



# MOLECUBES

## MODULAR BENCHTOP IMAGING



# γ-CUBE

The **γ-CUBE** is our high-sensitivity, high-resolution SPECT imager allowing whole-body mouse and rat imaging.

Patented lofthole technology and laser sintered collimators combined with high-resolution detectors result in a high-end true benchtop imager. Dedicated general purpose mouse and rat collimators allow you to perform almost any study in an user-friendly away.

In-house developed image reconstruction software guarantees fast reconstruction and excellent image quality. All common SPECT-labeled therapeutic and diagnostic imaging tracers can be imaged, also a dedicated high-energy isotope collimator allows for all theranostics applications.

Intuitive and wireless acquisition software combined with our multimodal small animal bed allow for easy and modular multimodal imaging along with the X-CUBE (CT) and β-CUBE (PET).

### Dimensional

Footprint	540 x 540 x 540 mm
Weight	78 kg
Operating room temperature	18-22°C
Operating humidity	70% (at 24°, non condensing)
Maximum heat generation	1500 BTU/hr
Power requirements	230 V AC, 50 Hz. 60 Hz
Standby modus	yes

### Field of View

Detector Bore	104 mm
Axial	12 mm (GP mouse collimator)/24 mm (GP rat collimator)
Transaxial	32 mm (GP mouse collimator)/60 mm (GP rat colimator)
Axial (travel) range	240mm
Maximal weight animals	450g

### Image Quality

Image resolution	GP mouse: 486 μm - GP rat: 939 μm
Peak Sensitivity	GP mouse: 0,12%GP - rat: 0,05%
Scan mode	static, dynamic
Shortest full bodymouse scan time	20 min Tc99m
Uniformity	GPmouse: integral uni 18,3% - differential uni 4,4%
	GPrat: integral uni 29,9% - differential uni 14,8%

### Detectors

Type	SIPM
# detectors	7
Number of pixels	monolithic
Pixelsize	equivalent if pixelated 0,25 mm
Bit-depth	1 event 5 Bytes
Read out speed	USB 3.0
Deadtime	500 nsec
Scintillator crystal material	NaI
Detactable Energy Range	20-365 keV
Energy Resolution	9,9% (Tc-99m)
# energy windows possible	3 (e.g. In111, Tc99m and I-131)

### Geometry

Magnification	fixed
Pinhole Technology	multi-lofthole
Available Collimators	GP rat, GP mouse High Energy
Rotation range	52° (360°/7)

### Reconstruction/Data

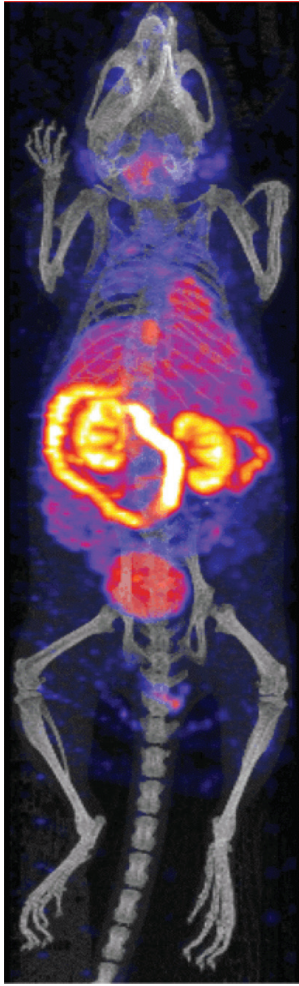
Type	3D MLEM (GPU based)
List-mode	yes
DICOM export	yes
Post-processing software	PMOD, Invicro
Attenuation Correction	CT based
Cardiac gating + method	yes, signal based
Respiratory gating + method	yes, signal based
High precision positioning	yes (10 μm precision)

### Dynamic Scanning

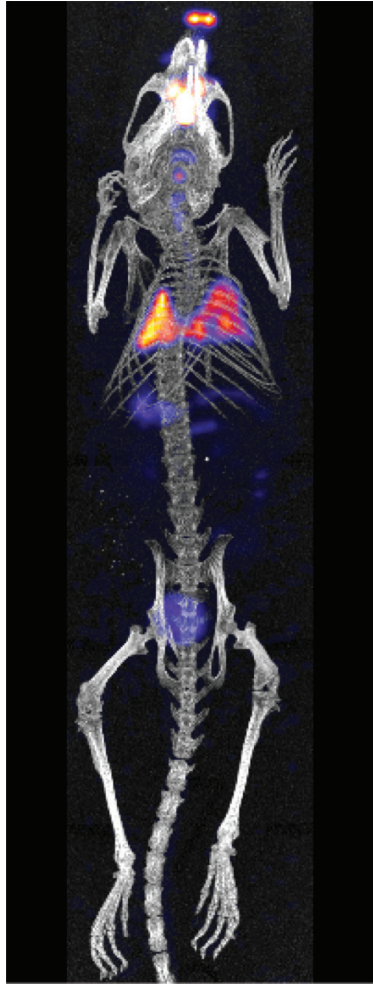
Dynamic scanning possible	yes
Smallest possible time in between time bins	5 ms
Kinetic modelling	yes
Planar scanning possible	yes

### Animal bed

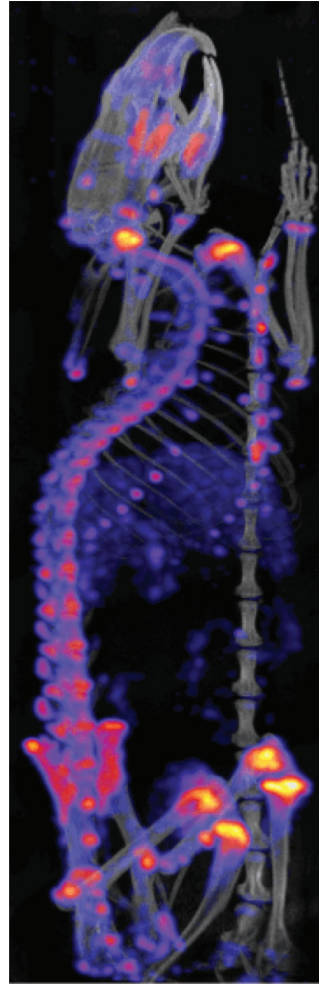
Kinetic modelling	opening at the back of the bed for catheter => injection on bed is possible
Compatibility with MR	yes, special bed model
Speed	10 mm/s



<sup>99m</sup>Tc MIBI mouse



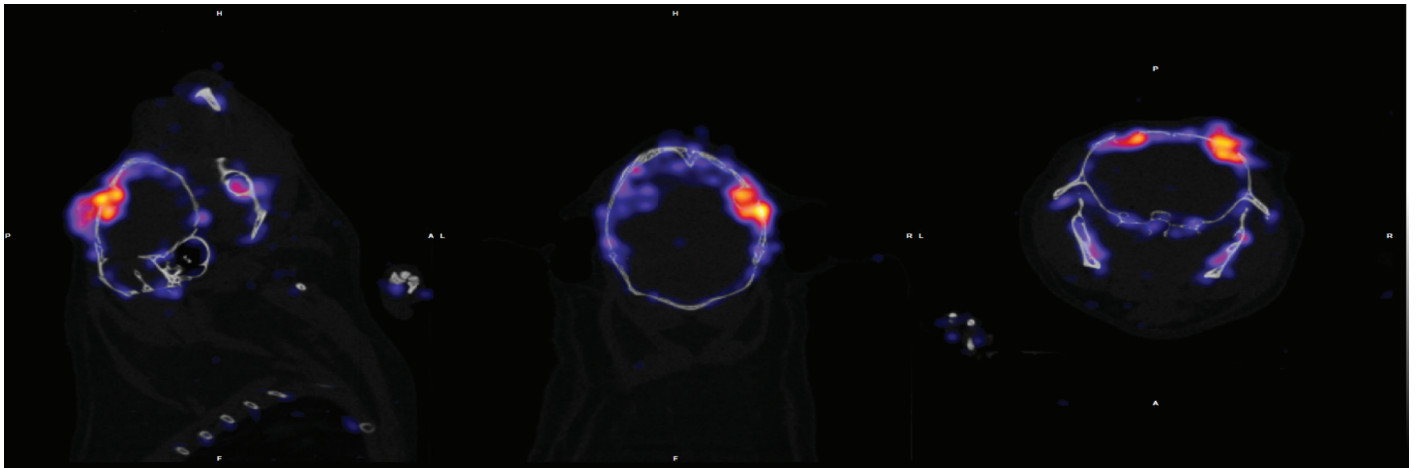
<sup>99m</sup>Tc MDP mouse, intratracheal administration



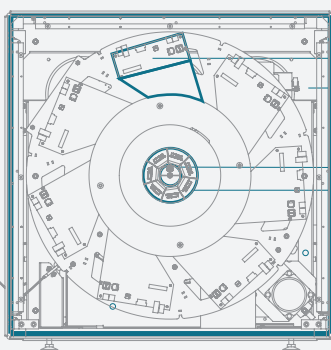
<sup>99m</sup>Tc HDP rat



<sup>99m</sup>Tc DMSA rat



<sup>99m</sup>Tc uptake in therapeutic skull lesion (left), control (middle) and combined control/therapy (right)



- LED progress bars
- High-resolution scintillation detectors
- Onboard image reconstruction
- Onboard physiologic monitoring
- High-precision sintered lofthole collimators



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