



Pre-clinical *in vivo* imaging

Key Features

- Exquisite sensitivity with bioluminescence
- Fluorescence imaging through the NIR Spectrum
- Cerenkov Imaging
- Expandable system tailored to your workflow
- Market trusted technology offering the fullest suite of leading imaging technologies, reagents and support

Quantitative Fluorescence and Bioluminescence Imaging

The IVIS® Lumina LT Series III from PerkinElmer provides an expandable, sensitive imaging system that is easy to use for both fluorescence and bioluminescence imaging *in vivo*. The system includes a highly sensitive CCD camera, light-tight imaging chamber and complete automation and analysis capabilities. As the leading optical imaging platform for *in vivo* analysis, IVIS systems include a range of practical accessories developed through experience in research laboratories worldwide.

Quantitative Flexible Expandable

With an adjustable field of view from 5-12.5 cm and with optional zoom and expansion lenses, the field of view can expand between 2.5-24 cm. This feature allows imaging of up to five mice or two medium size rats. The Lumina LT can also accommodate petri dishes or micro-titer plates for *in vitro* imaging. The system includes premium animal handling features such as a heated stage, gas anesthesia and ECG monitoring connections.

Superior Imaging Results

The IVIS Lumina LT is capable of imaging both fluorescent and bioluminescent reporters. The system is equipped with filters that can be used to image reporters that emit from green to near-infrared. Absolute calibration affords you consistent and reproducible results independent of magnification, filter selection from any IVIS instrument within an organization or around the world. The Living Image® software yields high-quality, reproducible, quantitative results incorporating instrument calibration, background subtraction and the image algorithms.

IVIS Lumina LT - Standard Excitation and Emission Filter Sets

FLUOROPHORES	STANDARD HIGH RESOLUTION EXCITATION FILTER SET (BUILT-IN)	STANDARD EMISSION FILTER SETS
GFP, YFP and PKH26	430 nm, 465 nm, 500 nm, 535 nm, 570 nm, 605 nm, 640 nm, 675 nm, 710 nm, 745 nm	515-575 nm
Cy 5.5, DsRed, tdTomato and VivoTag 680		575-650 nm
Indocyanine Green and VivoTag 750		695-770 nm
Multiple fluorophores Spanning 500-900 nm Broad Imaging Solution		810-875 nm

Optional Multispectral Imaging Upgrade

IVIS Lumina LT comes with an optional upgrade path to the Lumina Series III system, which allows for multispectral unmixing with our patented Compute Pure Spectrum (CPS) technology. CPS provides spectral library generation software tools to enable accurate autofluorescence removal and multispectral imaging. Image multiple fluorescent reporters simultaneously, facilitating exploration of multiple physiological outcomes in parallel within the same animal. This upgrade that includes 19 excitation and 7 emission filters allows for multispectral imaging of fluorescent reporters emitting from the green to near infrared.

Field of View

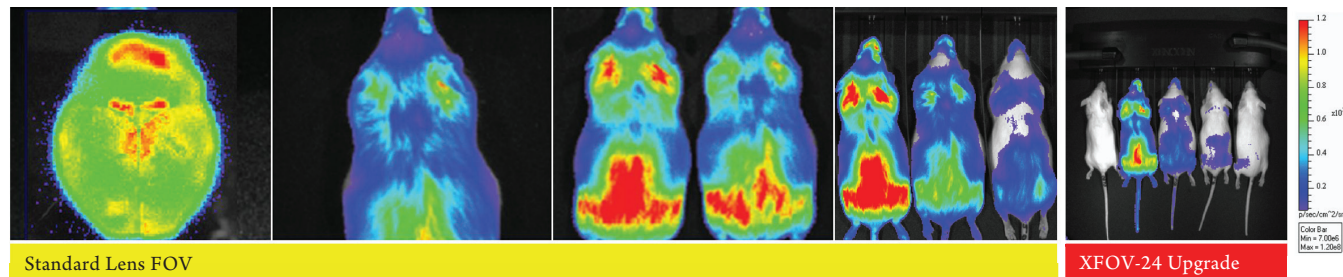


Figure 1. The IVIS Lumina LT Imaging System provides five fields of view.

Triple Reporter Imaging

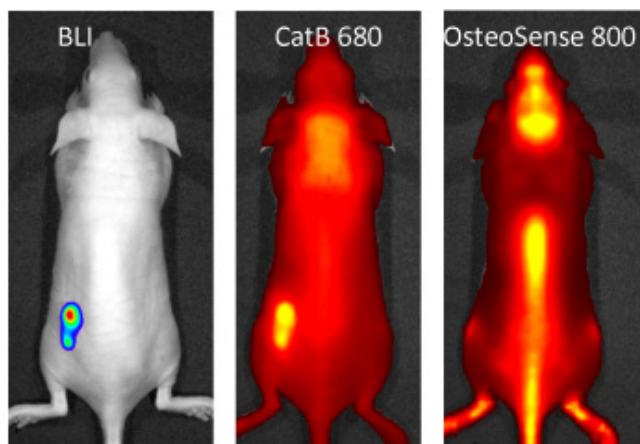


Figure 2. Image multiple reporters in the same animal. Monitoring Cathepsin B activity in 4T1-luc2 tumors by activatable fluorescent agent Cat B 680 FAST. OsteoSense 800 shows targeting of skeletal structures.

Dual Reporter Imaging - High Resolution Ex Vivo Applications.

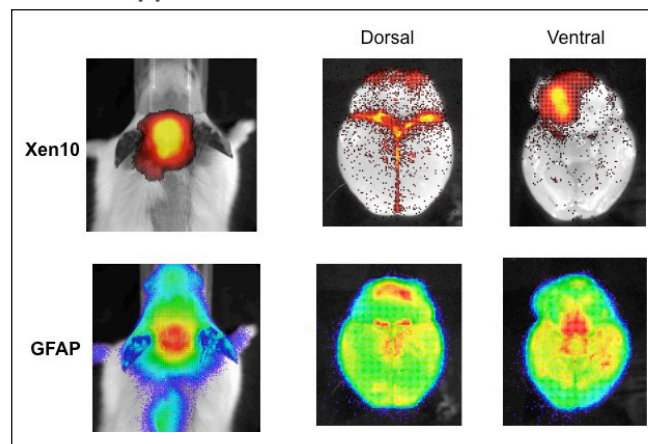


Figure 3. Dual Reporter Imaging - High Resolution Applications. Bacterial luc (500 nm) and GFAP (620 nm) brain imaging from mice with pneumococcal meningitis. Kadurugamuwa et al., Infection and Immunity, 2005.

Living Image Software with IVIS Lumina LT System

The wide range of IVIS system instrument settings, combined with absolute calibration of each setting, allows users to track signals during longitudinal studies that vary by many orders of magnitude. In this drug study (Figure 4), tumor signals vary by three orders of magnitude during the course of a 35 day experiment. The capability of Living Image Software makes this type of analysis simple for the user in both fluorescent and bioluminescent modes.

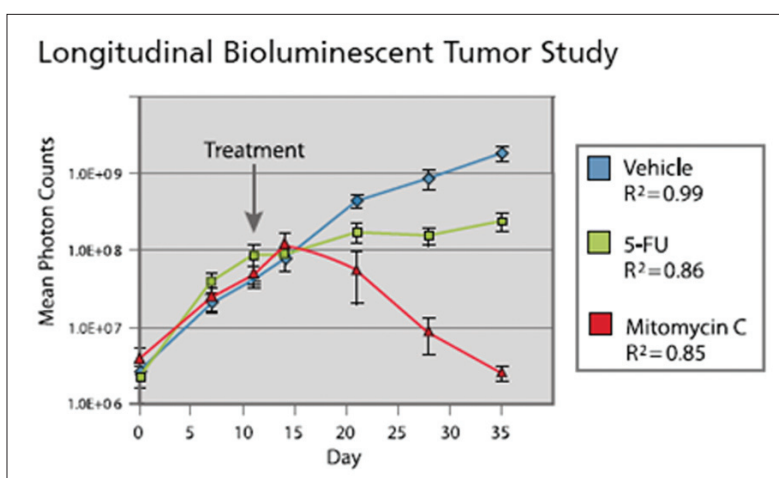


Figure 4. Absolute calibration allows for multiple day studies as well as comparison of results between labs around the world.

Inside the IVIS Lumina LT

CCD Camera

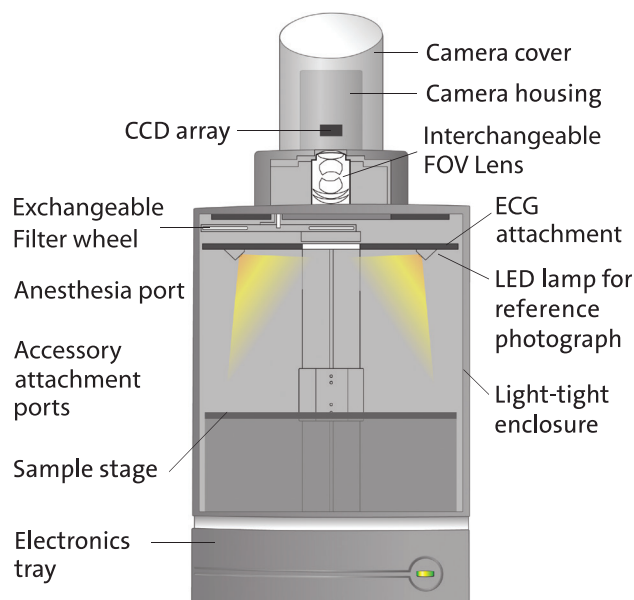
- The IVIS Lumina LT CCD is 13 x 13 mm square, with 1024 x 1024 pixels 13 micron in width, yields higher imaging resolution
- Back-thinned, back-illuminated grade 1 CCD provides high quantum efficiency over the entire visible to near-infrared spectrum
- 16 bit digitizer delivers broad dynamic range
- The CCD is thermoelectrically (Peltier) cooled to -90 °C ensuring low dark current and low noise

Imaging Chamber

- Light-tight imaging chamber
- High light collection lens, f /0.95 – f/16
- Optional 24 cm FOV lens attachment
- Optional 2.5 cm FOV zoom lens attachment
- 8 position emission filter wheels
- Complete upgrade path to Lumina Series III system
- LED lamps for photographic images
- Heated stage to maintain optimum body temperature
- Motor controlled stage, filter wheel, lens position, and f-stop
- Optional integrated ECG monitoring system
- Optional emission filter options for planar spectral imaging

Integrated Gas Anesthesia

- Gas anesthesia ports and 5 position manifold within imaging chamber allow anesthesia to be maintained during imaging sessions



The IVIS Lumina Series III platform offers a selection of instruments tailored to your *in vivo* imaging needs

FEATURES	IVIS LUMINA	IVIS LUMINA K	IVIS LUMINA XR	IVIS LUMINA LT
Bioluminescence	✓	✓	✓	✓
Radioisotopic Cerenkov Imaging	✓	✓	✓	✓
Fluorescence	✓	✓	✓	✓
Compute Pure Spectrum Spectral Unmixing	✓	✓	✓	
Real-Time Fast Kinetic Imaging (10 ms)		✓		
Integrated X-Ray			✓	
DyCE Imaging (Optional Upgrade)	✓	✓	✓	✓
Extended NIR Range 150W Tungsten EKE	✓	✓	✓	✓
Absolute Calibration to NIST® Standards	✓	✓	✓	✓

IMAGING SYSTEM COMPONENTS	SPECIFICATIONS
Camera Sensor	Back-thinned, back-illuminated, cooled Grade 1 CCD
CCD Size	1.3 x 1.3 cm
Imaging Pixels	1024 x 1024
Quantum Efficiency	>85% Efficiency 500-700 nm, >55% Efficiency 400-500 nm, >35% Efficiency 700-900 nm
Pixel Size	13 microns
Min. Detectable Radiance	100 photons/s/sr/cm ²
Min. Field of View (FOV)	5 x 5 cm (optional zoom 2.5 x 2.5 cm)
Max. Field of View (FOV)	12.5 x 12.5 cm (optional expansion 24 x 24 cm)
Min. Image Pixel Resolution	50 microns
Read Noise	< 3 electrons for bin=1,2, 4; < 5 electrons for bin=8, 16
Dark Current (Typical)	<120 electrons/s/cm ² ; or 2 x 10 ⁻⁴ electrons/s/pixel
Lens	f/.95 – f/16, 50 mm
Fluorescence Capability	Standard
Excitation Fluorescence Filters	10
Emission Fluorescence Filters	4 standard filters with optional emission wheel for planar spectral imaging
CCD Operating Temp	-90 °C
Imaging System Space Requirement	48 x 71 x 104 cm (W x D x H)
Imaging Chamber Interior Dimension	43 x 38 x 43 cm (W x D x H)
Power Requirements	6A at 120V
Stage Temperature	20 – 40 °C
Computer (Minimum specifications)	3.1 GHz, 4 GB RAM, 16XDVD+/-RW, 250 GB and 1 TB HD, 24" wide screen LED monitor
Living Image Software	1 acquisition copy and 4 analysis copies of Living Image software

For more information, please visit our website at www.perkinelmer.com/invivo

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