

# In-Vivo Multispectral FX PRO



The In-Vivo Multispectral FX PRO features automated image capture including powerful excitation-based spectral unmixing. The resulting enhanced sensitivity enables identification and separation of multiple fluorophores and removal of autofluorescence background. The MS FX PRO automatically generates multispectral image "cubes" with spatially co-registered X-ray and white light images for improved localization of biomarkers *in vivo*. This co-registration also enables direct correlation of molecular signals to phenotypes that change bone structure, bone density or animal appearance.

## System Benefits

### Powerful Multispectral Analysis

- ◆ Powerful software models data and provides unmixing of fluorophores.
- ◆ Easily establish, store and repeat multi-modal longitudinal imaging protocols.
- ◆ A wide range of excitation wavelengths enables optimum imaging of a wide range of fluorophores and biomarkers.
- ◆ Elegant visualization and rendering software for co-registering all modalities and multiple fluorophores in the same image.

### Unmatched Versatility

- ◆ Multimodal imaging capabilities include multi-wavelength fluorescence, white light, luminescence, radioisotopic and X-ray.
- ◆ Automated excitation and emission filter systems with 29 excitation filter positions and 4 emission filter positions
- ◆ Powerful broad spectrum fluorescence excitation using 400W Xenon light for enhanced speed and sensitivity across the visible and NIR spectrum
- ◆ Large 20 cm x 20 cm field of view for imaging multiple subjects simultaneously using all modalities.
- ◆ Automated imaging chamber allows remote switching between imaging modes without disturbing the subject.

### Superior Image Quality

- ◆ Sophisticated software algorithms remove autofluorescence for improved signal-to-noise and detection sensitivity.
- ◆ 4 megapixel resolution, cooled CCD camera and true 16-bit imaging provide highly accurate grayscale resolution and broad linear dynamic range for high resolution imaging — ideal for *in vivo* and *ex vivo* imaging
- ◆ Unique imaging geometry improves image clarity by providing a true flat focal plane
- ◆ Enhanced detection sensitivity and image quality with exclusive wide angle emission filters to eliminate imaging artifacts

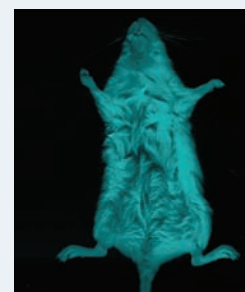
**Learn more.** For more information, call 1-877-747-4357, exp. code 7.  
Outside the U.S. call +1-203-786-5658.



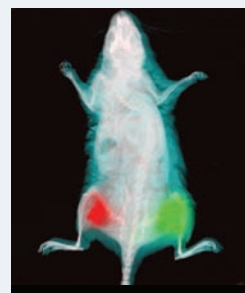
X-ray



Unmixed Fluorescent Signals



Reflectance



4-Layer Composite

**Carestream**  
Molecular Imaging  
[mi.carestreamhealth.com](http://mi.carestreamhealth.com)

# In-Vivo Multispectral FX PRO

Utilize the MS FX PRO for making fundamental biological discoveries and pre-clinical validation of therapeutics and biomarkers. Image changes in signaling cascades in live animals over time to discover how genetics, small molecules, and therapeutics affect these pathways. Validate and discover new molecular imaging probes and pre-clinical biomarkers — ideal for multi-functional imaging agents including nanoparticles, peptides, antibodies and more.

## System Specifications

### CAMERA

CCD	Monochrome interlined CCD
Pixel Density	2048 x 2048 pixels
Cooling	-29°C absolute
Lens	Computer controlled 10X zoom, 2 - 20cm, f2.5

### ILLUMINATION

Source	400W Xenon
Fluorescence	Automated 29-position selectable multiwavelength epi-illumination, 410 - 760 nm — includes 28 excitation filters
	400 Watt Xenon illumination source
White Light	White light epi-illumination and white light transillumination

### EMISSION FILTERS

Automated selectable wide angle filters, 535 - 830 nm - includes 6 emission filters

### PERFORMANCE

Field of View	2 x 2 cm to 20 x 20 cm, continuous automated zoom
Optical Resolution	10 micron/pixel (maximum)
Data Acquisition	16-bit single capture n-bit data acquisition
Binning	1x2, 2x2, 1x4, 2x4, 4x4, 1x8, 2x8, 4x8, 8x8, 16x16
Read Noise	<7-rms (nominal)
Dynamic Range	>4 OD
Dark Current Noise	$\leq 5 \times 10^{-5}$ e/pixel/s

### DETECTION MODES

Luminescence
Multiwavelength Fluorescence
UV Fluorescence
Radioisotopic
X-Ray

### EXPOSURE MODES

Single Capture
Multiple Capture
Progressive Exposure
Time Lapse Exposure

### COMPUTER INTERFACE

Ethernet

### OPERATING SYSTEMS

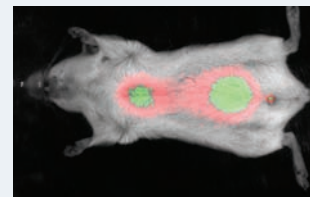
Windows XP  
Macintosh OS X

### DIGITAL X-RAY

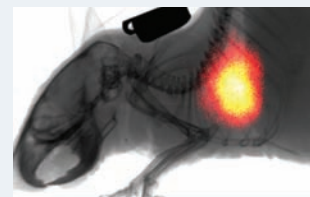
Resolution	$\geq 25$ lp/mm (nominal)
Energy Range	Approximately 12-35 kVp
Maximum Current	Approximately 150uA
Spot Size	<50 $\mu$
Target Material	Tungsten
Window Filtration	Beryllium
Cone of Illumination	>33 degrees
Field of Illumination	20 X 20 cm

### INSTRUMENT

Approx. Dimensions (l x w x h)	(in) 41 x 24 x 38
Approx. Net Weight	313 lbs



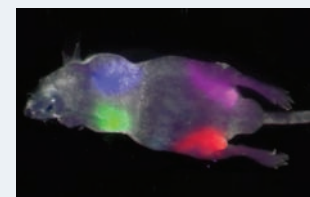
Imaging of  $^{18}\text{F}$ -FDG in a normal mouse



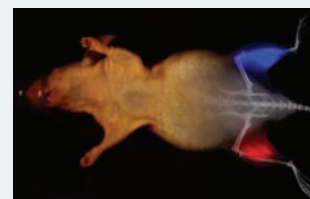
NIRF tumor cells discovered in the lungs of a mouse



Contrast of kidneys and heart using an i.v. X-ray contrast agent



Spectral unmixing of four fluorescent nanoparticles and co-registration with autofluorescence signal.



Spectral unmixing of Kodak X-Sight 761 & 650 nanospheres. Co-registration with X-ray and RGB reflectance images

**Learn more.** For more information, call 1-877-747-4357, exp. code 7. Outside the U.S. call +1-203-786-5658.

While Carestream In-Vivo Systems can be used for in vivo and in vitro molecular imaging of materials, researchers should be aware that the methods of preparing and viewing the materials for molecular imaging may be subject to various patent rights. All images were captured using Carestream Molecular Imaging System Technology.

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Molecular Imaging

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Carestream Health, Inc.  
4 Research Drive, Woodbridge, CT 06525