# Triumph® II

TriFoil Imaging

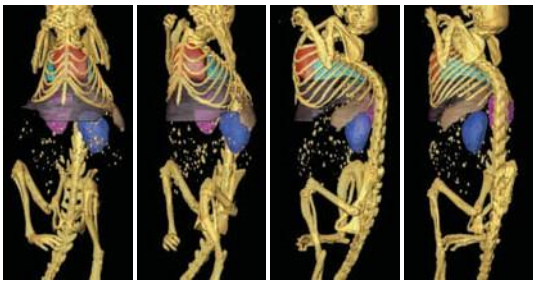
*Pre-Clinical Tri-Modality*
*(PET/SPECT/CT) Imaging System*

*excellence through innovation*

*The **Triumph II** pre-clinical PET/SPECT/CT system is a fully integrated molecular imaging system designed to provide solutions for biomedical research and drug discovery.*

*It combines functional imaging provided by SPECT and PET with high-resolution anatomical imaging provided by CT, creating a high-throughput imaging system designed specifically with animal researchers in mind.*

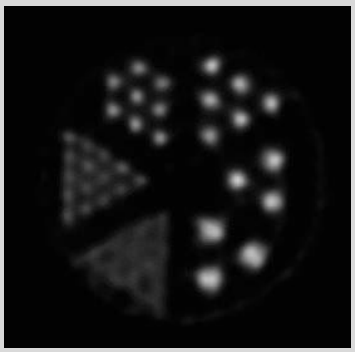
*Triumph II helps researchers easily and effectively monitor disease processes and understand the effects of new drug treatments.*

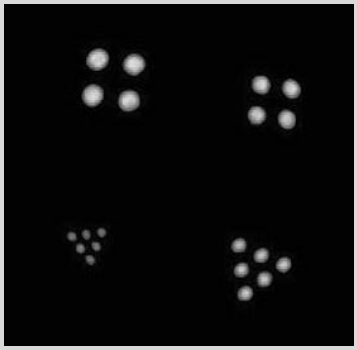


*CT image of a mouse with bone, heart, lungs, spleen, liver, and kidneys segmented.*

# Triumph platform

- *Integrated design to accommodate any combination of PET, SPECT and CT*
- *Integrated physiological monitoring (respiratory, ECG and temperature), heated beds, and anesthesia nose cones*
- *Fully shielded from CT X-rays*
- *VIVID® Volumetric Image Visualization Identification and Display workstation is included for co-registered images and quantification of data*
- *Field upgradeable*

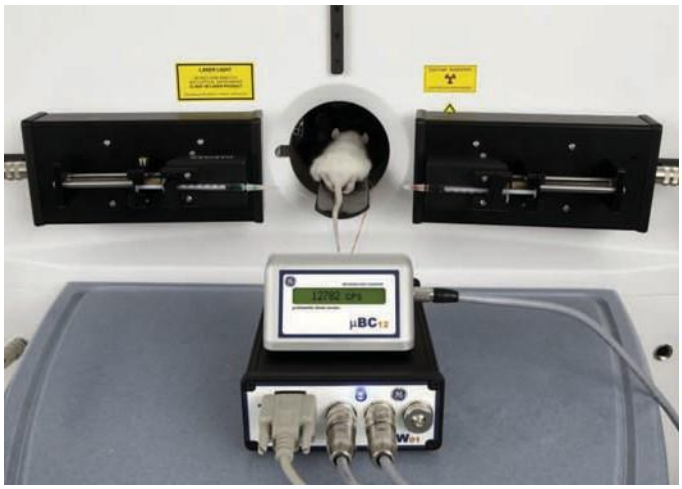




*PET (top) and SPECT (bottom) rod phantom images, units in mm.*

*Presented by Prof. Arano of Chiba University, Japan*

*Triumph gantry assembly.*



*Optional accessories such as Automated Microvolumetric Blood Counter and Injection Pumps integrate to the Triumph gantry.*

*Left: eXplore Console enables effcient management of study information.*

*Right: X-SPECT sub-system provides high quality pre-clinical SPECT imaging using solid-state Cadmium Zinc Telluride (CZT) detector technology.*

## LabPET: APD based PET sub-system

*The LabPET sub-system provides researchers with the ability to visualize and quantify biological processes in small animals with a reconstructed resolution better than 1.0 µl. LabPET's core technology features Avalanche PhotoDiode (APD) detectors and digital signal processing, which enable high performance imaging.*

- *LYSO and LGSO scintillators individually coupled to APD detectors*
- *Advanced detector design and parallel signal processing digital electronics to achieve high count rate performance*
- *Digital detector technology delivers high spatial resolution better than 1 mm and high recovery coefficient*
- *Options of 3 different axial fields of view (3.7 cm, 7.5 cm,and 11.2 cm)*

## X-SPECT: CZT based SPECT sub-system

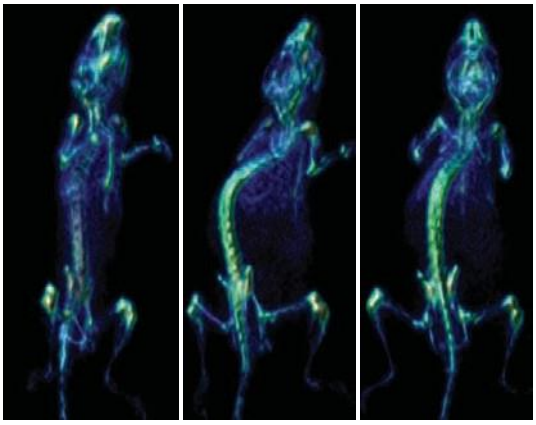
*The X-SPECT sub-system provides high quality pre-clinical SPECT imaging using solid-state Cadmium Zinc Telluride (CZT) detector technology.*

- *One, two, or four high resolution CZT digital gamma camera configurations available*
- *Interchangeable single and multiple pinhole collimators deliver high sensitivity up to 6,500 cps/MBq and high resolution down to 0.5 mm*
- *High energy resolution (4.5% at 140 keV) reduces radiation scatter and enables simultaneous multi-isotope imaging*
- *Wide gamma-ray energy range of 25-250 keV to cover a variety of isotopes for imaging*

## X-O: Fast, low dose CT sub-system

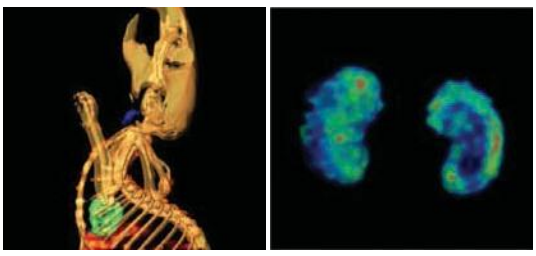
*The X-O, CT sub-system, is equipped with an advanced CMOS digital X-ray detector technology and has the flexibility to perform a wide range of scanning, including whole body imaging in less than a minute. The CT Zoom feature facilitates optimization of the field of view and resolution.*

- *Sub-minute whole body imaging*
- *Large field of view, 9.7 cm x 9.3 cm*
- *Low dose with good soft tissue contrast, less than 2 cGy per scan for whole body imaging*
- *Continuous rotation scan mode allows use of rapidly clearing contrast agents*



*PET image of a mouse injected with 18F sodium fluoride.*

*Courtesy of Prof. Roger Lecomte, PhD, Sherbrooke Molecular Imaging Center*



*Left: Simultaneous triple isotope imaging: 99mTc-MDP (orange), 201Tl (green), and 123I (blue) with segmented bone from CT.*

*Courtesy of Timothy Doyle, Ph.D., Small Animal Imaging Facility, Stanford University*

*Right: Mouse Kidneys*

*Courtesy of Dr. Rex Moats, Children's Hospital, Los Angeles, CA*

## Accelerate research with longitudinal studies

*Imaging live animals in longitudinal studies streamlines the evaluation of potential drug candidates by providing statistically more significant and accurate biological data - helping you maximize your research investments.*

## Characterize animal models better

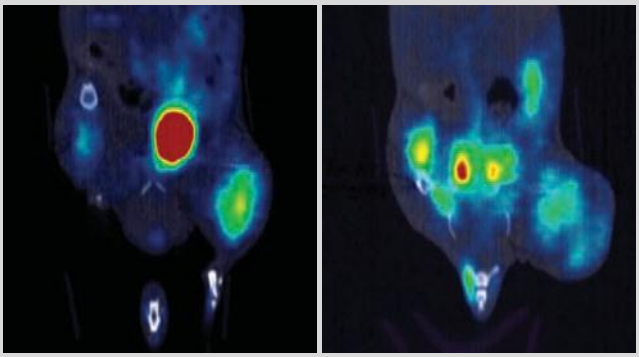
*Optimizing and validating animal models can be a challenging prerequisite for biomedical research. Pre-clinical imaging tools like CT, PET and SPECT help by evaluating the progression of disease models using clinically translatable imaging biomarkers. Tracking single cohorts over time can provide better statistical analysis. Comparing cohorts at the same time points allows for better evaluation of inter-subject variability.*

## Detect treatment effects faster

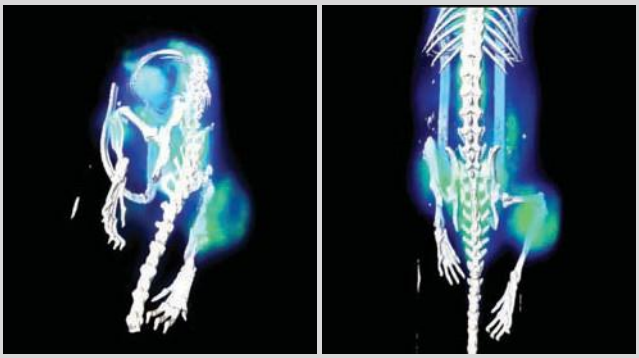
*Molecular imaging permits researchers to confirm that candidate therapeutics and diagnostics are working at the earliest possible time point. Researchers can evaluate new cancer therapeutics, for example, and detect the smallest changes in tumor metabolism, perfusion, angiogenesis and signs of apoptosis. Now, they can track all of these mechanisms longitudinally and in a dose-dependent manner.*

## Characterize toxicology faster

*Understanding organ specific toxicity of novel therapeutics early is critical to keeping research on track. CT imaging has been shown to help accelerate developmental toxicity studies. FDG PET can detect changes in glucose metabolism, SPECT has been used to evaluate renal function.*



*FDG PET-CT images of a subcutaneous xenograft tumor mouse with colon carcinoma. Coronal slice overlay of CT with PET image at two different slices (left), showing the high uptake in the xenograft tumor.*



*Images on the right show the 3D volume rendering of PET images along with skeletal surface rendered CT images.*

*Images courtesy of Prof. S. Staelens, Prof. S. Vandenberghe, and Dr. W. Ceelen Ghent University - IBBT Ghent, Belgium*

## Regulatory and compliance

*This product is a CE compliant device that satisfies requirements regarding Electro-Magnetic Compatibility (EMC), Electro-Magnetic Interference (EMI) pursuant to IEC 61010.*

*This product is also designed to comply with applicable standards under the Radiation Control for Health and Safety Act of 1968.*

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