

IR VIVO™



PRECLINICAL IMAGER

IR VIVO is the reference system for *in vivo* NIR-II imaging. It brings the revolution of NIR-II fluorescence into laboratories and imaging platforms, with:

- » reduced light scattering and absorption
- » virtually no autofluorescence
- » better contrast
- » access to greater depths

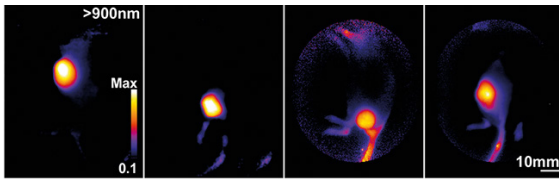
Furthermore, NIR-II photons dramatically improve the penetration through certain tissue that are completely opaque to visible or NIR-I wavelengths, giving access to e.g. brain (through bone) or black melanoma imaging.

IR VIVO benefits from Photon etc. ultra-low noise camera Alizé 1.7 and highly powerful laser illumination for a highly sensitive fluorescence imaging system.

IR VIVO™ PRECLINICAL IMAGING SYSTEM OPENS A NEW WINDOW ON LIVING BODIES

TECHNICAL SPECIFICATIONS	
Emission spectral range	700 - 1600 nm
Imaging modes	Fluorescence, reflectance, overlay
Emission filters	Up to 10 emission channels
Illumination sources	Lasers at 670,760, 808, and 890 nm, and adjustable power density
Lens	50mm f/1.4 lens
Field of view	80 x 64 mm to 44 x 35 mm Adjustable FOV for 1 mouse or individual organ view
Dimensions (L x W x H)	Tabletop: 77 x 60 x 98 cm
Stage temperature	25 - 40 °C
Anesthetic tubing and nosecone	Anesthetic nosecone supplied
Single image data format	HDF5, FITS, PNG, JPG , TIFF
Software	PC (Windows - 64-bits) with PHySpec™ control and analysis software (Computer included)
Power requirement	120 VAC / 6.4A / 50-60 Hz 230 VAC / 3.3 A / 50-60 Hz
CAMERA	
Type	InGaAs (Alizé™ 1.7)
FPA	640 x 512 pixels
Cooling	-60 °C
Quantum efficiency	>70% from 900 - 1600 nm
OPTIONS & ACCESSORIES	
Stage	Motorization XY
3-mice field-of-view	156 x 125 mm 3-position gas nosecone
Spectral probe	For real-time acquisition of spectrum on single point of the animal
Anesthesia system	Available on demand

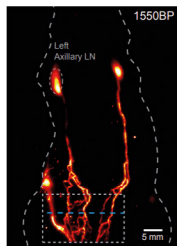
CANCER IMAGING



NIR-II fluorescence from breast, prostate, fibrosarcoma and colon tumors, 6 days after injection of the pan-cancer imaging agent CJ215 (Proimaging)

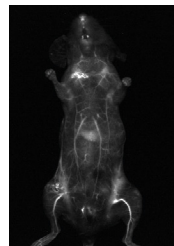
REF.: Mc Larney et al (1)

VASCULAR AND LYMPHATICS



Imaging of lymphatic vessels and lymphatic drainage in mouse

REF.: Zhong et al (3)



Vascular imaging in a mouse after ICG injection, acquired with a 1400 nm long-pass filter

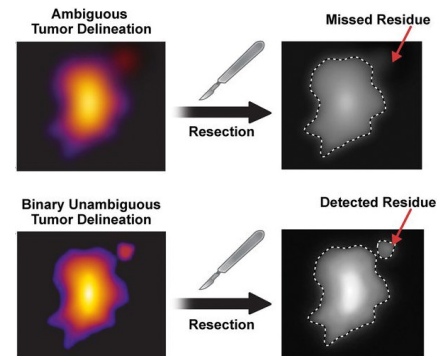
NIR-II IMAGING APPLICATIONS

- » Tumor labelling
- » Fluorescence guided surgery
- » Tumor vascularization and angiogenesis
- » Lymph nodes, vessels and lymphatic drainage

NIR-II IMAGING PROPERTIES

- » Reduced scattering
- » No autofluorescence
- » Greater depths, down to 2 cm
- » Fluorescent label multiplexing
- » Imaging through certain otherwise opaque tissue types, e.g. bone or melanin

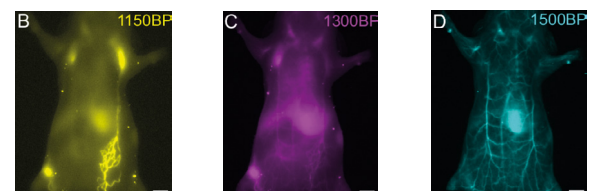
FLUORESCENCE GUIDED SURGERY



Advantage of NIR-II (bottom) over NIR-I (top) for fluorescence guided surgery (FGS)

REF.: Mc Larney et al (2)

MULTIPLEXING



Multiplexing possibilities: lymphatic and vascular signals within the same mouse and different emission bandwidths in the NIR-II region.

REF.: Zhong et al (3)

Selected publications

(1) Mc Larney et al, A pan-cancer agent for screening, resection and wound monitoring via NIR and SWIR imaging, Res Sq, 2024 Jan 23:rs.3.rs-3879635 (preprint) (2) Mc Larney et al, Ambient Light Resistant Shortwave Infrared Fluorescence Imaging for Preclinical Tumor Delineation via the pH Low-Insertion Peptide Conjugated to Indocyanine Green, J Nucl Med 2023; 64:1647-1653 (3) Zhong et al, Multiplexed Short-wave Infrared Imaging Highlights Anatomical Structures in Mice, bioRxiv (preprint) (4) Sun Y et al. Minimizing near-infrared autofluorescence in preclinical imaging with diet and wavelength selection. J Biomed Opt. 2023 Sep;28(9):094805

PHOTON ETC OPTICAL PRECLINICAL IMAGER FAMILY

KAER IMAGING SYSTEM

Open fluorescence and FGS



IR VIVO

The reference for NIR-II



SYNERGY

Combining BLI, FLI and NIR-II

