

A NEW SPECTRUM OF LIGHT  
**NEWTON FT-900**

BIOLUMINESCENCE & FLUORESCENCE  
IN VIS, NIR & NIR-II FOR IN VIVO IMAGING



# ABSOLUTE SIMPLICITY

DETECT, QUANTIFY AND VALIDATE

## — ABSOLUTE CALIBRATION

Absolute NIST Traceable Calibration Imaging is based on traceable references provided by the National Institute of Standards and Technology (NIST). It allows precise quantification of specific biomolecules (such as proteins) in the sample of interest and provides benefits such as accuracy, reproducibility, and standardization.

## — ABSOLUTE QUANTIFICATION

Absolute quantification allows researchers to compare and integrate data from different studies or laboratories. Unlike relative quantification, which compares the amount of an analyte between two or more samples, absolute quantification provides a precise value for the amount of substance in the sample, expressed in absolute units.

## — ABSOLUTE ANIMAL CARE

Large 20x20 cm FOV - Control of the temperature from 20°C to 40°C of the heated animal bed and possibility to switch it off for ex vivo or in vitro applications - EQUAFLOW breather to deliver equal gas to each nose cone and prevent unwanted animals awakening - Active gas scavengers - Sliding-out imaging bed motorized on X/Y-axis, detachable and made for up to 5 mice and 3 rats

## — ABSOLUTE TIME SAVER

Intuitive user interface - One click to get the image - Auto-exposure and automatic illumination control - User-friendly ROI definition - 3D visualization - Automatic image overlay - Adjustable stage

## — ABSOLUTE QUALITY

Very robust design for a long durability - Made of aluminium and stainless steel (no plastic) - Elegant, modern and compact design to adapt to your work environment - Easy to clean



# PRECISION & FLEXIBILITY

LET'S TAKE SMALL ANIMAL IMAGING TO THE NEXT LEVEL

The NEWTON FT-900 is the first deeply cooled CCD imager dedicated to both fluorescence and bioluminescence multispectral imaging as it allows for *in vivo* applications in the visible, near and short-wave infrared spectrum (VIS/ NIR/ NIR-II). Smart and ultra sensitive, it provides non-ionizing and non-invasive visualization of biological processes in real time. This cutting-edge optical imaging system facilitates the penetration of NIR-II light deeper into small animal tissue with less autofluorescence resulting in clearer and sharper images. It also enables expert researchers to get detailed information on the vascular blood flow of a mouse and allows imaging of tumors and single cells. The NEWTON FT-900 represents the perfect mix between high detection and deep analysis capabilities. Let's discover its proprietary optics, specifically developed for imaging in the second biological window (1000-1600nm).

## NIR-II FLUORESCENCE

Benefit from a 10 times greater photon penetration depth than visible fluorescence thanks to our strong intensified filtered LED. Witness live and ultra-low noise imaging of biological events with our cooled 1" CCD SWIR InGaAs camera that boasts 20 micrometer pixels and a video mode, ensuring unrivaled sensitivity and reduced image acquisition times. Visualize multiple reporters simultaneously with our overlay signal feature and choose from 10 excitation channels in the visible RGB and NIR spectrum (440 - 980nm) and 14 high efficiency emission filters, (1000 - 1600nm) all designed with our dual magnetron filter technology that guarantees high signal to noise ratio. The tight LED spectrum is constrained with a narrow excitation filter, to avoid autofluorescence.



## BIOLUMINESCENCE & 3D OPTICAL TOMOGRAPHY

Take advantage of the NEWTON FT-900 ultra-high sensitivity provided by its camera and lens (f/0.70). Perform bioluminescence tomography (BLT) to non-invasively visualize and monitor biological processes in small animals, such as mice. Reconstruct the bioluminescent signal into volume through our innovative 3D tomography imaging module which repositions it into the 3D representation of the mouse. Analyze deeper tissue structures with the help of our Mouse Atlas which allows the overlay of the mouse organs to the tomography image. Identify the size and location of the signal much more accurately than with 2D optical imaging. Our CCD and 3D cameras enable ultimate linearity for precise protein quantification over the full dynamic range.

## VIS FLUORESCENCE

Handle a variety of simultaneous signals for all your applications in the visible light spectrum (440-850nm). Get the benefits of multispectral imaging without worrying about crosstalk. Our unique technology ensures spectral unmixing by using mathematical dye separation so that each channel contains only the signal from one dye. Transport and image even immunocompromised animals by adding our XT 500 isolation chamber (sealed with HEPA-SPF filters) to the system.

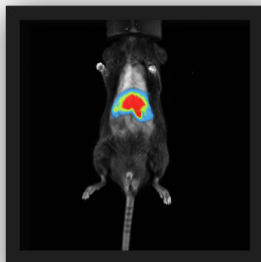
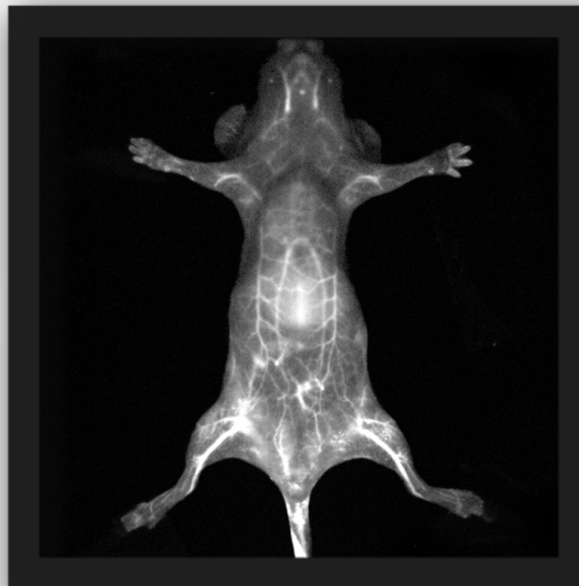
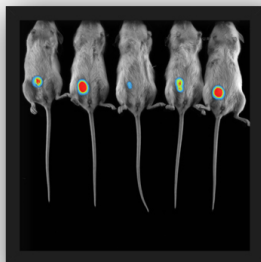
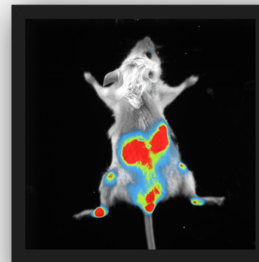
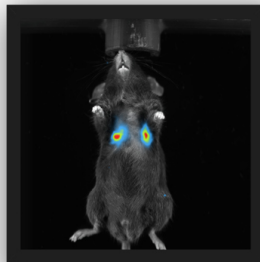
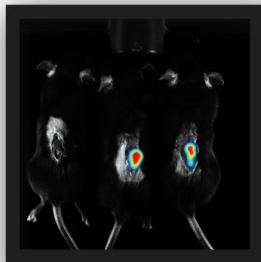


## METABOLIC STUDIES

Study real time metabolism such as drug dispersion, heart rate and breathing thanks to the high frame rate for SWIR II

## ALL THE APPLICATIONS YOU NEED IN ONE SYSTEM

Tumor and infection monitoring - Cell migration tracking - Molecules to nanoparticles targeting - Vasculature and microcirculation visualization - Biodistribution and pharmacokinetics studies



## LUCIFERASE EXPRESSION

Use various bioluminescent reporters like firefly luciferase and many fluorescent molecular reagents

## BLOOD FLOW MAPS

With our NEWTON FT-900, obtain deep tissue information such as detailed vascular blood flow maps of mice

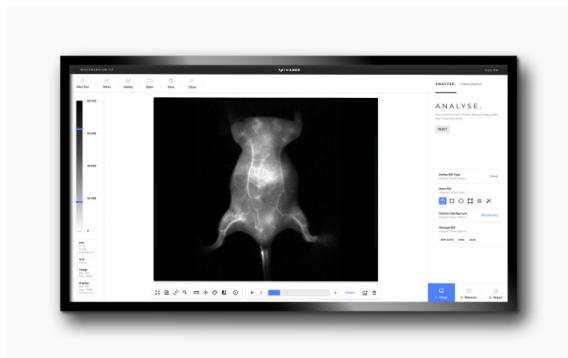
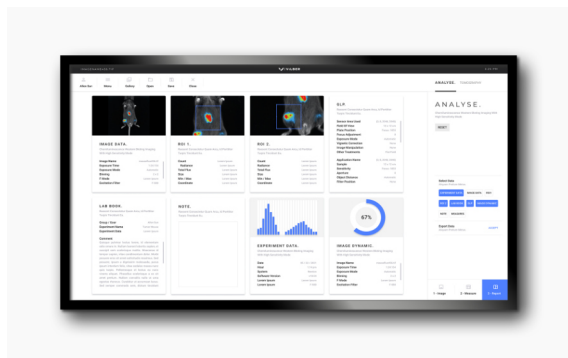
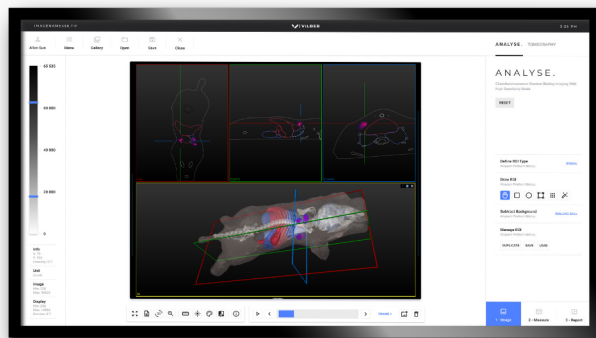
## WIDE COMPATIBILITY

Rodents (up to 5 mice and 3 rats, guinea pigs, small rabbits) - Zebra fishes - Organs and tissue sections *ex-vivo* - *In vitro* samples (in microplates etc...)

# DEEP LEARNING POWER

GET YOUR ANSWERS IN ONE CLICK

Make publication-ready scientific images with simplicity! Our system's protocol driven image acquisition is as quick as it is intuitive: adjust your exposure, save, print or quantify. Various modes are available (automatic, manual, serial image acquisition). For both bioluminescence and fluorescence imaging, the photographic image and the signal image are acquired consecutively and then overlaid. Define the regions of interest (ROI), monitor tumor development right from the onset and compare collected data. Enjoy our fast and smart KUANT software to get your answers. Based on the most recent developments in deep learning, it improves significantly the accuracy and resolution of your images by correcting motion blur or uneven lighting. Identify specific structures or abnormalities within the animal's body as our algorithms also perform image segmentation, which involves separating the image into distinct regions based on their properties.



# SPECIFICATIONS

## — PERFORMANCE

Ultra-high sensitivity  
Single cell imaging

## — ILLUMINATION

10 excitation channels:  
440, 480, 540, 580, 640  
680, 740, 780, 880, 980nm

## — EMISSION FILTERS

14 high efficiency filters  
Peak emission: 500nm, 550nm,  
600nm, 650nm, 700nm,  
750nm, 800nm, 850nm,  
1100nm, 1200nm, 1300nm,  
1400nm, 1500nm, 1600nm  
Custom design filter available

## — FLUORESCENCE

VIS camera 400-900nm  
InGaAs SWIR camera  
900-1700nm  
From 20 frames per second up to many  
minutes exposure  
Monochrome or color imaging mode

## — OPTICS

Proprietary lens - f/0.7 Aperture  
Field of view  
• Max: 20x20cm  
• Min: 6x6cm

## — EASE OF USE

Animal breather and heated animal bed  
For up to 5 mice  
Stage motorized XYZ

[INFO@VILBER.COM](mailto:INFO@VILBER.COM)

CONTACT US FOR A DEMO



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