging applications, including fluorescence microscopy, phase-contrast microscopy, confocal microscopy, live-cell imaging, differential interference contrast (DIC) microscopy, and fluorescence *in situ* hybridization (FISH).

Find out more at **thermofisher.com/clearadvantage**

Thermo Scientific™ Nunc™ Lab-Tek™ II Chamber Slide System
Available in RS or CC2 glass—removable chambers allow you to seed, incubate, fix, and stain on a single slide

Thermo Scientific™ Nunc™ Lab-Tek™ II Chambered Coverglass
Chambers mounted to coverglass (#1.5 borosilicate glass) for high-magnification microscopy and confocal and live imaging

Thermo Scientific™ Nunc™ MicroWell™ 96-Well Microplates
Clear plates with surface options: non-treated, or coated with Thermo Scientific™ Nunclon™ Delta surface, collagen I, or poly-D-lysine

Thermo Scientific™ Nunc™ F96 MicroWell™ Polystyrene Plates
Black or white plates with 50–250 µL working volume range; choice of Nunclon Delta surface

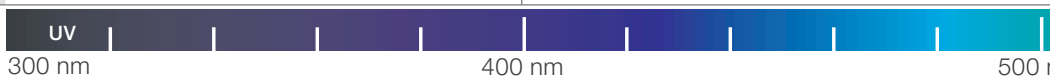
Thermo Scientific™ Nunc™ Lab-Tek™ Chamber Slide System
Available in glass or Permanox™ plastic—removable chambers allow you to seed, incubate, fix, and stain on a single slide

Thermo Scientific™ Nunc™ Glass Bottom Dishes
For fluorescence, phase-contrast, confocal, and live-cell imaging

Thermo Scientific™ Nunc™ Optical Bottom Plates
96- and 384-well optical-bottom plates, with either a thin polymer film bottom or a #1.5 borosilicate glass coverslip bottom

Table 14. Invitrogen™ fluorophore and reagent compatibility guide.

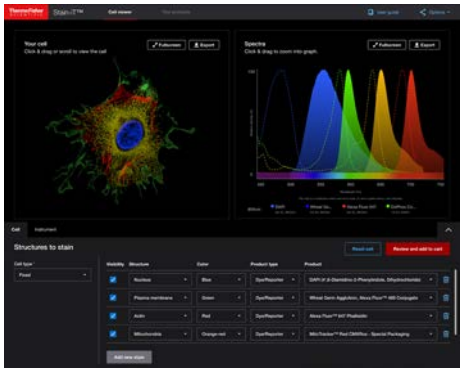
	Invitrogen™ EVOS™ DAPI Light Cube Excitation: 357/44 nm Emission: 447/60 nm	Invitrogen™ EVOS™ GFP Light Cube Excitation: 482/25 nm Emission: 524/24 nm
Antibody internalization		pHrodo Green iFL antibody labeling reagents
Apoptosis		CellEvent Caspase-3/7 Green Detection Reagent Click-iT Plus TUNEL Green Assay
Autophagy		Premo Autophagy Sensors (p62 and LC3B) GFP
Cell tracking	CellTracker Blue NeuroTrace Blue Nissl Stain Calcein Blue AM	CellTracker Green NeuroTrace Green Nissl Stain Calcein AM
Cytoskeleton (actin)	Alexa Fluor Phalloidin Blue	CellMask Green Actin Tracking Stain Alexa Fluor Phalloidin Green
Cytoskeleton (tubulin)		Tubulin Tracker Green CellLight Tubulin-GFP
Endosomes/endocytosis	Alexa Fluor dextrans	pHrodo and Alexa Fluor dextrans, bioparticles, and LDL BODIPY FL LDL CellLight early and late endosomes
Endoplasmic reticulum	ER-Tracker Blue-White DPX	ER-Tracker Green
Hypoxia		Image-iT Green Hypoxia Reagent
Calcium	Fura-2 Indo-1	Fluo-4 Oregon Green BAPTA-1 Fluo-3 Calcium Green Fluo-5F
Lysosomes	LysoTracker and LysoSensor Blue	LysoTracker and LysoSensor Green
Mitochondrial structure		MitoTracker Green CellLight Mitochondria-GFP
Mitochondrial function		MitoSOX Superoxide Green HCS Mitochondrial Health Kit Image-iT Lipid Peroxidation Kit Click-iT Lipid Peroxidation Kit
Nucleus	HCS NuclearMask Blue DAPI Hoechst 33342 NucBlue ReadyProbes SYTO Blue SYTOX Blue	SYTO 9 SYTOX Green YO-PRO-1 YOYO-1 Click-iT EdU CellLight Nucleus-GFP CellLight Histone 2B-GFP NucGreen ReadyProbes
Plasma membrane	Agglutinin (WGA) Alexa Fluor 350	CellMask Green BODIPY 493/503 WGA Alexa Fluor 488 FluoVolt Membrane Potential CellLight Plasma Membrane-GFP
Reactive oxygen species/oxidative stress	ThiolTracker Violet	CellROX Green Reagent H_2DCFDA dyes Singlet Oxygen Sensor Green Dihydrorhodamine 123 DAF-FM Nitric Oxide APF Radical Sensor Image-iT LIVE Green ROS Kit Premo Hydrogen Peroxide Sensor
Phagocytosis		pHrodo Green BioParticles Alexa Fluor Zymosan A BioParticles Premo Autophagy Assays NBD-PE
Viability	Calcein Blue AM SYTOX Blue	Calcein AM, cell-permeant dye SYTOX Green Nucleic Acid Stain LIVE/DEAD viability/cytotoxicity assays NucGreen Dead 488 ReadyProbes Reagent YOYO-1 Iodide Image-iT DEAD Green Viability Stain HCS LIVE/DEAD Green Kit
Fluorescent protein–based cell structure reagents		CellLight GFP BacMam 2.0
Senescence		CellEvent Senescence Green Detection Kit



Invitrogen™ EVOS™ RFP Light Cube Excitation: 542/20 nm Emission: 593/40 nm	Invitrogen™ EVOS™ Texas Red Light Cube Excitation: 585/29 nm Emission: 628/32 nm	Invitrogen™ EVOS™ Cy5 Light Cube Excitation: 628/40 nm Emission: 692/40 nm
pHrodo Red iFL antibody labeling reagents		pHrodo Deep Red antibody labeling reagents LysoLight Deep Red labeling kits and reagents
	CellEvent Caspase-3/7 Red Detection Reagent Click-iT Plus TUNEL Red Assay	Click-iT Plus TUNEL Far Red Assay
Premo Autophagy Sensors (p62 and LC3B) RFP		
CellTracker Orange NeuroTrace Red Nissl Stain	CellTracker Red	CellTracker Deep Red NeuroTrace Deep-Red Nissl Stain
CellMask Orange Actin Tracking Stain Alexa Fluor Phalloidin Yellow	Alexa Fluor Phalloidin Red	CellMask Deep Red Actin Tracking Stain Alexa Fluor Phalloidin Far Red
CellLight Tubulin-RFP		Tubulin Tracker Deep Red
Alexa Fluor dextrans and bioparticles DiI LDL	pHrodo and Alexa Fluor dextrans, bioparticles, and LDL CellLight early and late endosomes	Alexa Fluor dextrans
	ER-Tracker Red	
Image-iT Red Hypoxia Reagent		
Rhod-3 X-Rhod-1	Rhod-2 Fura Red	
	LysoTracker and LysoSensor Red	LysoTracker and LysoSensor Deep Red LysoLight Deep Red labeling kits and reagents
MitoTracker Orange CellLight Mitochondria-RFP	MitoTracker Red	MitoTracker Deep Red
MitoSOX Superoxide Red JC-1 Membrane Potential Image-iT TMRM TMRE Image-iT Lipid Peroxidation Kit		
Click-iT EdU CellLight Nucleus-RFP SYTO 14 SYTOX Orange Propidium Iodide ReadyProbes	HCS NuclearMask Red SYTO 59 Red SYTOX Red Click-iT EdU	HCS NuclearMask Deep Red NucRed 647 ReadyProbes SYTO Deep Red SYTOX Deep Red TO-PRO-3 TOTO-3 DRAQ5 Click-iT EdU
CellMask Orange WGA Alexa Fluor 555	WGA Alexa Fluor 594	CellMask Deep Red WGA Alexa Fluor 647 BODIPY 665/676
CellROX Orange Reagent Dihydroethidium (hydroethidine)		CellROX Deep Red Reagent
pHrodo Red BioParticles Conjugates Premo Autophagy Assays Alexa Fluor Zymosan A BioParticles	Alexa Fluor Zymosan A BioParticles	pHrodo Deep Red BioParticles Conjugates LysoLight Deep Red labeling kits and reagents
SYTOX Orange Nucleic Acid Stain	SYTOX Red LIVE/DEAD Viability/Cytotoxicity Kit (Green/Red) YOYO-3 Iodide	SYTOX Deep Red Nucleic Acid Stain LIVE/DEAD Viability/Cytotoxicity Assay Kit (Green/Deep Red)
CellLight RFP BacMam 2.0		

invitrogen

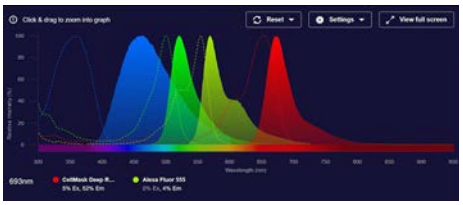
Educational resources



Invitrogen™ Stain-iT™ Cell Staining Simulator

Visualize cell staining without wasting reagents, antibodies, or time while generating quality results.

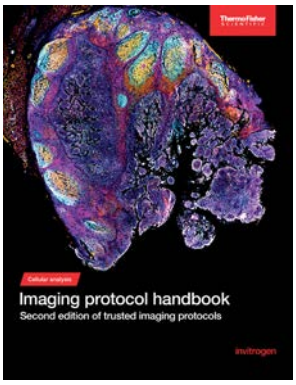
Get started at
thermofisher.com/stainit



SpectraViewer tool

Easily compare excitation and emission spectra of fluorophores and reagents and assess instrument compatibility.

Get started at
thermofisher.com/spectraviewer



Imaging protocol handbook

Protocols that fit your needs in imaging ranging from sample and assay preparation to staining, labeling, and data analysis strategies.

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imagingprotocolhandbook

Learn more about instrument services, repairs, analytical validation consulting services, qualification services, service plans, and contracts for your instruments at thermofisher.com/instrumentservices.

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