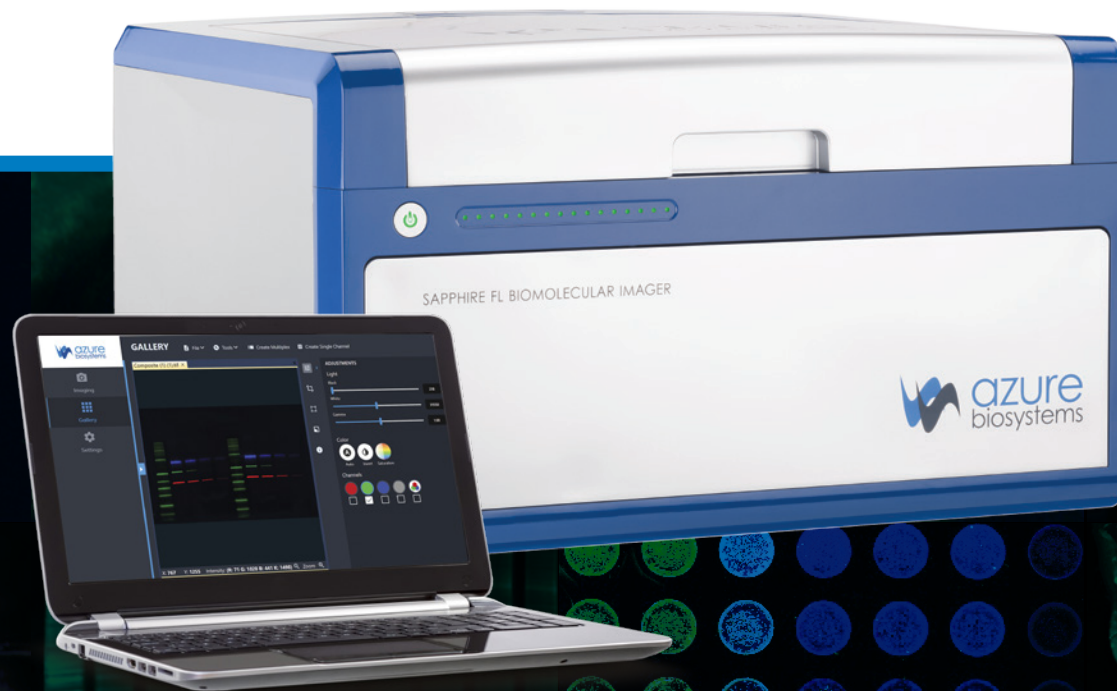




# SAPPHIRE™ FL BIOMOLECULAR IMAGER

UNLIMITED POSSIBILITIES, UNCOMPROMISING PERFORMANCE









# SAMPLE FLEXIBILITY

## IMAGE ALL THE SAMPLES YOU CAN IMAGINE

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

### 4 CM CLEARANCE

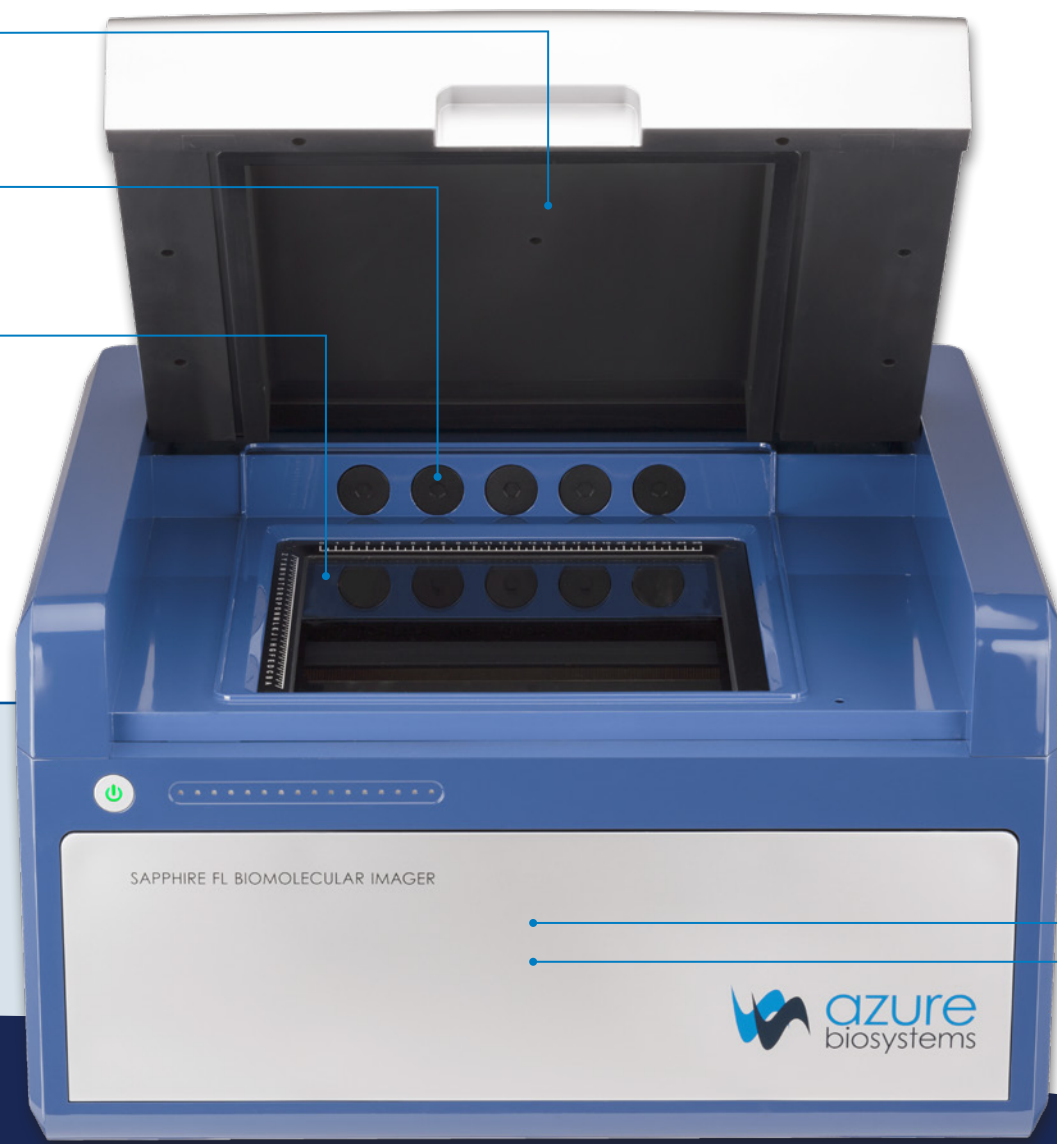
Enables imaging of samples with depth

### 5 ANESTHESIA PORTS

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.

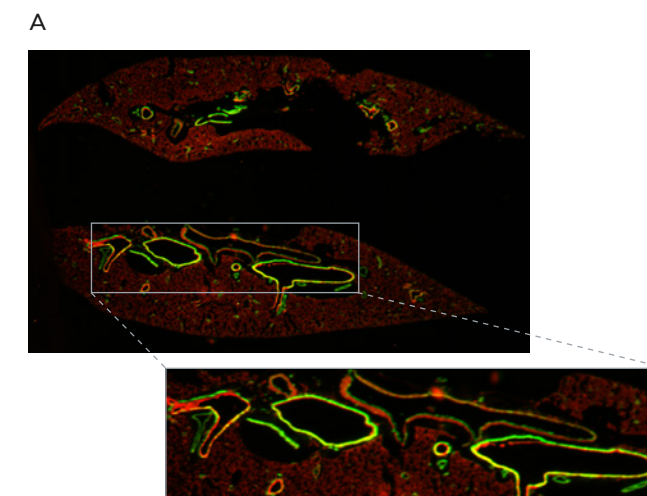


### SAMPLE TYPES

- 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

### HIGH RESOLUTION IMAGING – UP TO 5 MICRON RESOLUTION

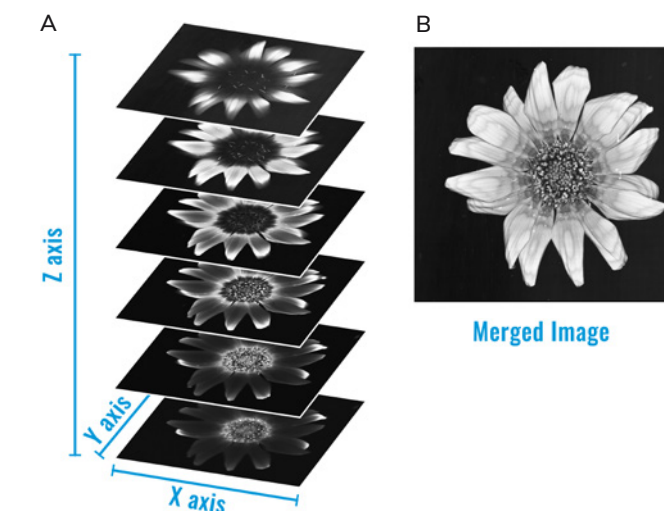
**Whole Slide Imaging** – Screen slides before microscopic analysis by imaging multiple slides at a resolution of 5 microns. The adjustable focal plane enables scanning of thick samples.



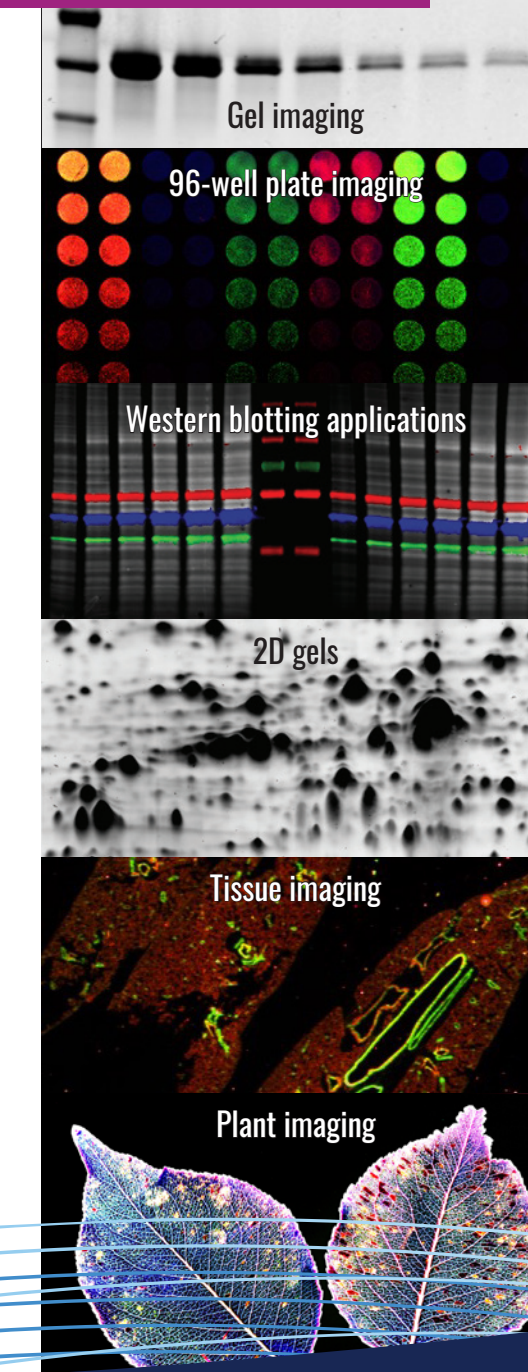
A. Mouse lung tissue slide probed for vascular endothelial (VE)-cadherin (AzureSpectra 550 nm secondary antibodies) and smooth muscle actin (SMA) (AzureSpectra 650 nm secondary antibodies). Imaged on the Sapphire FL using the 532 and 638 standard optical modules (red and green, respectively) at 5 µm.

### 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.

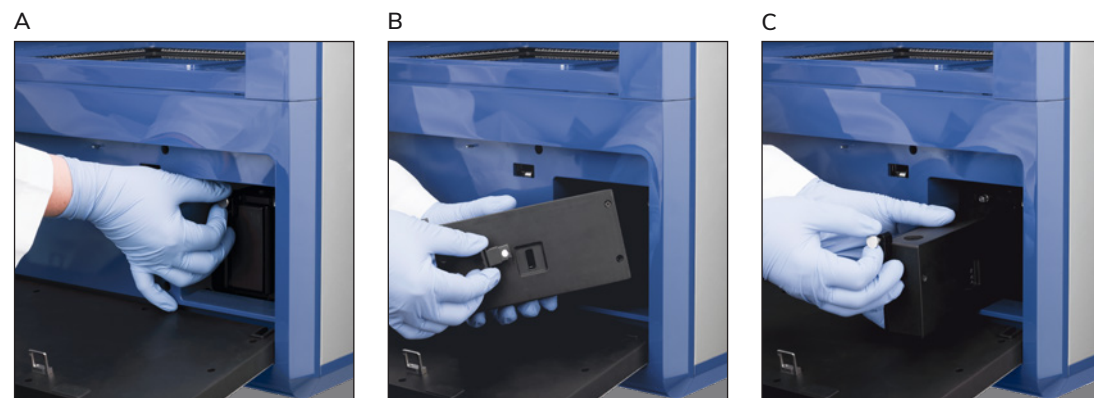


# WHERE WILL YOUR RESEARCH TAKE YOU TODAY?

Customization and upgradability – Pick the modules that support your research



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



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

### Optical Modules

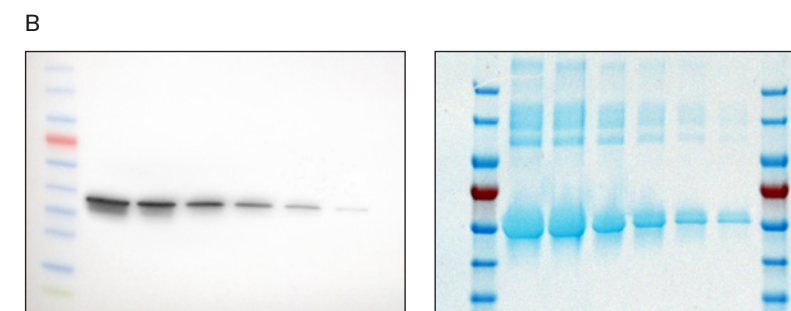
IS4001	488 Standard Optical Module	IS4030	375 Custom Optical Module
IS4002	532 Standard Optical Module	IS4031	450 Custom Optical Module
IS4003	638 Standard Optical Module	IS4032	488 (YFP) Custom Optical Module
IS4004	685 Standard Optical Module	IS4033	532 (Propidium Iodide) Custom Optical Module
IS4005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

More options available upon request.

## 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 | 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 | 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 | Amersham™ ECL Prime  
 WesternBright™ Quantum HRP Substrate  
 WesternBright ECL Spray HRP Substrate

### PHOSPHOR IMAGING

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

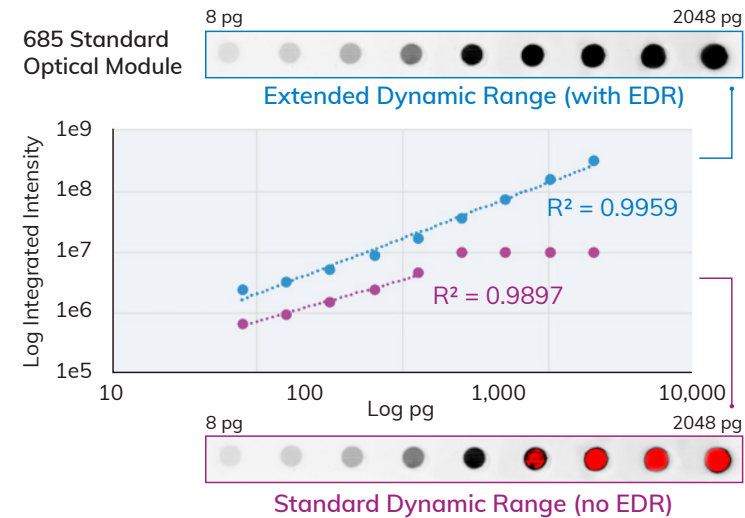


# WHAT CAN YOU SEE?

Broad dynamic range and exceptional sensitivity enable enhanced quantitative data generation

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

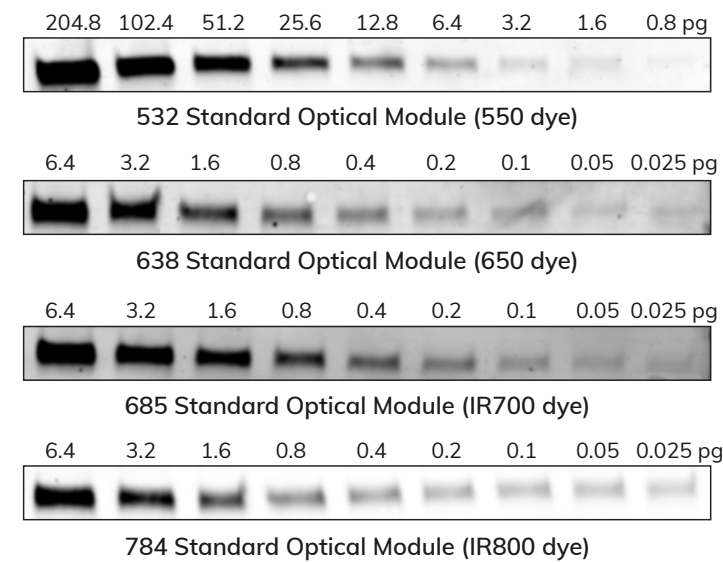
Extended dynamic range, when selected, allows imaging of both bright and weak bands without experiencing saturation. This is ideal for samples that feature strong and weak expressing proteins. EDR extends dynamic range to 24 bits of data.



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

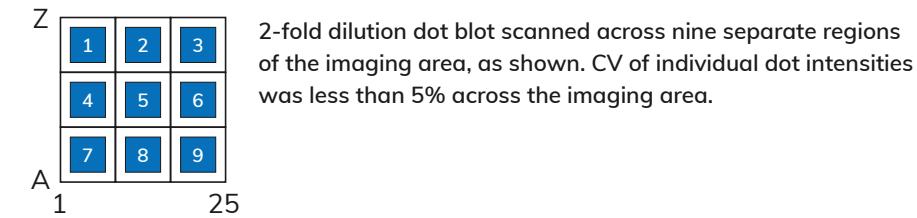
High sensitivity allows femtogram detection of proteins labeled with common fluorescent dyes.



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

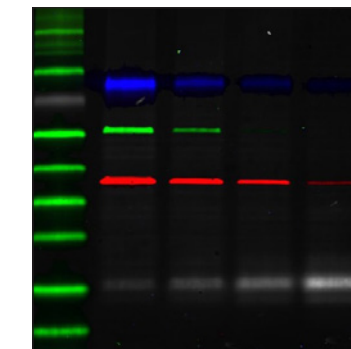
## REPRODUCIBILITY AND UNIFORMITY – CVs LESS THAN 5%

Be confident that every scan will be accurate and reproducible.



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

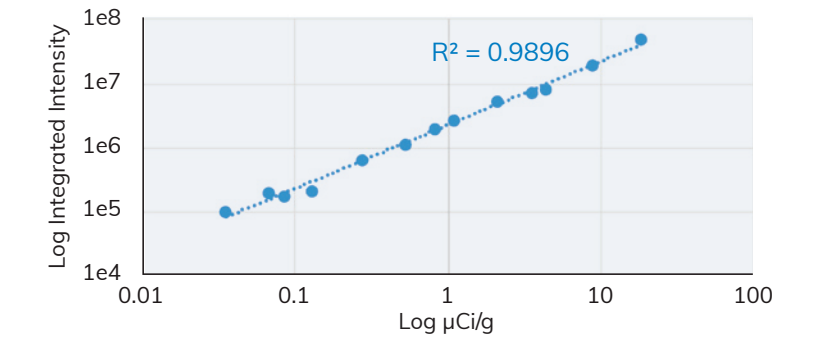
Quickly and easily swap optical modules to create 4-channel images.



Four-color Western blot imaged at 50  $\mu\text{m}$  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)

## 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  $\mu\text{m}$  on the Sapphire FL Biomolecular Imager. Limit of detection: 0.036  $\mu\text{Ci/g}$ .

## CRISP GEL IMAGING

Laser-based scanning delivers sharp images across sample types.

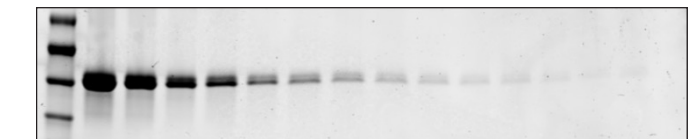


Image of Coomassie-stained gel taken on the Sapphire FL using the 685 Standard Optical Module. Purified BSA separated by SDS-PAGE and stained with Coomassie. Serial dilutions from 5  $\mu\text{g}$  to 0.6 ng.

# 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 ± 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
	<b>Custom Optical Modules</b>
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

Part number	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
		<b>System Upgrades</b>
IS4007	Sapphire FL Chemiluminescence Module	Add Chemiluminescence Module to Sapphire FL



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