



TIME MEDICAL
SYSTEMS



NOVA

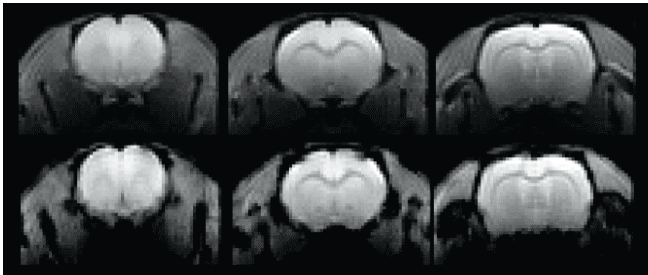
7T NOVA Preclinical MRI System

Complete, Flexible MRI Systems

Take your research forward

Time Medical offers a complete range of pre-clinical MRI systems. Each MRI system includes the console, ultra-high field magnet, gradient coils, RF coils, imaging software, and animal handling system to meet all your needs.

Time Medical is able to produce superior ultra-high field magnetic systems exhibiting very high stability and consistency. The architecture of the Time Medical console allows superior performance on multiple RF channels. Our imaging software supports an extensive library of 2D, 3D, and advanced MRI pulse sequences.

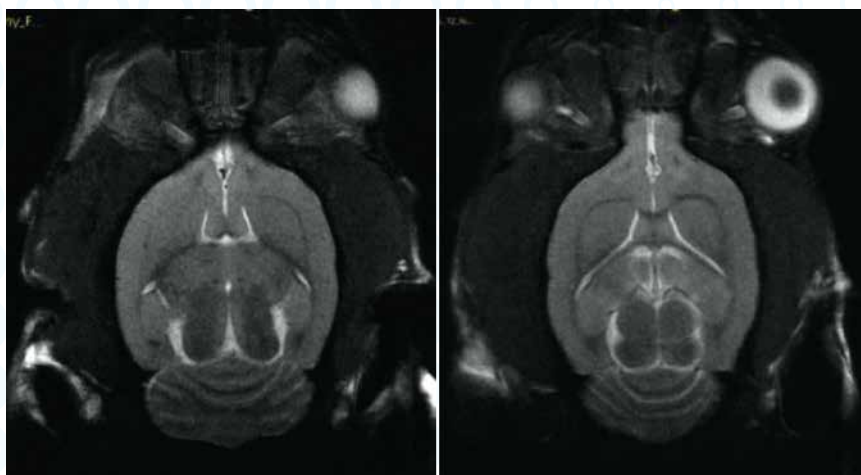


Ultra-High Field MR Systems

4.7 - 9.4T Horizontal Bore Magnet Systems

Available in a range of clear bore sizes from 160 - 400mm and in field strengths from 4.7 - 9.4T, Time Medical's ultra-high field magnets are renowned for their market leading performance with its superior stability. Most systems are available with active shielding technology.

Time Medical MRI System is an adaptable MR imaging platform that can be utilized in many MRI applications as well as in the development of novel research processes.



Gradient Coil

High Duty Cycle Gradient coil

Time Medical's latest generation of high performance gradients has been developed by MR scientists to address the most challenging techniques and applications at the high magnetic fields.

Features include:

- Excellent heat extraction, providing industry-leading high duty cycle performance
- Improved maximum gradient strength with short rise times
- Superior magnetic shielding
- High slew-rates
- Superior gradient linearity
- High-performance room-temperature shims



RF coils

4.7 - 9.4T Horizontal Bore Magnet Systems

A key feature of Time Medical's complete range of RF coils is the high level of RF homogeneity and stability, which is vital to effective imaging, whether in the transmit or receive phase, while maintaining excellent signal-to-noise ratio.

Time Medical have an extensive catalogue of RF coils, which fall into the following categories:

- High Temperature Superconducting (HTS) coil: The coil is cooled with liquid nitrogen (77K) and can be maintained at this operation temperature for more than four hours. The SNR increased by a factor of 2~5 compared with an equivalent copper coil.
- Volume coil: the animal fits fully inside the coil, minimizing the distance between the coil body and the animal body.
- Surface coil: integrated built-in preamplifier with outstanding signal-to-noise ratio, ideal for oncology and MR spectroscopy. Available in transceiver or receive-only modes.
- Phased array coil: ideal for neurological, spinal and cardiac imaging, these coils are available in a variety of anatomical shapes.
- Dual-tuned coil: these coils make possible the acquisition of anatomic (^1H imaging) and metabolic (for instance ^{31}P , ^{19}F , ^{13}C) information from a single MRI or MRS exam. Volume and surface coils are available in dual-tuned mode.

Applications

Pulse sequence library

Time Medical's pulse sequence library is constantly being updated and enhanced. The sequences are fully parameterized and optimized for small rodents in vivo (such as rats, mice) for efficient and reliable imaging.

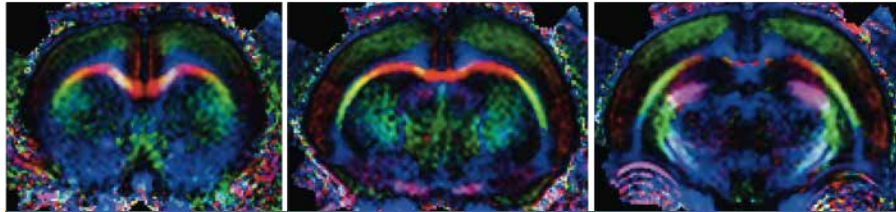
- Standard 2D, 3D Imaging
- Diffusion Weighted / Diffusion Tensor Imaging
- Fast Imaging Sequences
- T1, T2 Relaxometry, T1 & T2 maps
- Angiography
- Perfusion Imaging
- 1D/2D Magnetic Resonance Spectroscopy (PRESS, STEAM, LASER, ISIS, CSI)
- Cardiac MRI: Bright Blood, Black Blood, Tagging, Late Enhancement, CINE
- Perfusion MRI: Arterial Spin Labeling, DCE, DSC
- Multi-nuclear imaging and MR Spectroscopy

Time Medical's wide range of MRI systems are used in a variety of applications. Each system is carefully configured to meet your requirements and demands, while offering the best performance of that system.

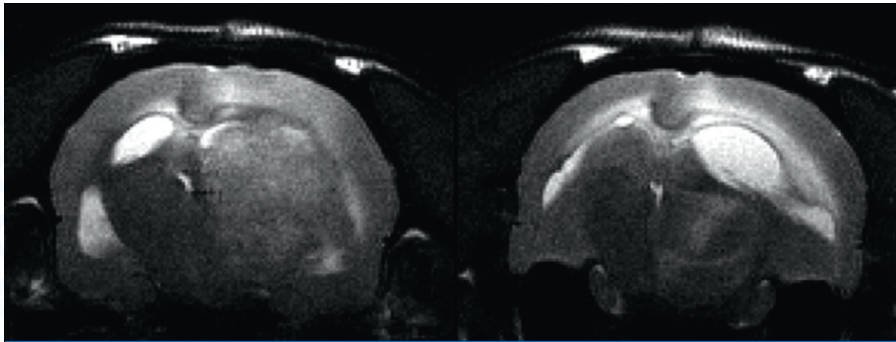
The image acquisition of MRI can be time consuming and labor intensive. Therefore, our systems are designed to improve throughput, increase efficiency and improve accuracy, allowing to collect precision data.

- 2D, 3D Spin-echo Sequence
- 2D Multi-echo Spin echo Sequence
- 2D, 3D Gradient-echo Sequence
- 2D Multi-echo Gradient-echo Sequence
- 2D Fast Spin-echo Sequence
- 2D Spin-echo and Gradient-echo Epi (Echo Planar Imaging); Single Shot Or Multiple Shots
- SSFP
- 3D MPRAGE
- 3D Short Echo Time Sequence
- Inversion Recovery
- Fat Saturation,
- Magnetization Transfer
- Pre-saturation
- Spatial Saturation
- Flow Compensation

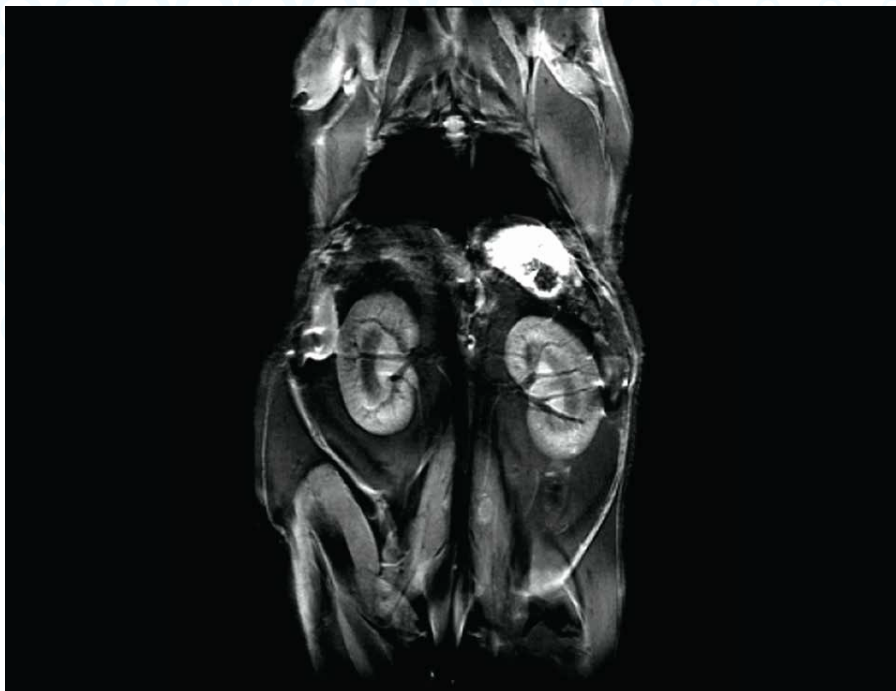
- Anatomical Imaging
- Cardiology
- Oncology
- Neurology
- Diffusion
- Relaxometry
- Perfusion
- Magnetic Resonance Spectroscopy
- Functional MRI



Diffusion Tensor Image (DTI) Of Rat Brain Acquired at 7 Tesla.

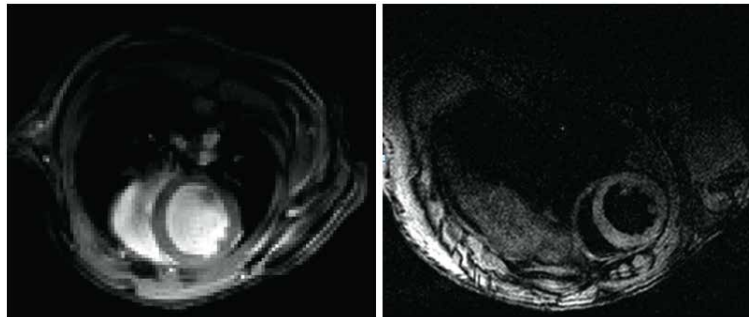


FSE T2W images of Rat brain tumor acquired at 9.4 Tesla.

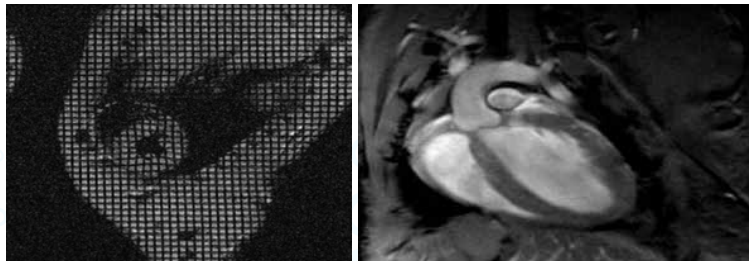


In-vivo body image of mice acquired at 9.4 Tesla (respiratory gating).

Mouse Cardiac Image



Bright-blood (left) and black-blood (right) cardiac image of mice acquired at 7 Tesla.

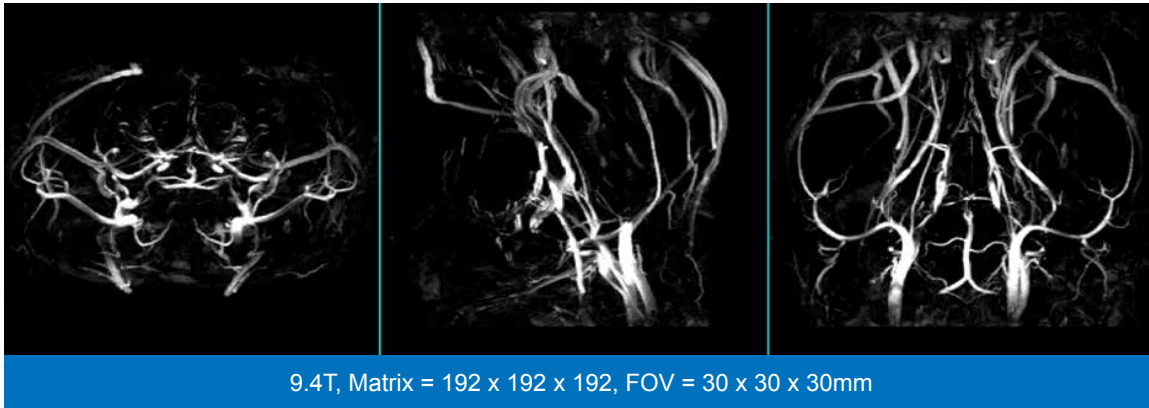


Tagging Cine of Cardiac Image

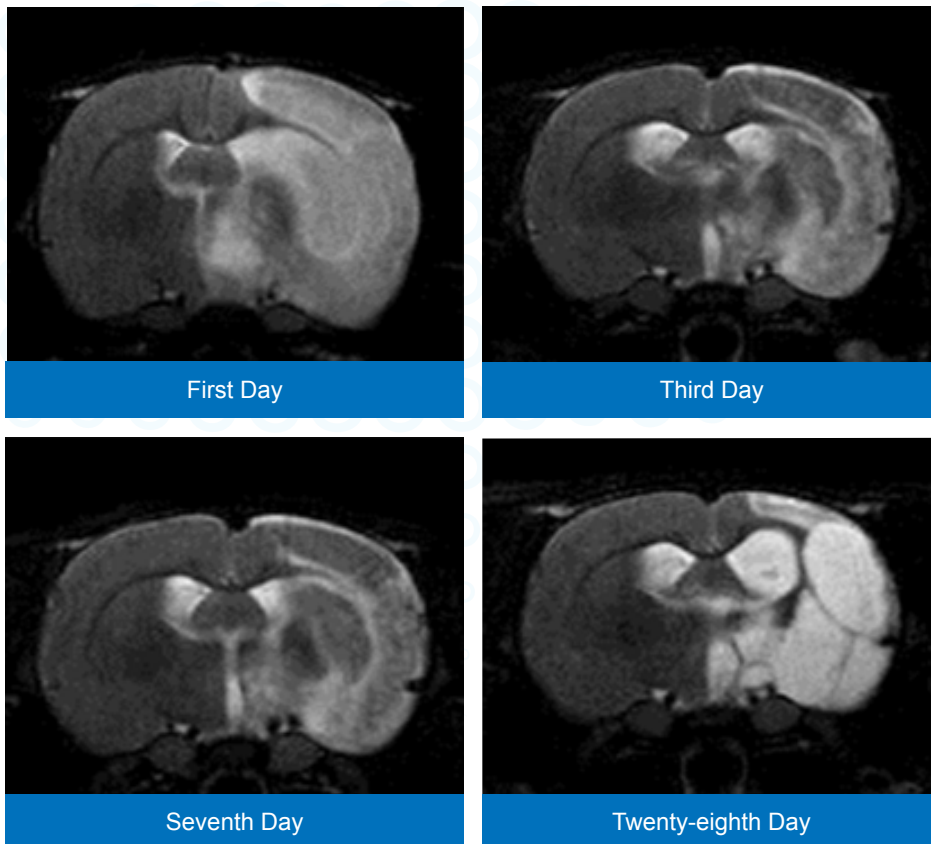


Arterial spin labeling on Rat brain acquired at 7 Tesla

Rat Brain 3D TOF Blood Vessel Image



Rat Brain Tumor Image



At a Glance

We have provided this table so that you can compare our best-selling systems at a glance. Further information can be found inside this brochure, or by contacting us using the information on this page.

Magnet System	7T		9.4T	
Bore size (mm)	210	310	210	310
Length (mm)	1100	1310	1250	1500
Width (mm)	1100	1300	1250	1500
Height (mmm)	1500	1800	1700	2000
Homogeneity (ppm/DSV)				
Fully shimmed	<5 %/200mm	<±5 /15cm	<±2/8cm	<±5 /15cm
Superconducting only	< ±4/8cm	<±20/15cm	< ±4/8cm	<±20/15cm
Fringe Field (5 Gauss line)				
Radial	1.5m	2.2m	1.9m	2.5m
Axial	1.8m	2.2m	2.2m	2.5m

Application of RF coils					
	Surface	Dual-tuned	Volume	Phased Array	HTS
Oncology	✓	✓	✓		✓
Spectroscopy	✓	✓	✓		✓
Neurology	✓	✓	✓	✓	✓
Cardiology			✓	✓	✓
Micro-Imaging			✓		✓
Whole Body Anatomic Imaging			✓	✓	

Main Gradient				
Outer diameter	205mm	305mm	205mm	305mm
Inner diameter	120mm	210mm	120mm	210mm
Max. gradient strength	600mT/m	300mT/m	600mT/m	300mT/m

Site Planning

Your Partner in Planning

Evaluating and deciding on the right MRI system takes time, but it is just the beginning of our relationship with you the customer.

Here at Time Medical, we know that our role doesn't stop when your system is ready. Site planning, and ensuring the correct pre-requisites are in place, are just as important as helping you select which system meets your research needs.

We will be on hand to help you plan and prepare the location for the installation of your new imaging equipment. This includes an additional site survey to identify and eliminate potential issues that could impact operation of the magnet once it is energized.

Service Structure:

- Service performed by dedicated service teams
- Customer hotline to Time Medical
- Remote monitoring of magnet and system electronics
- Rapid response to a customer problem

Implementation Timeline

The implementation of our system is designed to be as efficient as possible, allowing you to continue with your research quickly.

The four key dates of the system implementation timeline are:

- Start project
- Build installation environment
- Delivery and installation of magnet system
- Commission and hand-over to customer

Protecting Your Assets

RF shielding is an available option with all of our systems, giving you peace of mind that your installation will provide a safe working environment for all personnel who come into contact with the equipment.

The RF room is a custom, insulated, turn-key magnet room, inclusive of sound proofing, RF penetration panels, oxygen monitor and internal fit-out.



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