azure biosystems

SAPPHIRE FL AND SAPPHIRE FL+ BIOMOLECULAR IMAGERS

UNLIMITED POSSIBILITIES, UNCOMPROMISING PERFORMANCE

SAPPHIRE FL AND SAPPHIRE FL+ BIOMOLECULAR IMAGERS

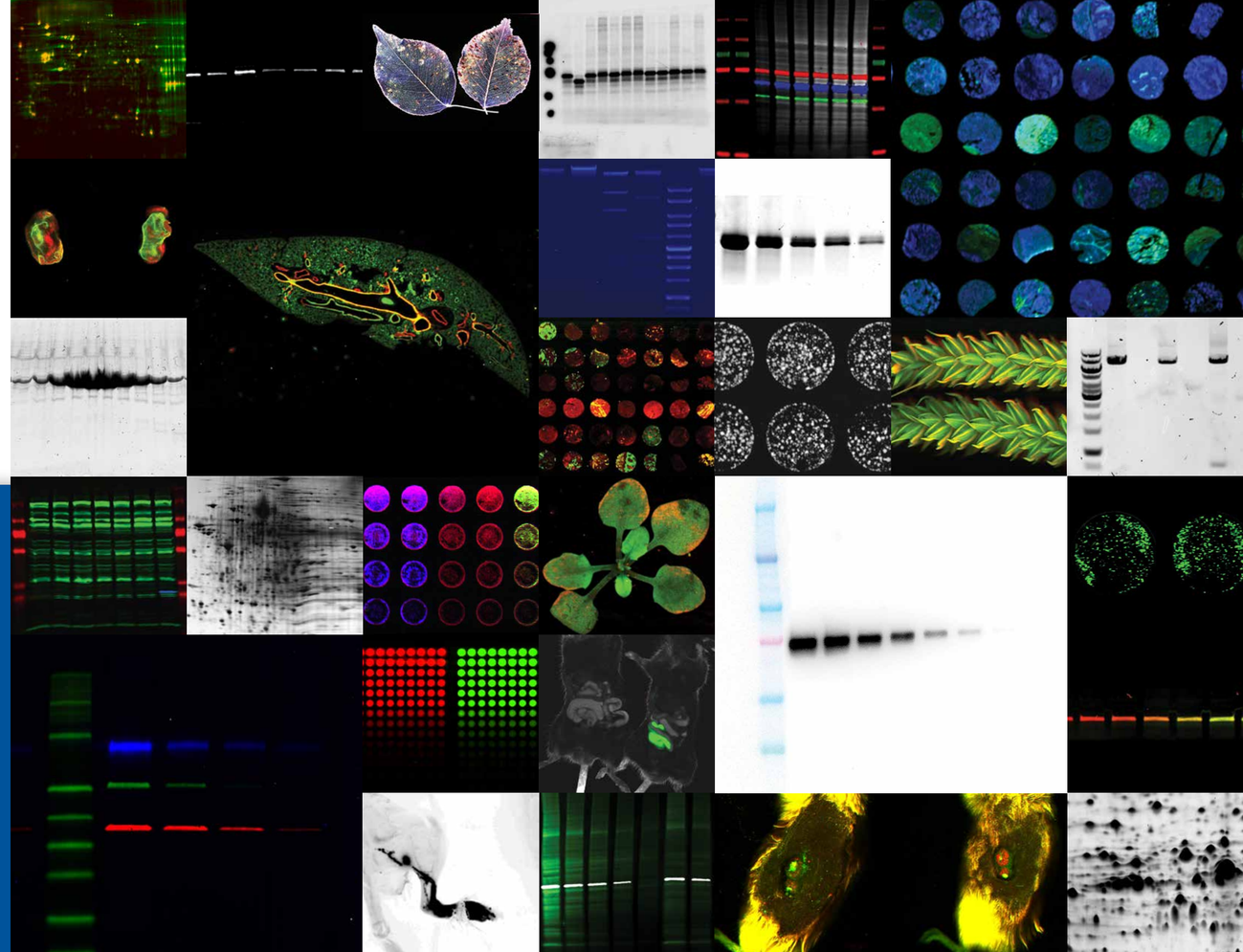
FLEXIBILITY WITH UNCOMPROMISING PERFORMANCE – FROM IN VITRO MOLECULAR ASSAYS TO IN VIVO IMAGING

The Sapphire FL and the Sapphire FL+ enable true dye and application flexibility. With a patent-pending design and support of wavelengths between 375 nm – 900 nm, the Sapphire FL family boasts the widest wavelength range of any biomolecular imaging system in its class.

With the Sapphire FL, user-exchangeable optical modules ensure there is no need to compromise. Easily swap lasers, filters, or entire optical modules in under two minutes to suit the needs of your experiment. In addition to fluorescence, the Sapphire FL also excels at imaging phosphor screens and chemiluminescence (with the optional chemiluminescence module). The flexibility of the Sapphire FL guarantees researchers the freedom to confidently choose the best dyes and chemistry for any experiment.

APPLICATIONS

Southern blots | Northern blots | Western blots | Multiplex Westerns
Quantitative Westerns | Total protein normalization | In-cell Westerns
Cell-based assays | Agar plates/Clonogenic assays | Multi-well plate imaging
Protein arrays | Microarrays | ELISAs | Immunohistochemistry
Lateral flow immunoassay development | Thin layer chromatography imaging
Electrophoretic mobility shift assays (EMSA) | 2D DIGE | Densitometry
Gel documentation | In-gel imaging | DNA gel imaging | RNA gel imaging
Protein gel imaging | Coomassie imaging | Silver stain imaging
Fluorescent gel stain imaging | Gel autoradiography
Membrane autoradiography | Tissue section autoradiography
Tissue section imaging | Plant bioluminescence imaging
Phosphoprotein studies | Glycoprotein assays | Reporter gene assays
GFP expression in model organisms | Model organism imaging

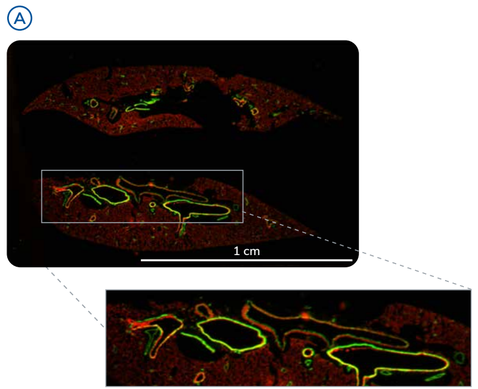


FLEXIBILITY WITH UNCOMPROMISING PERFORMANCE

The Sapphire FL is the ultimate biomolecular imager for **flexibility**. With customizable and user-changeable laser and filter modules, the Sapphire FL easily adapts to a lab's changing needs and advancing research.

HIGH RESOLUTION IMAGING – UP TO 5 MICRON RESOLUTION

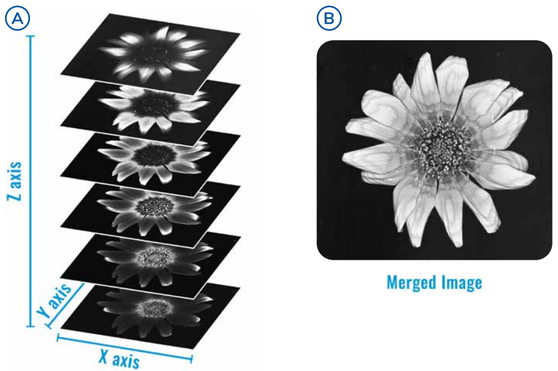
Whole Slide Imaging – Screen slides before microscopic analysis by imaging multiple slides at a resolution of 5 microns.



A. Mouse lung tissue slide probed for vascular endothelial (VE)-cadherin (AzureSpectra 550 nm secondary antibodies) and smooth muscle actin (SMA) (AzureSpectra 650 nm secondary antibodies). Imaged on the Sapphire FL using the 532 and 638 Standard Optical Modules (red and green, respectively) at 5 µm.

Z PLANE ADJUSTMENT FOR SAMPLES WITH MULTIPLE FOCAL PLANES

Find the Best Data – Adjustable laser focus from -1 mm below to +6 mm above the glass surface. The adjustable focal plane allows for optimal imaging of your sample, even when offset from the glass.



A. A 50 µm scan of a flower was taken from 0 to 5 mm with 1 mm adjustments.

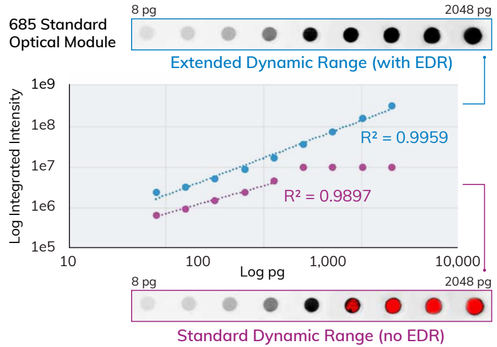
B. The image was merged in the Sapphire FL Capture Software to view all areas of focus at once.

WHAT CAN YOU SEE?

Broad dynamic range and exceptional sensitivity enable enhanced quantitative data generation.

DISTINGUISH SUBTLE DIFFERENCES IN EXPRESSION WITH EXTENDED DYNAMIC RANGE (EDR)

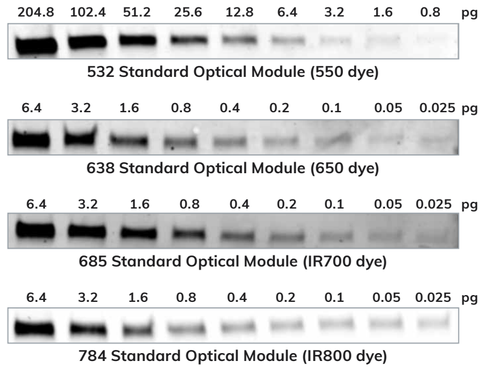
Extended dynamic range, when selected, allows imaging of both bright and weak bands without experiencing saturation. This is ideal for samples that feature strong and weak expressing proteins. EDR extends dynamic range up to 24 bits of data.



A dot blot was scanned with (top image) and without (bottom image) extended dynamic range (EDR). Without EDR, the top four dots saturate and cannot be quantified. Scanning with EDR demonstrates quantifiable linearity over the entire range of sample concentrations.

SENSITIVE FLUORESCENT DETECTION

High sensitivity allows femtogram detection of proteins labeled with common fluorescent dyes.

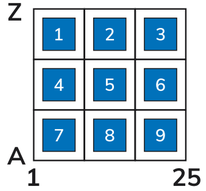


Bovine serum albumin (BSA) conjugated to AzureSpectra dyes, separated by SDS-PAGE and transferred to membranes. Blots were imaged at 50 µm on the Sapphire FL. Loaded amounts of dye-conjugated-BSA are given.

NO LIMITS – JUST RESULTS

REPRODUCIBILITY AND UNIFORMITY – CVS LESS THAN 5%

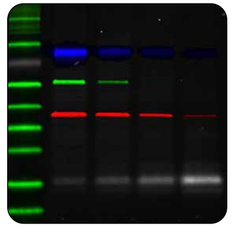
Be confident that every scan will be accurate and reproducible.



2-fold dilution dot blot scanned across nine separate regions of the imaging area, as shown. CV of individual dot intensities was less than 5% across the imaging area.

4-CHANNEL FLUORESCENT IMAGING – SEE MORE IN A SINGLE SAMPLE

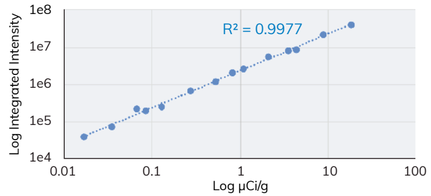
Quickly and easily swap optical modules to create 4-channel images.



Four-color Western blot imaged at 50 µm on the Sapphire FL with the 488, 532, 685, and 784 Standard Optical Modules.

PHOSPHOR IMAGING – IMAGE STORAGE PHOSPHOR SCREENS WITH HIGH SENSITIVITY

Storage phosphor screens are imaged, digitized and ready for quantitation.



American Radiolabeled Chemicals Carbon-14 Standard exposed to storage phosphor screen for three hours, then imaged at 200 µm on the Sapphire FL Biomolecular Imager. Limit of detection: 0.036 µCi/g.

CRISP GEL IMAGING

Laser-based scanning delivers sharp images across sample types.

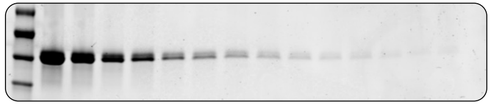
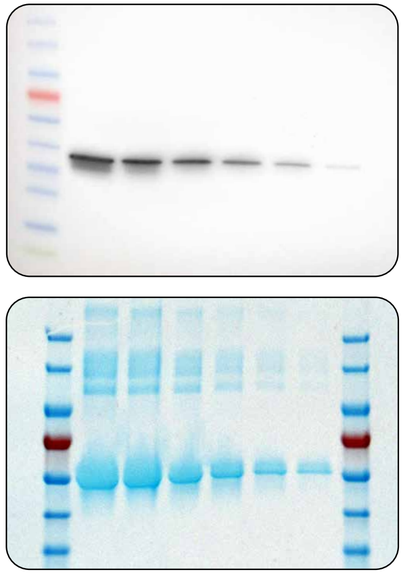


Image of Coomassie-stained gel taken on the Sapphire FL using the 685 Standard Optical Module. Purified BSA separated by SDS-PAGE and stained with Coomassie. Serial dilutions from 5 µg to 0.6 ng.

CHEMISTRY AND DYE SENSITIVITY

CHEMILUMINESCENCE WHEN YOU NEED IT

Upgrade to the **Sapphire FL Chemiluminescence Module**.



Chemiluminescent blot with color marker and Coomassie gel imaged on Sapphire FL Chemiluminescence Module.

NIR FLUORESCENCE

AzureSpectra™ 700 | AzureSpectra 800 | Cy® 5.5 | Cy7 | Alexa Fluor® 680 | Deep Purple™ DyLight™ 650 | DyLight 680 | DyLight 755 | DyLight 800 | ECL Plex™ | Ethidium Bromide GelStar® | IRDye® 650 | IRDye 680LT | IRDye 680RD | IRDye 700DX | IRDye 750 IRDye 800CW | IRDye 800RS | Ponceau | Qdot® 525 | Qdot 565 | Qdot 585 | Qdot 605 Qdot 705 | Qdot 755

VISIBLE FLUORESCENCE

AzureRed™ | AzureSpectra 488 | AzureSpectra 550 | AzureSpectra 650 | Alexa Fluor 488 Alexa Fluor 546 | Alexa Fluor 555 | Alexa Fluor 633 | Alexa Fluor 647 | Bodipy™ FL | Bodipy PC CellTracker™ Green | CellROX® Deep Red | Cy2 | Cy3 | Cy5 | DyLight 488 | DyLight 550 DyLight 633 | DyLight 650 | FAM | Flamingo™ | Fluorescein | GelRed® | GFP | MCherry SYBR® Green | SYBR Gold | SYBRSafe | SYPRO® Orange | SYPRO Red | SYPRO Ruby SYPRO Tangerine | TMRE | TotalStain Q

CHEMILUMINESCENCE

Horseradish Peroxidase (HRP) | Alkaline Phosphotase | Radiance® ECL | Radiance Plus Radiance Q | SuperSignal™ West Substrates | Pierce™ ECL Western Blotting Substrate Pierce ECL Plus Western Blotting Substrate | Amersham™ ECL Prime WesternBright™ Quantum HRP Substrate | WesternBright ECL Spray HRP Substrate

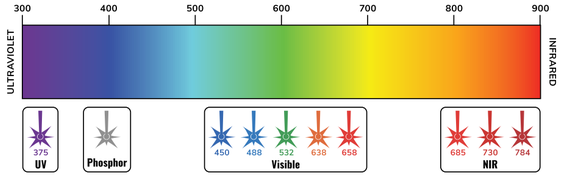
PHOSPHOR IMAGING

3H | 11C | 14C | 18F | 32P | 33P | 35S | 32P | 68Ga | 125I | 131I | 99mTc

Additional options supported.

SWAP LASERS AND FILTERS FOR EXPANDED FLEXIBILITY

The Sapphire FL is designed to accommodate quick and simple customization with user-exchangeable optical modules. Easily swap lasers or filters in under two minutes to best suit the needs of each individual dye and experiment.



Laser modules are designed to be easily replaced by the end user.

EASILY SWAP LASERS AND FILTERS

A. Remove optical module from system.

B. Remove and replace filter.

C. Load new laser and filter combination into system.

WHERE WILL YOUR RESEARCH TAKE YOU TODAY?

FLEXIBLE SIZING - SAME POWERFUL PERFORMANCE

With two field of view options and the same high-quality performance, the Sapphire FL is designed to fit your workflow.

The Sapphire FL offers two field of view options. **A.** Sapphire FL **B.** Sapphire FL+

AZURESPOT PRO FOR ANALYSIS

AzureSpot Pro combines several powerful analysis tools into one convenient and easy-to-use package. Designed to guide you through the analysis process, AzureSpot Pro makes complex analysis simple.

SPECIFICATIONS AND ORDERING INFORMATION

SYSTEMS

Feature	Sapphire FL Biomolecular Imager	Sapphire FL+ Biomolecular Imager
Part number	IS4000	IS4100
Scanning area	25 cm x 25 cm	46 cm x 25 cm
Clearance from glass to lid	4 cm	5 cm
Dimensions (W x H x D)	63.0 x 39.9 x 59.3 cm	96.8 x 40.7 x 66 cm
Maximum scanning speed	500 mm/s	1000 mm/s
Anesthesia ports	Compatible with commercially available anesthesia systems	N/A
Scanning modes	Simultaneous, Sequential, Extended Dynamic Range (EDR)	
Resolution	5 µm – 1000 µm	
Image output	16-bit TIFF	
EDR output	24-bit data	
Power requirements	100 – 240 VAC ± 10%, 50/60 Hz	
Computer options	Windows laptop computer (IS2011) or Windows desktop computer (IS2012)	
Sample types	Membranes, plates, slides, gels, phosphor screens, model organisms, and more	

OPTICAL MODULES

Part number	Standard Optical Modules
IS4030	375 Standard Optical Module
IS4031	450 Standard Optical Module
IS4001	488 Standard Optical Module
IS4032	488 (YFP) Standard Optical Module
IS4002	532 Standard Optical Module
IS4033	532 (Propidium Iodide) Standard Optical Module
IS4003	638 Standard Optical Module
IS4057	658 Standard Optical Module
IS4004	685 Standard Optical Module
IS4066	730 Standard Optical Module
IS4005	784 Standard Optical Module
IS4006	Phosphor Standard Optical Module

Custom Optical Modules available upon request

LASER AND FILTER OPTIONS

Part number	Standalone Laser Options (Does not include emission filter)
IS4023	Sapphire FL 375 nm Laser
IS4024	Sapphire FL 450 nm Laser
IS4025	Sapphire FL 488 nm Laser
IS4055	Sapphire FL 488 nm (YFP) Laser
IS4026	Sapphire FL 532 nm Laser
IS4027	Sapphire FL 638 nm Laser
IS4059	Sapphire FL 658 nm Laser
IS4028	Sapphire FL 685 nm Laser
IS4067	Sapphire FL 730 Laser
IS4029	Sapphire FL 784 nm Laser

Custom laser options available upon request

	Standalone Emission Filter Options (Does not include laser module)
IS4056	Sapphire FL 424/SP Emission Filter
IS4008	Sapphire FL 452 nm Emission Filter
IS4011	Sapphire FL 494 nm Emission Filter
IS4012	Sapphire FL 513 nm Emission Filter
IS4010	Sapphire FL 534 nm Emission Filter
IS4049	Sapphire FL 572 nm Emission Filter
IS4013	Sapphire FL 624 nm Emission Filter
IS4009	Sapphire FL 676 nm Emission Filter
IS4058	Sapphire FL 710 nm Emission Filter
IS4046	Sapphire FL 720 nm Emission Filter

Part number	Standalone Emission Filter Options – Continued (Does not include laser module)
IS4068	Sapphire FL 809 nm Emission Filter
IS4047	Sapphire FL 829 nm Emission Filter

Custom emission filter options available upon request

ACCESSORIES AND SYSTEM UPGRADES

Part number	Product
IS1015	Sapphire Eraser
	Sapphire FL
IS4007	Sapphire FL Chemiluminescence Module
IS4052	Sapphire FL Chemiluminescence Module Ethernet Connection Kit
IS4053	Sapphire FL Slide Holder
IS4054	Sapphire FL Plate Holder
IS4050	Anesthesia Nose Cone
IS4051	Anesthesia Tubing
	Sapphire FL+
IS4101	Sapphire FL+ Chemiluminescence Module
IS4102	Sapphire FL+ Slide Holder
IS4103	Sapphire FL+ Plate Holder

azure biosystems

6747 Sierra Court, Suites A-B • Dublin, CA 94568 USA
Phone: 925.307.7127 • Fax: 925.905.1816
info@azurebiosystems.com • www.azurebiosystems.com

Copyright © 2025 Azure Biosystems. All rights reserved. The Azure Biosystems logo, Azure Biosystems®, AzureSpectra™, Radiance®, Radiance Plus®, and Sapphire™ are trademarks of the Company. CellROX® is registered trademark to Life Technologies, Inc. CellTracker™ is trademark of Invitrogen. Flamingo™ is trademark of Bio-Rad. Alexa Fluor®, DyLight™, Qdot®, SYBR®, and SYPRO® are trademarks of Thermo Fisher Scientific. Cy2®, Cy3, Cy5, Cy5.5, and Cy7 are registered trademarks of Amersham Biosciences. ECL Plex™ is a trademark of GE Healthcare. GelStar® is a trademark of FMC Corporation. IRDye® is a trademark of LI-COR, Inc. All other trademarks, service marks and trade names appearing in this brochure are the property of their respective owners.

MM-0204 R1