

SAPPHIRE™ FL BIOMOLECULAR IMAGER

UNLIMITED POSSIBILITIES, UNCOMPROMISING PERFORMANCE



SAPPHIRE FL BIOMOLECULAR IMAGER

Flexibility with uncompromising performance – From in vitro molecular assays to in vivo imaging

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.

The Sapphire FL offers customizable and user-changeable optical modules, 5–1000 μm resolution scans, a Z-plane range from -1.0 to +6 mm, 5 anesthesia output ports for imaging living animals, chemiluminescence detection through the Chemiluminescence Module and much more.



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 | Small animal imaging

APPLICATION FLEXIBILITY

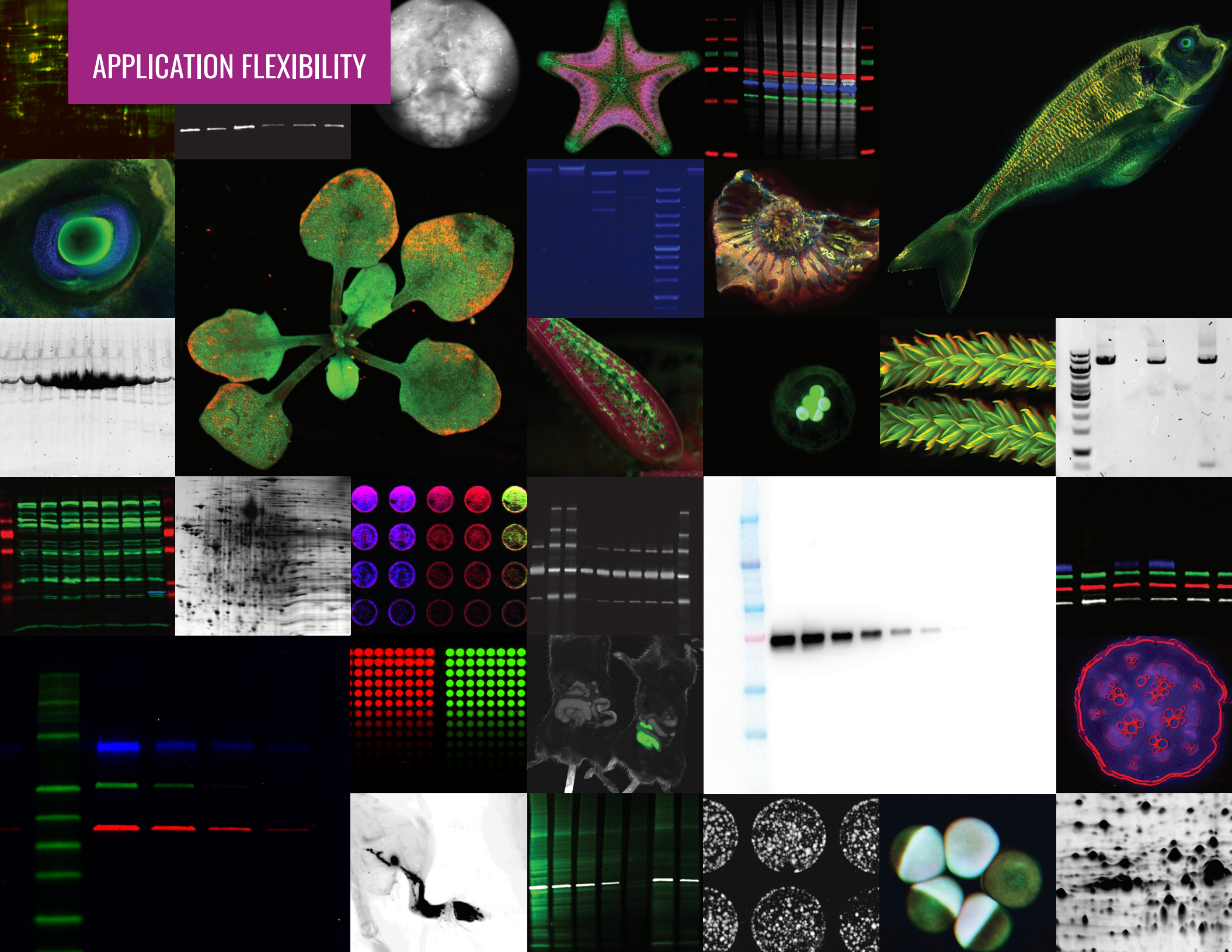


IMAGE ALL THE SAMPLES YOU CAN IMAGINE

Innovation-driving performance – High resolution imaging and wide depth of field enable many sample types

4 CM CLEARANCE

Enables imaging of samples with depth

5 OUTLET PORTS FOR ANESTHESIA

Compatible with standard anesthesia kits

LARGE 25 cm X 25 cm FIELD OF VIEW

Get More Done – Scan as many as 6 membranes (9 x 7 cm) or 6 96-well plates at a time. 4 cm of clearance above the glass allows for small animal imaging and tissue imaging.

SAMPLE TYPES

PVDF Membranes | Nitrocellulose membranes | 384-well plates
96-well plates | 12-well plates | 6-well plates | Agarose gels
SDS page gels | Native gels | 2D gels | Slides | Tissue sections
Microarrays | Small animals | Organs | Plants | Agar plates

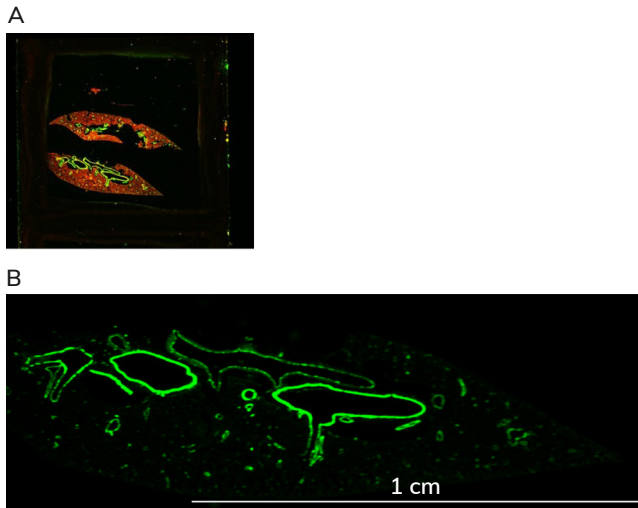


 azure
biosystems

SAMPLE FLEXIBILITY

HIGH RESOLUTION IMAGING – UP TO 5 MICRON RESOLUTION

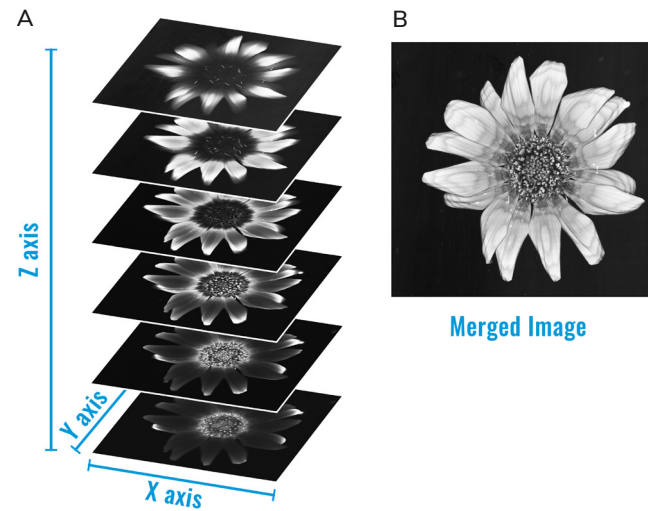
Whole Slide Imaging – Screen slides before microscopic analysis by imaging multiple slides at a resolution of 5 microns. The adjustable focal plane enables scanning of thick samples.



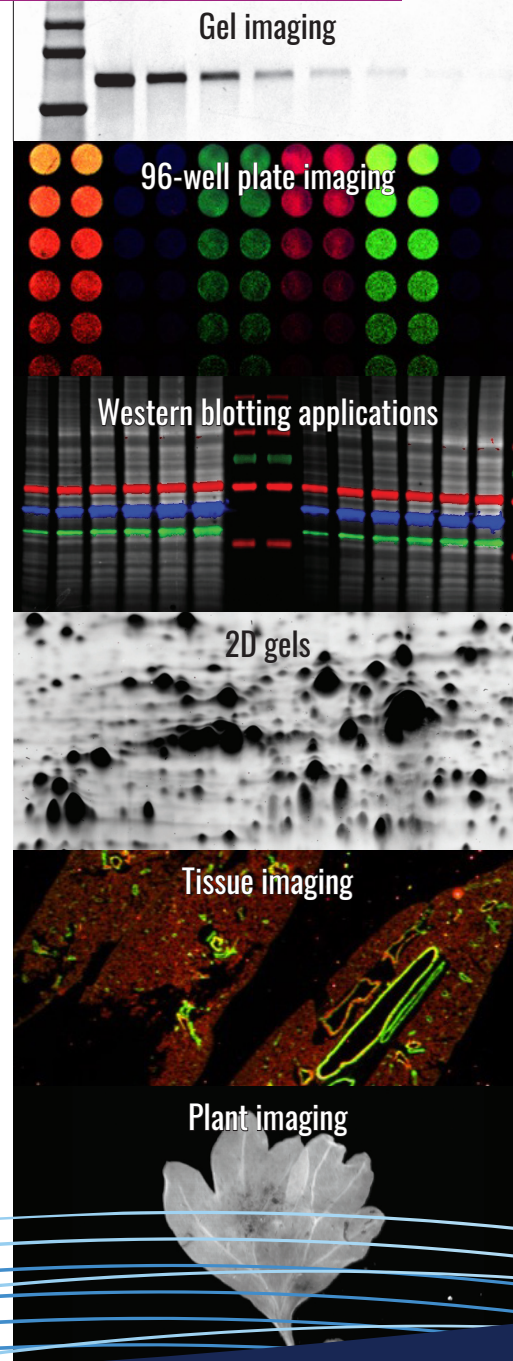
A. Mouse lung tissue slide stained stained for vascular endothelial (VE)-cadherin (Azure Spectra 550 nm) and smooth muscle actin (AzureSpectra 650 nm). Imaged on the Sapphire FL using the 532 nm (red) and 638 nm (green) laser modules at 5 μ m. B. Mouse lung tissue slide stained with 650-Smooth Muscle Actin (SMA). Imaged on the Sapphire FL with 638 nm laser modules at 5 μ m.

Z PLANE ADJUSTMENT FOR SAMPLES WITH MULTIPLE FOCAL PLANES

Find the Best Data- Adjustable laser focus from -1 mm to +6 mm from the glass surface allows for optimal imaging of your sample even if offset from the glass.



A. A 50-micron scan of a flower was taken from 0 to 6 mm with 1 mm adjustments. B. The image was merged in the Sapphire FL Capture Software to view all areas of focus at once.



WHERE WILL YOUR RESEARCH TAKE YOU TODAY?

Customization and upgradability – Pick the modules that support your research



NO LIMITS – EASILY SWAP LASERS AND FILTERS FOR EXPANDED DYE FLEXIBILITY

A



B



C



A. Remove optical module from system. B. Remove and replace filter. C. Load new laser and filter combination into the system.

Optical modules

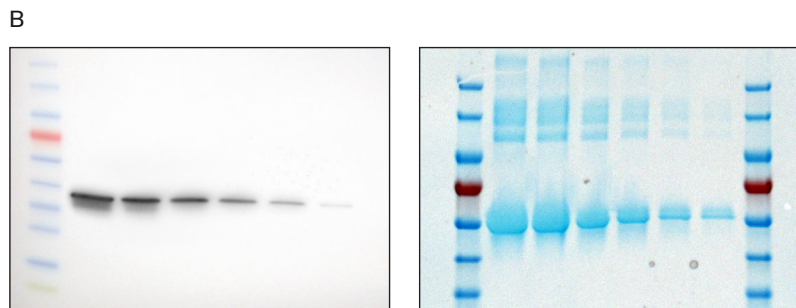
IS4001	488 Standard Optical Module	IS4030	375 Custom Optical Module
IS4002	532 Standard Optical Module	IS4031	450 Custom Optical Module
IS4003	638 Standard Optical Module	IS4032	488 (YFP) Custom Optical Module
IS4004	685 Standard Optical Module	IS4033	532 (Propidium Iodide) Custom Optical Module
IS4005	784 Standard Optical Module		
IS4006	Phosphor Imaging Standard Optical Module		

Common optical modules offered.

CHEMISTRY AND DYE FLEXIBILITY

CHEMILUMINESCENCE WHEN YOU NEED IT

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



A. Sapphire FL and Sapphire FL Chemiluminescence Module. B. 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 | Cell Tracker 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 | SYBR Safe | SYPRO® Orange
SYPRO Red | SYPRO Ruby | SYPRO Tangerine | TMRE | TotalStain Q

CHEMILUMINESCENCE

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

PHOSPHOR IMAGING

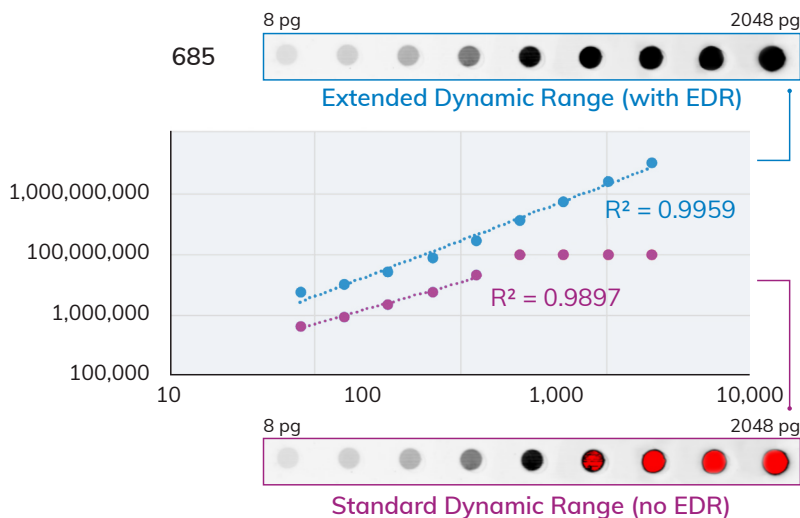
14C | 18F | 32P | 35S | 68Ga

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)

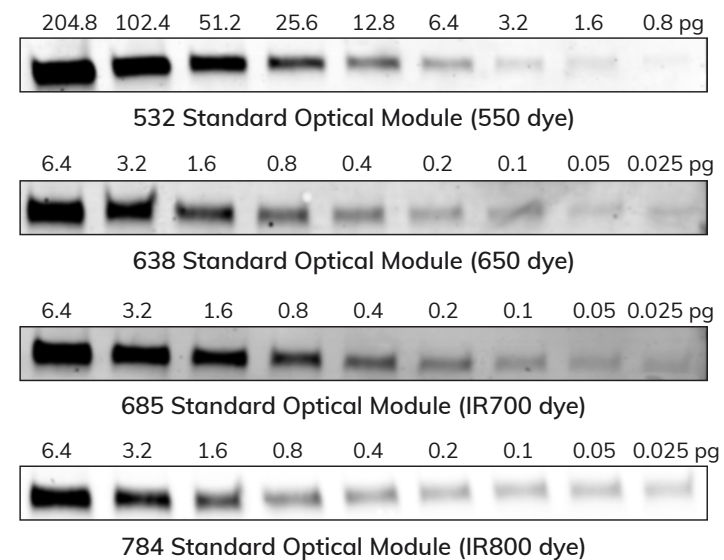
Extended dynamic range, when selected, allows imaging of both bright and weak bands without experiencing saturation. This is ideal for samples that feature strong and weak expressing proteins. EDR extends dynamic range to 24 bits of data.



Extended dynamic range. A dot blot was scanned with (top image) and without (bottom image) 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

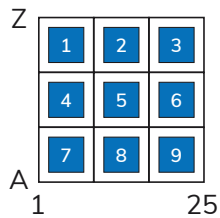
High sensitivity allows femtogram detection of proteins labeled with common fluorescent dyes.



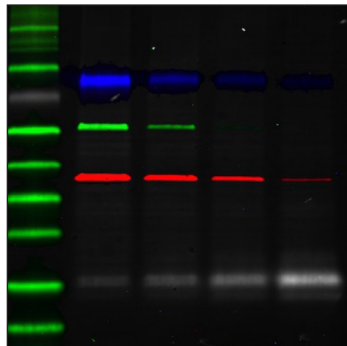
Bovine serum albumin (BSA) conjugated to AzureSpectra dyes, separated by SDS-PAGE, and transferred to membranes. Blots were imaged at 50 μm on the Sapphire FL. Loaded amounts of dye-conjugated-BSA are given.

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.



Four-color Western blot imaged at 50 μm on the Sapphire FL with the 488 nm, 532 nm, 685 nm, and 784 nm Standard Optical Modules. Transferrin and RNase A were conjugated to AzureSpectra 490 nm and 550 nm, respectively, then spiked into HeLa lysate and separated by SDS-PAGE. Standard Western blotting procedure was followed. Blots were probed with anti-Tubulin and anti-GAPDH primary antibodies with AzureSpectra IR700 and IR800 fluorescent secondary antibodies, respectively. Transferrin-490 (blue) | RNase A-550 (grey) Tubulin-IR700 (green) | GAPDH-IR800 (red)

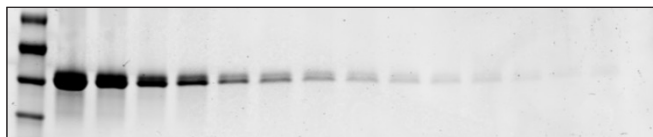
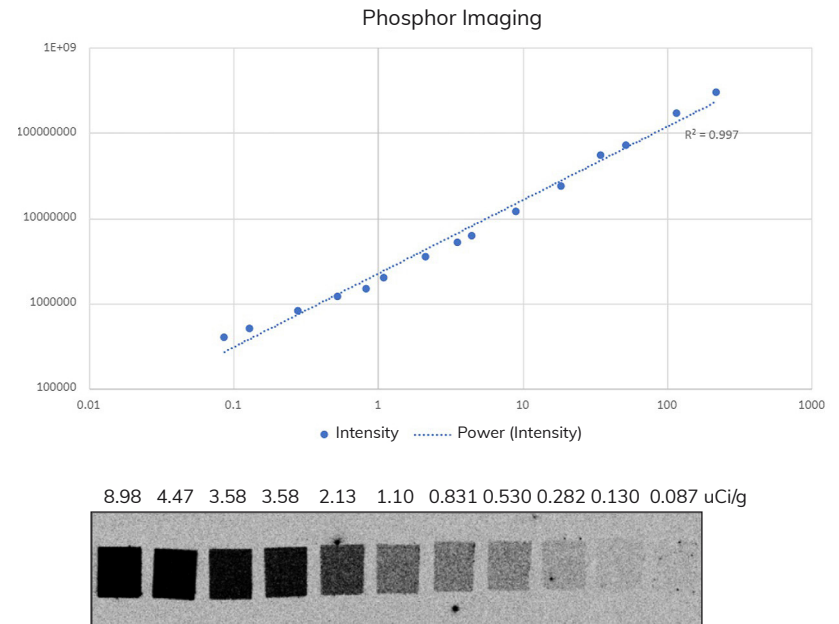


Image of Coomassie-stained gel taken on the Sapphire FL using the 685 Standard Optical Module. Purified BSA separated by SDS-PAGE and stained with Coomassie. Serial dilutions from 5 μg to 0.6 ng.

PHOSPHOR IMAGING – DETECT RADIOLABELS

Image phosphor screens with high sensitivity.



American Radiolabeled Chemicals Carbon-14 Standard exposed to Storage Phosphor Screen for three hours, then imaged on the Sapphire FL Biomolecular Imager.

SPECIFICATIONS AND ORDERING INFORMATION

Sapphire FL Biomolecular Imager

Laser Based Scanning System

Part number	IS4000
Scanning area	25 cm x 25 cm
Scanning modes	Simultaneous, Sequential, Extended Dynamic Range (EDR)
Resolution	5 μm – 1000 μm
Image output	16-bit TIFF
EDR output	24-bit data
Maximum scanning speed	250 mm/s
Animal imaging	Compatible with commercially available anesthesia systems
Dimensions	593 mm (L) x 630 mm (W) x 399 mm (H)
Weight	43.5 kg (empty of optical modules; each optical module weighs 0.6 kg)
Power requirements	100 – 240 VAC \pm 10%, 50/60 Hz
Computer options	Windows laptop computer (IS2011) or Windows desktop computer (IS2012)
Sample types	Membranes, plates, slides, gels, phosphor screens, small animals, and more

Part number

Standard Optical Modules

IS4001	488 Standard Optical Module
IS4002	532 Standard Optical Module
IS4003	638 Standard Optical Module
IS4004	685 Standard Optical Module
IS4005	784 Standard Optical Module
IS4006	Phosphor Imaging Standard Optical Module

Custom Optical Modules

IS4030	375 Custom Optical Module
IS4031	450 Custom Optical Module
IS4032	488 (YFP) Custom Optical Module
IS4033	532 (Propidium Iodide) Custom Optical Module

Additional custom optical modules available upon request

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

Custom laser options available upon request

	Standalone Emission Filter Options (Does not include laser module)	
IS4008	Sapphire FL 452 nm Filter	430-475 nm emission filter
IS4009	Sapphire FL 676 nm Filter	657-695 nm emission filter
IS4010	Sapphire FL 534 nm Filter	524-544 nm emission filter
IS4011	Sapphire FL 494 nm Filter	477-511 nm emission filter
IS4012	Sapphire FL 513 nm Filter	505-522 nm emission filter
IS4013	Sapphire FL 624 nm Filter	604-644 nm emission filter
IS4046	Sapphire FL 720 nm Filter	708-723 nm emission filter
IS4047	Sapphire FL 829 nm Filter	798-860 nm emission filter
IS4049	Sapphire FL 572 nm Filter	558-586 nm emission filter

Custom emission filter options available upon request

Part number	Accessories	
IS1015	Sapphire Eraser	Designed to erase signal from phosphor imaging screens

	System Upgrades	
IS4007	Sapphire FL Chemiluminescence Module	Add Chemiluminescence Module to Sapphire FL

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