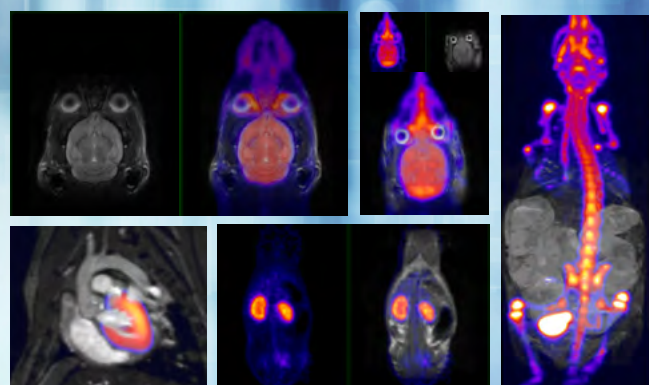
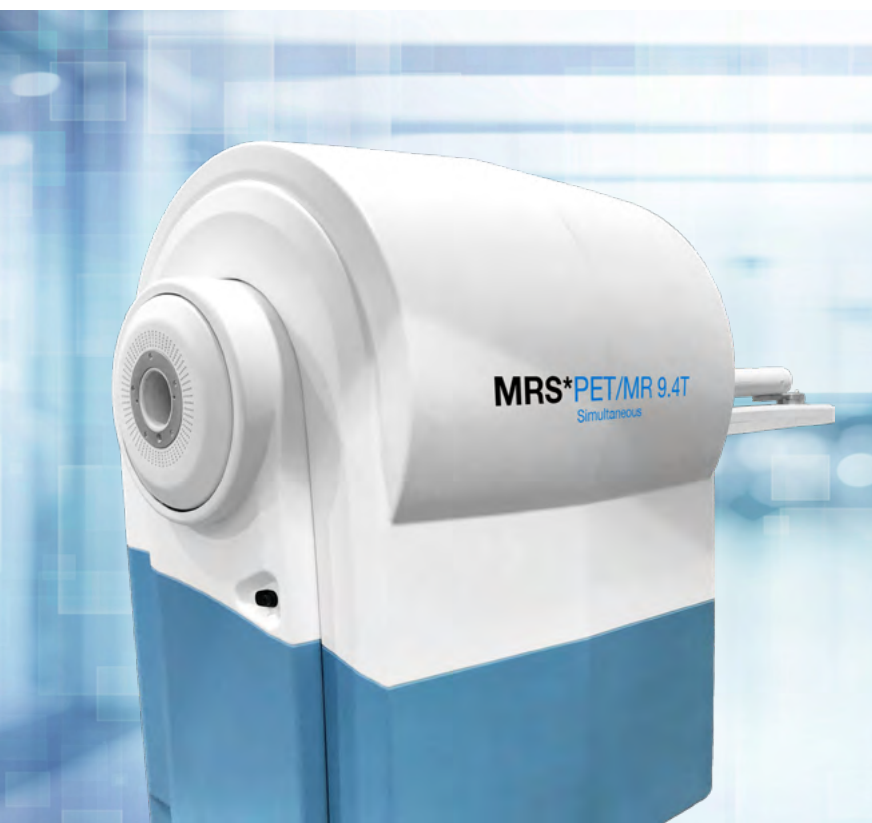




MRS*PET/MR

MR SOLUTIONS

Preclinical PET/MR scanner
Dry magnet technology



MRS*PET/MR 9.4T

MRS*PET/MR 7.0T

MRS*PET/MR 4.7T

MRS*PET/MR 3.0T

Imaging Innovations bringing real benefit to researchers

Magnetic Resonance and Molecular Imaging

MRS*PET/MR

Preclinical PET/MR scanner with dry magnet technology

MRS*PET/MR 9.4T - 7.0T - 4.7T - 3.0T

MRS*PET INSERT

Simultaneous PET/MR acquisition



MRS*PET CLIP-ON

Sequential PET/MR acquisition



Simultaneous or sequential PET/MR imaging ?

Mainly defined by the interest of the researchers for multi-parametric information for a study on the same subject and at the same time.

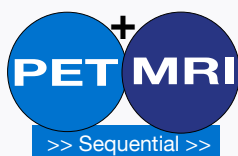
MR SOLUTIONS has developed two PET scanners compatible with its cryogen-free preclinical MR up to 9.4T, **MRS*DRYMAG**:

The **MRS*PET INSERT** is designed for simultaneous acquisition together with the MR modality. It permits multi-parametric information on the same animal for a particular study. For instance during a PET acquisition of 30 minutes, several MR scans (T2, T1, DWI etc) can be performed as an MR acquisition is usually shorter. All MR data acquired during the PET scan could then be merged automatically with the PET data once the acquisition is finished.

Simultaneous PET/MR acquisition also has the advantage to reduce the anaesthesia duration and can provide essential information of the blood flow as an example in cardiac and brain studies.

The **MRS*PET CLIP-ON** is designed for sequential acquisition with the MR modality but also with MR Solutions' CT: It permits single-parametric information as the PET and the MR modalities are back to back, in-line on the same axis. The animal is automatically transferred from one modality to the other with a motorised bed.

Sequential PET/MR imaging can cover most of the applications, but researchers with a main focus in oncology will probably select the sequential imaging. The MR with its high soft tissue contrast will have a superior detection, assessment and characterisation of tumours over a CT.



MRS*PET INSERT

MR Solutions has developed two versions of the MRS*PET INSERT:

- **MRS*PET-I 80** for ≥ 24 cm bore size MR up to 15 cm axial FOV, for rodents and marmosets for simultaneous PET/MR imaging.
- **MRS*PET-I 40** for 17 cm bore size MR up to 10 cm axial FOV, mouse and rat head for simultaneous PET/MR imaging.

PET insert can be removed in less than 5 minutes from the dry magnet and be operated as a stand alone PET device using a benchtop holder. Removing the MRS*PET INSERT allows to scan bigger animals, for instance 3 kg animals for the biggest bore MRS*DRYMAG magnet.

PET in the MR ≥ 24 cm

MRS*DRYMAG 24 cm bore + MRS*PET-I 80



Mice, rats, marmosets
whole body PET/MRI

PET out of the MR ≥ 24 cm

MRS*DRYMAG 24 cm bore



Up to 3 kg animal
whole body MRI

PET in the MR 17 cm

MRS*DRYMAG 17 cm bore + MRS*PET-I 40



Mice whole body
and rat head PET/MRI

PET out of the MR 17 cm

MRS*DRYMAG 17 cm bore



Mice, rats, marmosets
whole body MRI

MRS*PET CLIP-ON

MR Solutions has developed two versions of the MRS*PET CLIP-ON

- **MRS*PET-CO 80** for 17 cm bore size MR up to 15 cm axial FOV, for rodents and marmosets for sequential PET/MR imaging.
- **MRS*PET-CO 120** for ≥ 24 cm bore size MR up to 15 cm axial FOV, up to 3 Kg animals for sequential PET/MR imaging.

PET CLIP-ON is plugged on the front of the MR in the same axis for sequential PET/MR imaging. This configuration allows to keep the same bore size through the two modalities. Moreover, the PET CLIP-ON can easily be dissociated from the MR and plugged on the CT.

PET/MR 17 cm

MRS*DRYMAG 17 cm + MRS*PET-CO 80



Mice, rats, marmosets
whole body PET/MRI
and MRI

PET/MR ≥ 24 cm

MRS*DRYMAG 24 cm + MRS*PET-CO 120



Up to 3 kg animal
whole body PET/MRI
and MRI



MRS*PET/MR

The ultimate cryogen-free PET/MR: no liquid helium, no nitrogen

The best PET & MR technologies combined in one system

MRS*DRYMAG

The Dry Magnet technology

The **MRS*DRYMAG** technology does not require liquid helium or liquid nitrogen for the cooling, hence the term dry magnet.

The safest and true cryogen-free technology

In case of quench, as there is no helium gas or liquid helium in the magnet, nothing will escape from the magnet. The pressure of the imaging room will remain the same, avoiding the setup of specific emergency exit doors.

No major site preparation, no quench valve or pipes required, no faraday cage required

MRS*PET/MR does not need any specific room requirements such as quench pipes, quench valve or a liquid helium reservoir. There are no requirements for ceiling height beyond standard room construction.

MRS*DRYMAG PET/MR can be installed almost anywhere in rooms as small as 8m² and on the highest floor of a building. A **MRS*PET/MR** 3T weighs 350 kg and a 7T 500 kg.



Installation in BSL Labs
1, 2, 3, 4 and SPF

Low maintenance cost for
robust superconducting
magnets

Upgradable magnet

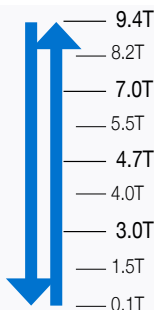
MRS*PET/MR is upgradable. For instance a 3T PET/MR can be upgraded to a 7T PET/MR on site at any time.

Variable field technology

Optionally the **MRS*DRYMAG** can be ramped down and ramped up to any field strengths upon users choice.

For instance from 7.0T to 3T for clinical and preclinical translational imaging studies, to 1T for contrast agent development, to 0.5T for ex-vivo studies.

The system can move from one field to the other in minutes.



A large choice of coils for PET/MRI



- Transmit/receive birdcage coils
- Surface coils
- Phased array coils
- Multinuclear coils: ²³Na, ¹⁵O, ¹⁹F, ³¹P, ¹³C
- Specific customised coils.

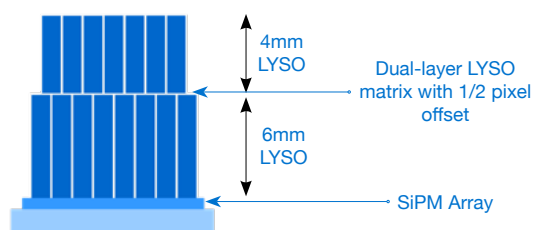
MRS*PET

The SiPM technology

The **MRS*PET** for small animal imaging uses the latest silicon photomultiplier (SiPM) technology. The detector assembly (crystal/SiPM) allows true DOI (depth of interaction) with two pixelated layers of scintillator crystal with different matrices. This design enables the **MR SOLUTIONS** PET module to reach under 0.8mm resolution.

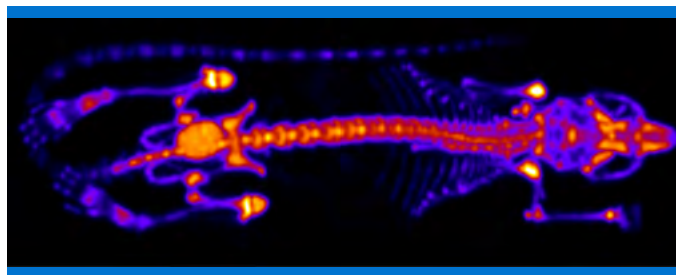
True DOI, Depth of interaction

All the PET systems from **MR SOLUTIONS** are built up with true depth of interaction hardware allowing a uniform high resolution across the entire field of view. All systems have dual-layer LYSO matrix with 1/2 pixel offset between the top and bottom layers.



Continuous PET detectors

MRS*PET system is designed with continuous detectors all across its axis. It doesn't have several "rings" attached together, therefore with the continuous detector technology, there is no loss of detection as it is the case on other systems.



MRS*PET models

MRS*PET CLIP-ON

Sequential imaging PET/MR & PET/CT

MRS*PET-CO 80: PET Clip-On for MR and CT, up to 15 cm axial FOV, rodents and marmoset
MRS*PET-CO 120: PET Clip-On for MR and CT, 15 cm axial FOV, up to 3 kg animals
MRS*PET-220: PET scanner for CT and large bore MR, up to 12 kg animals

MRS*PET INSERT

Simultaneous imaging PET/MR

MRS*PET-I 80:
PET insert for ≥24 cm bore size MR up to 15 cm axial FOV, for rodents and marmoset
MRS*PET-I 40:
PET Insert for 17 cm bore size MR up to 10 cm axial FOV, mouse and rat head



With **MRS*DRYMAG** technology
MR Solutions users are not the hostages of the helium shortage and its escalating price year after year.
MR Solutions preclinical MRI systems significantly reduce environmental impact.

MRS*PET/MR INSERT

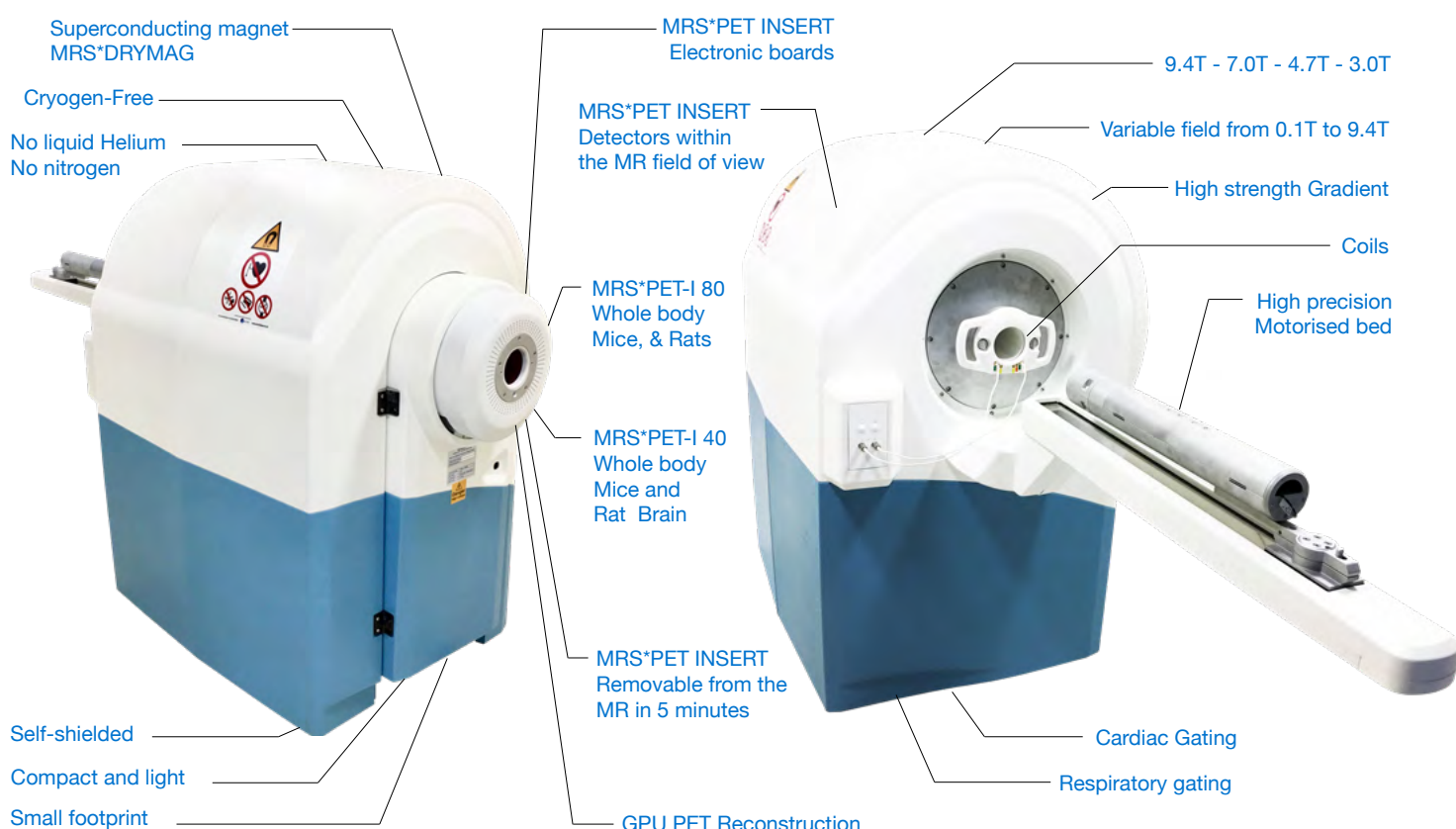
Preclinical PET/MR scanner for simultaneous imaging



MRS*PET/MR INSERT 9.4T - 7.0T - 4.7T - 3.0T

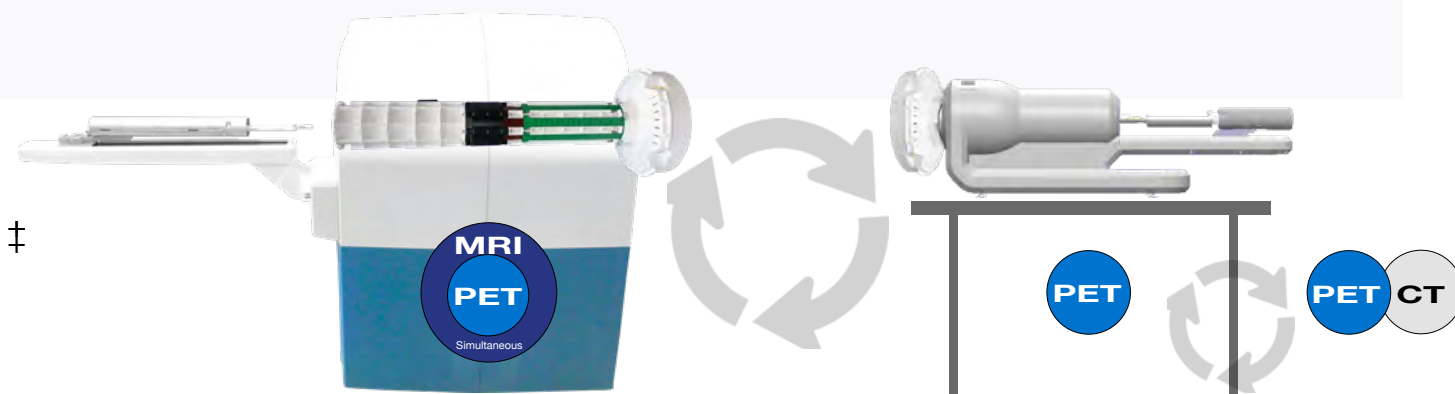
Simultaneous PET/MRI for whole body mice and rats up to 600 g

The MRS*PET INSERT is designed for simultaneous imaging in combination with all MRS*DRYMAG, cryogen-free MRI up to 9.4T. Two models are available: The MRS*PET-I 80 is for large bore MRI systems for whole body mice and rats imaging and the MRS*PET-I 40 is for smaller bore MRI systems for whole body mice and rat brain imaging. The axial field of view can go up to 15 cm with continuous PET detectors.



MRS*PET INSERT : Stand alone PET acquisition

The PET INSERT can be removed from the PET/MR to give access to the full bore size of the MR. This allows to scan bigger animals up to 3 kg using the MR only. The PET INSERT can be operated as a stand-alone device using a dedicated benchtop holder built in with a motorised bed.



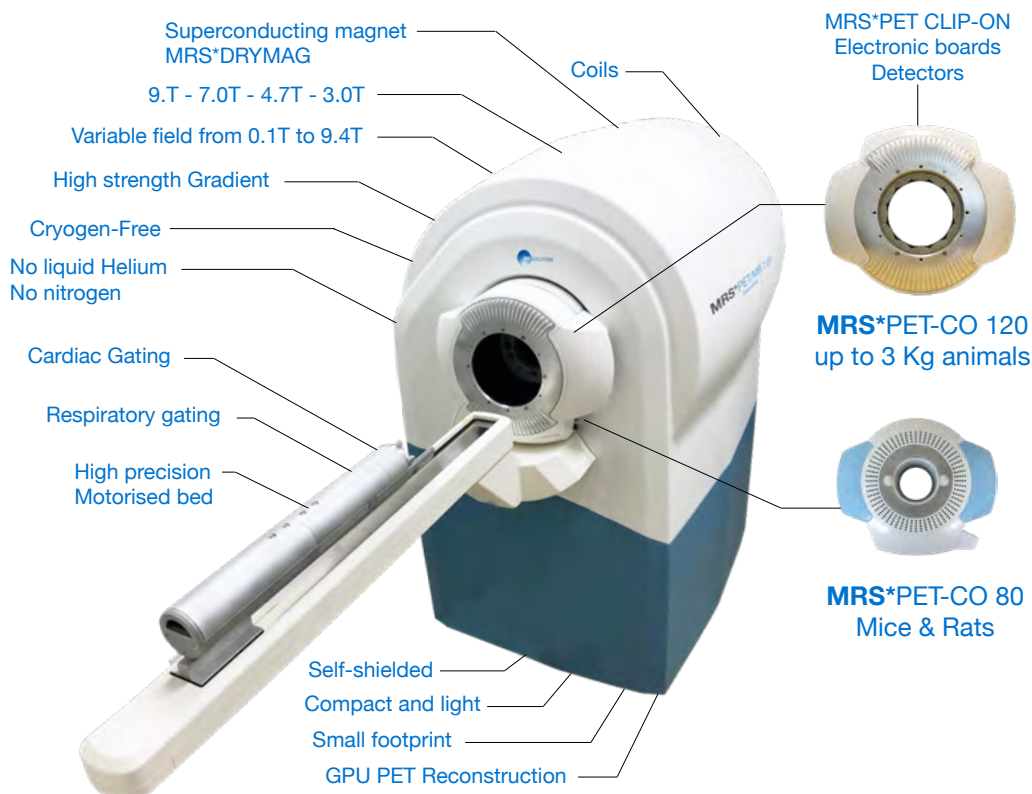
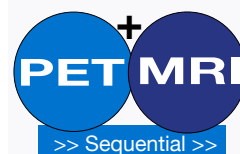
MRS*PET/MR CLIP-ON

Preclinical PET/MR scanner for sequential imaging

MRS*PET/MR CLIP-ON 9.4T - 7.0T - 4.7T - 3.0T

Sequential PET/MRI for animals up to 3 kg

The MRS*PET CLIP-ON is designed for sequential imaging in combination with all MRS*DRYMAG, cryogen-free MR up to 9.4T and all MRS*CT, computed tomography scanners. Two models are available: The MRS*PET-CO 120 series is for large bore MR and CT systems for 3 kg animal imaging and the MRS*PET-CO 80 for smaller bore systems for rodents imaging. The axial field of view can go up to 15 cm with continuous PET detectors.



Optimise workflow and investment

With MR Solutions CLIP-ON technology, no need to duplicate the modalities. Only one PET scanner, one CT scanner and one MR system permits researchers to perform automatic sequential multimodality imaging of PET/MR, PET/CT, stand-alone PET and stand-alone CT.

"Plug and Scan"



MRS*PET CLIP-ON : the path to Preclinical PET/CT imaging

One PET Clip-ON for PET/CT and PET/MR

Benchtop MRS*PET/CT to MRS*PET/MR sequential imaging - From rodents to marmosets



MRS*PET/CT 80 & MRS*PET/CT 120 to MRS*PET/MR sequential imaging - Up to 3KG animals



PET/MR imaging
from mice to 3 kg animals imaging

PET/MR imaging
from mice to 3 kg animal imaging

MRS*PET/MR 9.4T

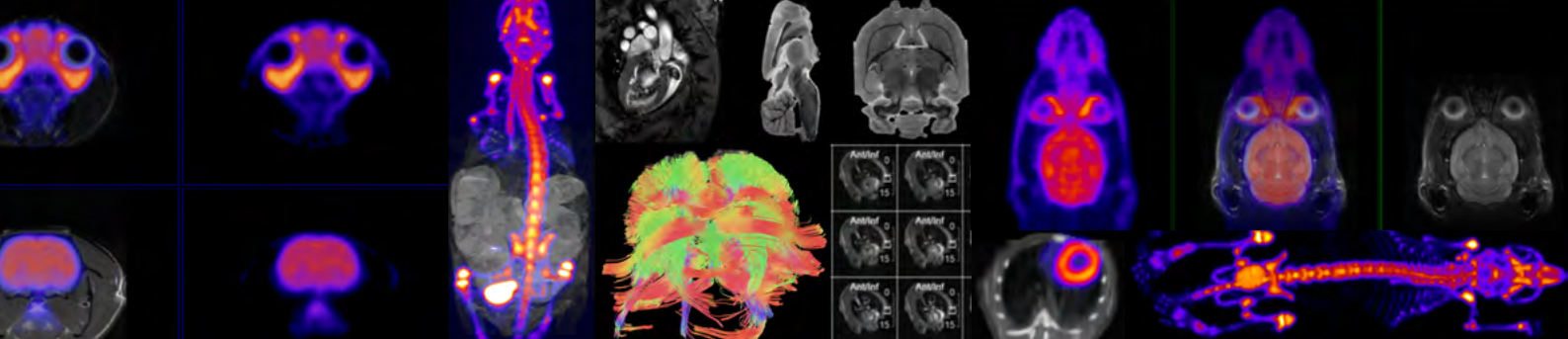
Dry magnet technology: Cryogen-free
Simultaneous and Sequential Imaging

MRS*PET/MR 7.0T

Dry magnet technology: Cryogen-free
Simultaneous and Sequential Imaging

Main Specifications				
Model reference	MRS*PET/MR 9417		MRS*PET/MR 9426	
Animal type with MRS*PET CLIP-ON	Whole body mice, rats & Marmosets		Whole body mice, rats, marmosets, 3kg animals	
Animal type with MRS*PET INSERT	Whole body mice & rat head		Whole body mice & rats	
without MRS*PET INSERT	Whole body mice, rats & Marmosets		Whole body rodents, marmosets, 3kg animals	
MRS*DRYMAG : MR component, dry magnet specifications				
FOV (mm)	70 mm x 100 mm axially		135 mm DSV	
Homogeneity	over 35 mm DSV +/- 0.05ppm		±1 ppm over 98 mm DSV	
5 gauss line	105 cm rad. x120 cm axially		140 cm radially x 170cm axially	
Magnet Technology / Cooling	Dry Magnet technology MRS*DRYMAG Cryogen free (no liquid helium and no nitrogen)			
Variable fields	Yes, for Powerscan version: up to 3 additional strengths			
Integral RF shield	Yes, self shielded			
Gradient strength	600 mT/m all directions		420 mT/m all directions	
Gradient upgrade	1000 mT/m for Powerscan		600 mT/m for Powerscan	
Coils	Volume, surface, Phased array, multinuclear			
MRS*PET : PET specifications for CLIP-ON and INSERT				
PET-INSERT (I) PET-CLIP-ON (CO)	MRS* PET-I 40	MRS* PET-CO 80	MRS* PET-I 80	MRS* PET-CO 120
Clear bore size (mm)	60	112	112	160
Transaxial. FOV (mm)	40	80	80	120
Axial FOV (mm)	50.2 & 102.48	50.2, 102.48 & 151.2		
Extended aFOV	300 mm with Motorised bed			
Crystals thickness	Double Layers of LYSO: LYSO/LYSO: 10mm			
PMT	Silicon PM			
Depth of Interaction	Yes- true DOI from hardware configuration			
Spatial Resolution with 3D OSEM (mm)	0.7			
Sensitivity	up to 12% depending of the configuration			
Dimensions and weight with animal table				
DRYMAG (mm)	1600 (h) x 2600(l) x 1100(w)		1525 (h) x 2545 (l) x 989 (w)	
Total Weight	700 kg		<1000kg	

Main Specifications				
Model reference	MRS*PET/MR 7017	MRS*PET/MR 7024		
Animal type with MRS*PET CLIP-ON	Whole body mice, rats & Marmosets	Whole body rodents, 3kg animals		
Animal type with MRS*PET INSERT	Whole body mice & rat head	Whole body mice & rats		
without MRS*PET INSERT	Whole body mice, rats & Marmosets	Whole body rodents, 3kg animals		
MRS*DRYMAG : MR component, dry magnet specifications				
FOV (mm)	70 mm x 100 mm axially	135 mm DSV		
Homogeneity	over 35 mm DSV +/- 0.05ppm	±1 ppm over 98 mm DSV		
5 gauss line	105 cm rad. x120 cm axially	140 cm radially x 170cm axially		
Magnet Technology / Cooling	Dry Magnet technology MRS*DRYMAG Cryogen free (no liquid helium and no nitrogen)			
Variable fields	Yes, for Powerscan version: up to 3 additional strengths			
Integral RF shield	Yes, self shielded			
Gradient strength	600 mT/m all directions	420 mT/m all directions		
Gradient upgrade	1000 mT/m for Powerscan	600 mT/m for Powerscan		
Coils	Volume, surface, Phased array, multinuclear			
MRS*PET : PET specifications for CLIP-ON and INSERT				
PET-INSERT (I) PET-CLIP-ON (CO)	MRS* PET-I 40	MRS* PET-CO 80	MRS* PET-I 80	MRS* PET-CO 120
Clear bore size (mm)	60	112	112	160
Transaxial. FOV (mm)	40	80	80	120
Axial FOV (mm)	50.2 & 102.48	50.2, 102.48 & 151.2		
Extended aFOV	300 mm with Motorised bed			
Crystals thickness	Double Layers of LYSO: LYSO/LYSO: 10mm			
PMT	Silicon PM			
Depth of Interaction	Yes- true DOI from hardware configuration			
Spatial Resolution with 3D OSEM (mm)	0.7			
Sensitivity	up to 12% depending of the configuration			
Dimensions and weight with animal table				
DRYMAG (mm)	1525 x 2545 x 989		1525 x 2545 x 989	
Total Weight	<500 kg		<600 kg	



PET/MR imaging
from mice to 3 kg animals imaging

MRS*PET/MR 4.7T

Dry magnet technology: Cryogen-free
Simultaneous and Sequential Imaging

Main Specifications				
Model reference	MRS*PET/MR 4717	MRS*PET/MR 4724		
Animal type with MRS*PET CLIP-ON	Whole body mice, rats & Marmosets	Whole body rodents, 3kg animals		
Animal type with MRS*PET INSERT	Whole body mice & rat head	Whole body mice & rats		
without MRS*PET INSERT	Whole body mice, rats & Marmosets	Whole body rodents, 3kg animals		
MRS*DRYMAG : MR component, dry magnet specifications				
FOV (mm)	70 mm x 100 mm axially	135 mm DSV		
Homogeneity	over 35 mm DSV +/- 0.05ppm	±1 ppm over 98 mm DSV		
5 gauss line	75 cm radially x 90 cm axially	110 cm radially x 140cm axially		
Magnet Technology / Cooling	Dry Magnet technology MRS*DRYMAG Cryogen free (no liquid helium and no nitrogen)			
Variable fields	Yes, for Powerscan version: up to 3 additional strengths			
Integral RF shield	Yes, self shielded			
Gradient strength	600 mT/m all directions	420 mT/m all directions		
Gradient upgrade	1000 mT/m for Powerscan	600 mT/m for Powerscan		
Coils	Volume, surface, Phased array, multinuclear			
MRS*PET : PET specifications for CLIP-ON and INSERT				
PET-INSERT (I) PET-CLIP-ON (CO)	MRS* PET-I 40	MRS* PET-CO 80	MRS* PET-I 80	MRS* PET-CO 120
Clear bore size (mm)	60	112	112	160
Transaxial. FOV (mm)	40	80	80	120
Axial FOV (mm)	50.2 & 102.48	50.2, 102.48 & 151.2		
Extended aFOV	300 mm with Motorised bed			
Crystals thickness	Double Layers of LYSO: LYSO/LYSO: 10mm			
PMT	Silicon PM			
Depth of Interaction	Yes- true DOI from hardware configuration			
Spatial Resolution with 3D OSEM (mm)	0.7			
Sensitivity	up to 12% depending of the configuration			
Dimensions and weight with animal table				
DRYMAG (mm)	1525 x 2545 x 989		1525 x 2545 x 989	
Total Weight	<500 kg		<600 kg	

PET/MR imaging
from rodents to 6 kg animal imaging

MRS*PET/MR 3.0T

Dry magnet technology: Cryogen-free
Simultaneous and Sequential Imaging

Main Specifications				
Model reference	MRS*PET/MR 3017	MRS*PET/MR 3024		
Animal type with MRS*PET CLIP-ON	Whole body mice, rats & Marmosets	Whole body rodents, 3kg animals		
Animal type with MRS*PET INSERT	Whole body mice & rat head	Whole body mice & rats		
without MRS*PET INSERT	Whole body mice, rats & Marmosets	Whole body rodents, 3kg animals		
MRS*DRYMAG : MR component, dry magnet specifications				
FOV (mm)	70 mm x 100 mm axially	135 mm DSV		
Homogeneity	over 35 mm DSV +/- 0.05ppm	±1 ppm over 98 mm DSV		
5 gauss line	65 cm x 80 cm axially	110cm x 140cm axially		
Magnet Technology / Cooling	Dry Magnet technology MRS*DRYMAG Cryogen free (no liquid helium and no nitrogen)			
Variable fields	Yes, for Powerscan version: up to 3 additional strengths			
Integral RF shield	Yes, self shielded			
Gradient strength	600 mT/m all directions	420 mT/m all directions		
Gradient upgrade	1000 mT/m for Powerscan	600 mT/m for Powerscan		
Coils	Volume, surface, Phased array, multinuclear			
MRS*PET : PET specifications for CLIP-ON and INSERT				
PET-INSERT (I) PET-CLIP-ON (CO)	MRS* PET-I 40	MRS* PET-CO 80	MRS* PET-I 80	MRS* PET-CO 120
Clear bore size (mm)	60	112	112	160
Transaxial. FOV (mm)	40	80	80	120
Axial FOV (mm)	50.2 & 102.48	50.2, 102.48 & 151.2		
Extended aFOV	300 mm with Motorised bed			
Crystals thickness	Double Layers of LYSO: LYSO/LYSO: 10mm			
PMT	Silicon PM			
Depth of Interaction	Yes- true DOI from hardware configuration			
Spatial Resolution with 3D OSEM (mm)	0.7			
Sensitivity	up to 12% depending of the configuration			
Dimensions and weight with animal table				
DRYMAG (mm)	1525 x 2545 x 989		1525 x 2545 x 989	
Total Weight	<500 kg		<600 kg	

Applications PET/MRI

Performed with **MRS*PET/MR**

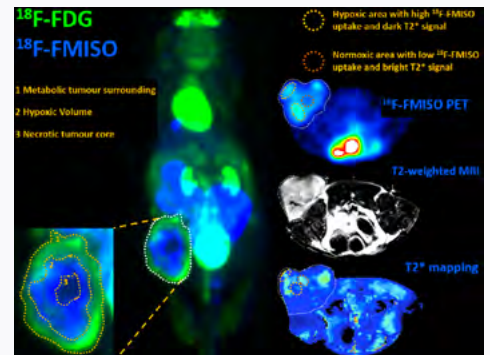
Real case studies from **MRS*PET/MR** users

Oncology

Simultaneous PET/MR imaging of hypoxic and metabolic volumes within CT26 tumour bearing mice

PET-MR images showing the global distribution of ^{18}F -FMISO and ^{18}F -FDG were acquired on the same animal with a 24h interval. ^{18}F -FMISO uptake was acquired 120 min post-injection (10MBq, i.v., 1h acquisition) on day 1 along with a simultaneous T2*-weighted MRI. ^{18}F -FDG uptake was acquired 30 min post-injection (10 MBq, i.v., 30 min acquisition) on day 2. Images were acquired on a balb/c mice (8 weeks old) bearing a CT26 xenograft tumour (left side, white circle). The figure presents the ^{18}F -FMISO PET image (blue) superimposed with ^{18}F -FDG PET image (green). Metabolic (1), hypoxic (2) and necrotic (3) area are highlighted (light yellow). Axial projection of ^{18}F -FMISO PET, T2-weighted MRI and corresponding T2* mapping are presented on the right panel. Hypoxic (light yellow) and Normoxic (Dark yellow) area are highlighted.

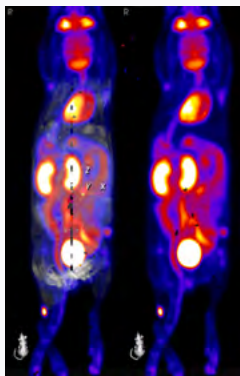
Courtesy of Dr Pierre-Simon BELLAYE, Centre Georges-François Leclerc, Dijon, France.
System: **MRS*PET/MR 7T**



PET/MR Imaging of a flank tumour: human Breast Cancer Cells in a mouse

PET: Isotope ^{18}F , 12MBq, Uptake 14 min, acquisition time 30 min
Reconstruction: OSEM-3D,
Corrections : scatter, decay, random, normalization, dead time
MR: FSE T1W, Respiratory and cardiac gating, Acquisition time: 6m52

Courtesy of Dr Alexandra Oudot, Centre Georges-François Leclerc, Dijon, France.
System: **MRS*PET/MR 7T**

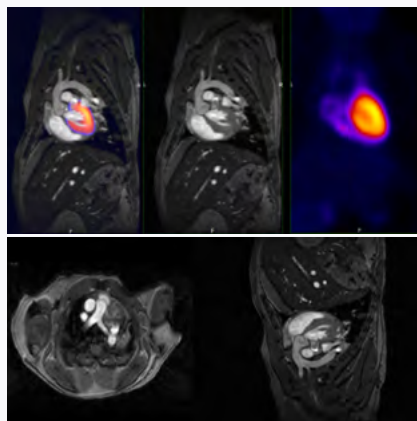


Cardiology

Superparamagnetic nanoflowers: bioresorbable carriers of ultrasmall gold nanoparticles designed for early detection of atherosclerosis by integrated simultaneous PET/MR imaging

CARGOLD PROJECT
ANR-16-CE09-0026-04

Courtesy of Dr Stéphane Roux, UTINAM, Besançon, France.
System: **MRS*PET/MR 7T**

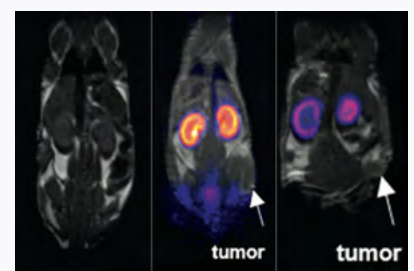


Nanoparticles

Functionalisation of Gadolinium Chelates Silica Nanoparticle through Silane Chemistry for Simultaneous ^{64}Cu PET/MR imaging

MR/PET images and biodistribution results demonstrate the renal clearability of the particle.
PET list mode 30 to 60 min acquisition.
Reconstruction: 3D OSEM, Corrections: scatter, decay, random, normalization, dead time
Two MR scans T1-T2 FSE with respiratory gating, coronal & axial planes

Courtesy of Dr François Lux, Université Claude Bernard, Lyon, France.
System: **MRS*PET/MR 7T**



Applications PET/MRI

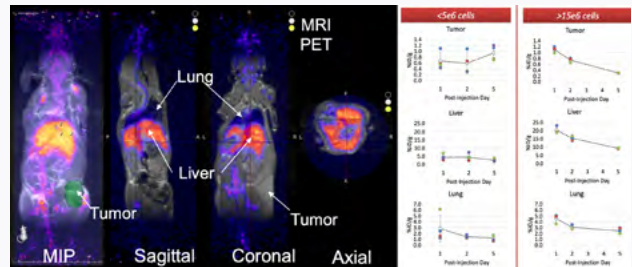
Performed with **MRS*PET/MR**

Cell Therapy

Dose escalation study of ^{89}Zr -labeled CAR-NK-92MI cells

This study contributes to the design of a treatment regimen using adoptive cell therapy. Using lower number of cells show less liver and lung trapping and more cell uptake in the tumor site over 5 days after administration. However, significantly more cells are present in the tumor site within 24 hours after adoptive transfer of a higher cell dose.

Acquisition : Simultaneous PET and MR imaging. Animals were scanned on days 1, 2, and 5 post-injection (PID) of the ^{89}Zr -labeled cells, 2D T1-weighted FSE axial sequence was used and PET acquisition times were 10 minutes on PID 0-2, and 20 min on PID5. PET images were decay corrected to initial injection time on PID0.



Courtesy of Prof. Naomi Sta Maria and Russell E. Jacobs, USC Keck School of Medicine at USC; Zilkha Neurogenetic Institute, Department of Physiology & Neuroscience. System: **MRS*PET/MR 7T**

Anatomy

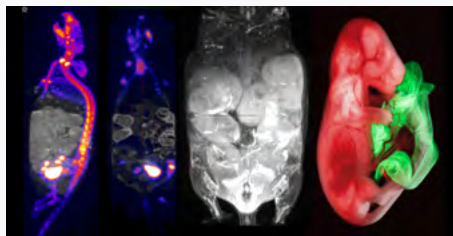
Simultaneous PET/MR imaging of a Pregnant Mouse with 9 embryos

PET: Isotope 18F, 12MBq, Uptake 14 min, acquisition time 30 min, Reconstruction: 3D OSEM, Corrections : scatter, decay, random, normalization, dead time

Three MR scans during the PET acquisition: FSE T2 coronal 14 min, FSET2 axial 13 min and FSET2w 3D with 0.15 mm thickness of 15 min Respiratory and cardiac gating

Courtesy of Prof. Rinat Abramovitch, The Wohl Institute for Translational Medicine, Hadassah, Jerusalem, Israel.

System: **MRS*PET/MR 7T**



Neurology

Dynamic PET imaging on rat brain over 40 minutes with three MR imaging performed simultaneously

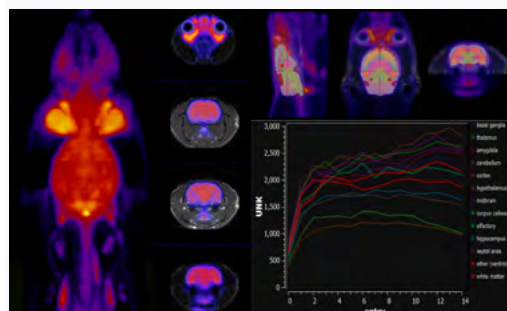
Automatic segmentation of the rat brain giving the FDG uptake for each region over 40 minutes. During the PET acquisition, three MR scans were possible on the same animal.

PET: List mode, Dose: 31 MBq FDG, Uptake: 0' Scan Time: 40'

MR: EPI SE DWI (b=0, 700), FSET1w, FSET2w axial

Courtesy of Dr Alexandre Cochet, Centre Georges-François Leclerc, Dijon, France.

System: **MRS*PET/MR 7T**

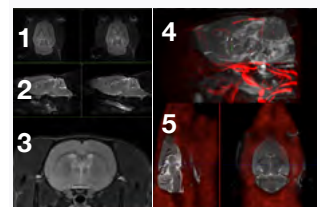


Simultaneous PET/MR Imaging of a rat brain Time of Flight (MRA)

Four MR scans during the PET acquisition: 1) FSET2 coronal, 3) FSET2 sagittal, 3) FSET2 axial, 4) Time of Flight (MRA) Respiratory and cardiac gating 5) PET: Isotope 18F, 12 MBq, acquisition time 30 min,

Courtesy of Prof. Rinat Abramovitch, The Wohl Institute for Translational Medicine, Hadassah, Jerusalem, Israel.

System: **MRS*PET/MR 7T**



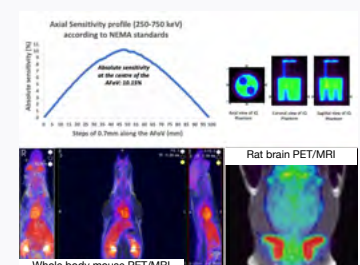
Performance

Performance Evaluation of a PET Insert for Small-Animal PET/MRI at 3 Tesla

Performance according to NEMA standards (NEMA NU 4-2008) The PET insert exhibits excellent spatial resolution and comparable results inside and outside the MR bore, interference from the magnetic field is negligible. The NECR values were similar with and without MR pulsing. Conversely, the PET insert had negligible impact on the MR system as shown by the images and similar values of B0, T1 and T2. The integrated PET/MR whole body and brain images provide excellent anatomical and physiological details.

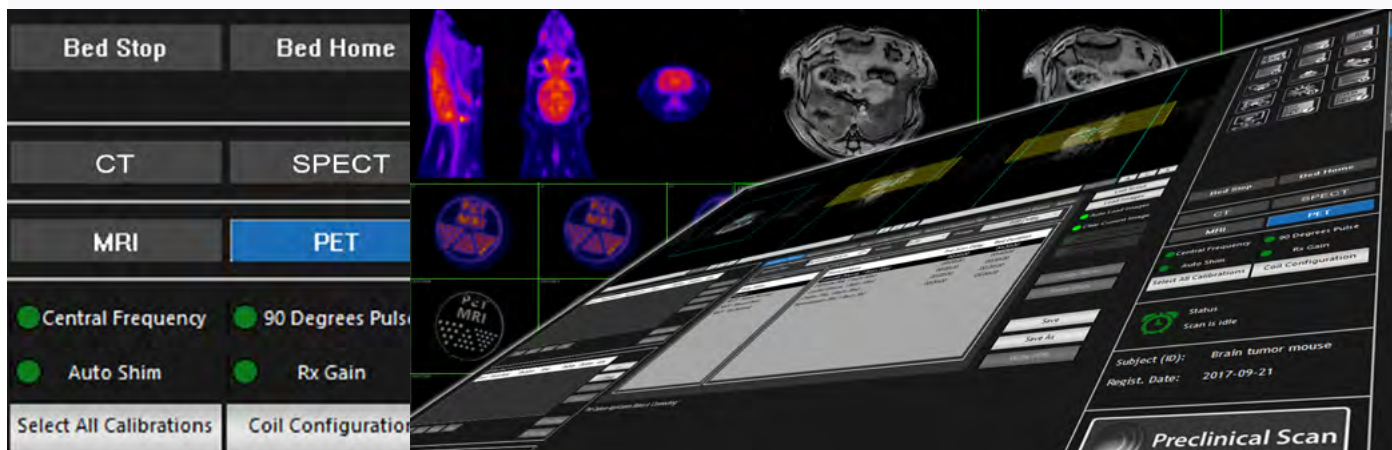
Courtesy of Prof. Steve Meikle and Gaelle Emvalomenos, Brain and Mind Centre, The University of Sydney, Australia.

System: **MRS*PET/MR 3T**



PRECLINICAL SCAN Software

All your imaging modalities controlled through one interface

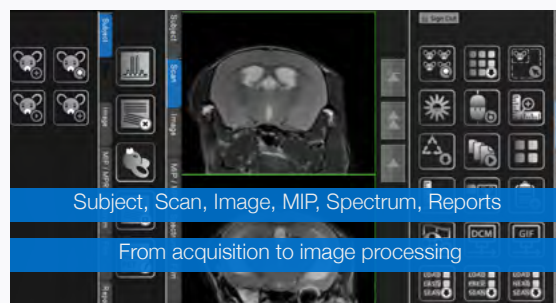


The most advanced multimodality imaging software

Preclinical Scan is the multimodality interface for preclinical imaging. Under one interface users have access to all MR functionalities such as adjusting acquisition parameters, reconstruction parameters, image geometry, but also have access to the PET, SPECT and CT extended functionalities.

There is no need for our users to move from one console to another or even from one software to another as they change imaging modality. Everything is covered within the Preclinical Scan software.

We have designed the graphical user interface to be friendly and easy to set up, even for the new user. For the advanced user, real-time optimisation and advanced functionalities are available. Preclinical Scan software can be configured with different levels of access depending on the experience of designated users.

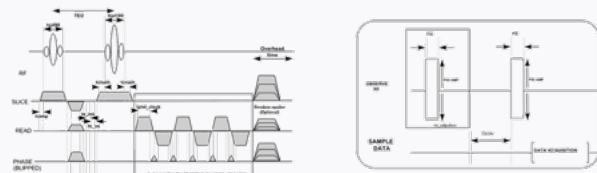


POWERSCAN Software

Pulse Sequence Programming

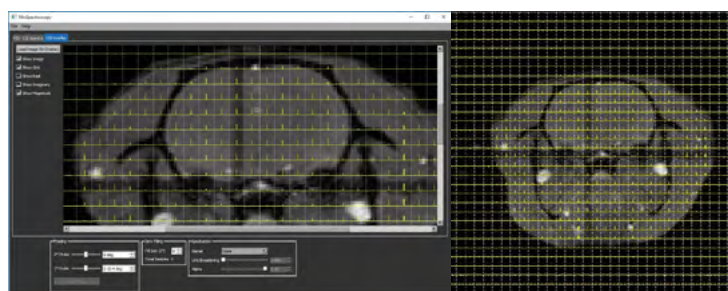
Powerscan allows the MRI physicist full access to all functions of the MRI system. Pulse sequences may be written and/or modified and new reconstruction algorithms incorporated. Full source code to all pulse sequences is supplied.

All sequences developed by MRI physicists can be uploaded to Preclinical Scan Software once validated. MR SOLUTIONS also provides assistance and services for development of new pulse sequences.



- Full control of the system
- Access to individual components such as reconstruction software
- Interface to user programs
- Flexible pulse programming environment with user defined graphical wave shape generation
- Interactive setup mode for sequence parameter optimisation including real-time display of images and/or spectra and time data
- Scripting of own set of modes of acquisition
- Customisable reconstruction processing
- DICOM export
- DICOM worklist
- User customisable text with international language display

Spectroscopy Software



MR Solutions has developed a new software for spectroscopy. This software is provided with all the Powerscan versions of the MRS*DRYMAG and comes with several sequences:

- Single voxel spectroscopy: PRESS, STEAM with CHES and VAPOR water/solvent suppression, LASER.
- Chemical shift imaging: 3D, Multislice CSI, Echo-planar spectroscopic imaging, EPSI Flyback EPSI
- Volume localisation for x-nuclei spectroscopy. Voxel positioning using 1H image when double-tuned coils are available, e.g. 1H/19F

Animal Handling



Anaesthesia

Cardiac Gating

Respiratory Gating

Pathogen-free beds

The Imaging beds on MR SOLUTIONS systems are designed to provide important support functions to the animal during the preparation stage and throughout the imaging process. The beds provide anaesthetic gas to the animal and thermo-regulation of the animal during the scan.



Pathogen-free Imaging Cells with physiological monitoring for mice, rats, marmoset, monkeys and rabbits.

Ensures reproducible imaging conditions for longitudinal studies and provides a pathogen-free environment for immunodeficient animals and infectious disease studies.

ANIMAL IMAGING BEDS MRI COMPATIBLE

Mice

Rats

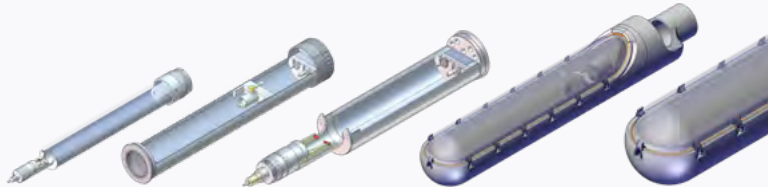
Large animals 3 kg up to 12 kg

Ø38mm

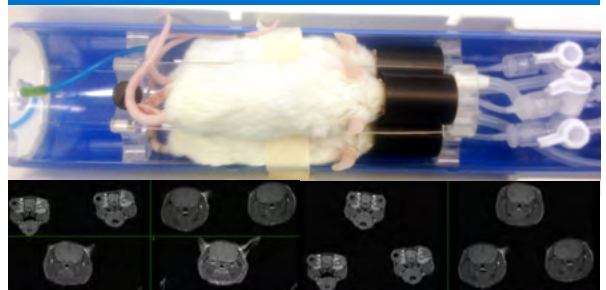
Ø70mm

Ø115mm

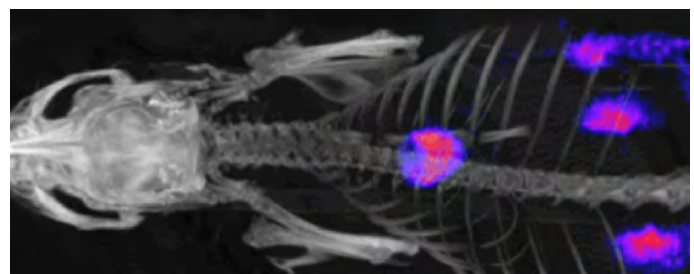
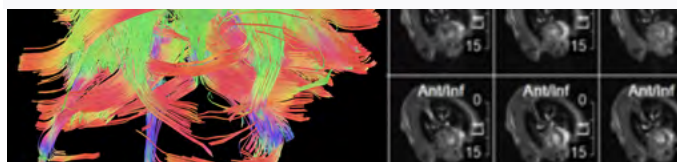
Ø150mm



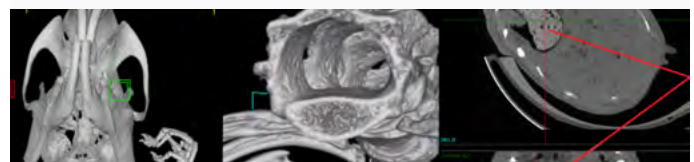
High-throughput scanning
Imaging 3 mice simultaneously



Advanced MRI Sequences
for **MRS*DRYMAG & MRS*PET/MR**



PET/CT imaging
Available with all **MRS*PET CLIP-ON**



MR SOLUTIONS products and services

Molecular Imaging	Resonance Imaging	Molecular & resonance Imaging	Applications
PET PET/CT SPECT SPECT/CT CT	Cryogen-free MR / Dry Magnet Wet magnet refurbishment Magnet development Gradients Coils	PET/MR 9.4T PET/MR 7.0T PET/MR 4.7T PET/MR 3.0T PET INSERT for MRI	Preclinical Clinical Food Quality control Oil industry

For more information on other products please contact our team at information@mrsolutions.com



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