magnetic INSIGHT

Advancing Molecular Imaging to Enable Breakthrough Research

HYPER

LOCALIZED HYPERTHERMIA PLATFORM

IMAGE. QUANTIFY. TARGET. TREAT.

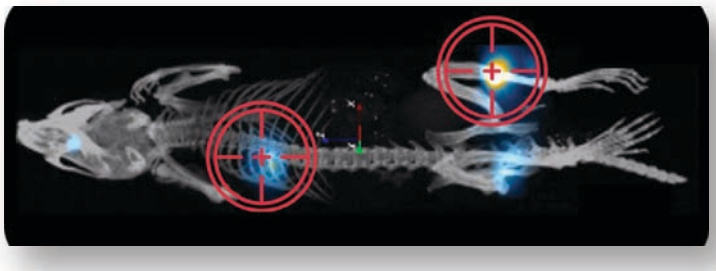
SCAN ME

in vivo Localized Magnetic Theranostic Platform

Focused Hyperthermia

Directed Drug Delivery

Localized Immune Stimulation



Pictured above: Targeted HYPER heating regions are identified in a mouse by image-guidance on a co-registered MPI/CT image. Energy deposition is localized to the nanoparticles in the target area.

HYPER is the first commercially available localized, image-guided magnetic fluid hyperthermia (MFH) system. The HYPER technology produces localized heating of nanoparticles within a sensitive region known as a Field-Free Region (FFR). Similar to Magnetic Particle Imaging (MPI), the FFR can be adjusted in both size and position which allows the user access to both spatial and power control of heating to millimeter-scales along with real-time fiber optic temperature monitoring.

HYPER is a ground-breaking research tool for magnetic thermal ablation, drug release, and cell activation models.

HYPER is available as a stand-alone system that can be integrated with the MOMENTUM™ Magnetic Particle Imaging (MPI) workflow or other tomographic imaging modalities such as optical, PET, MRI and X-ray/CT.

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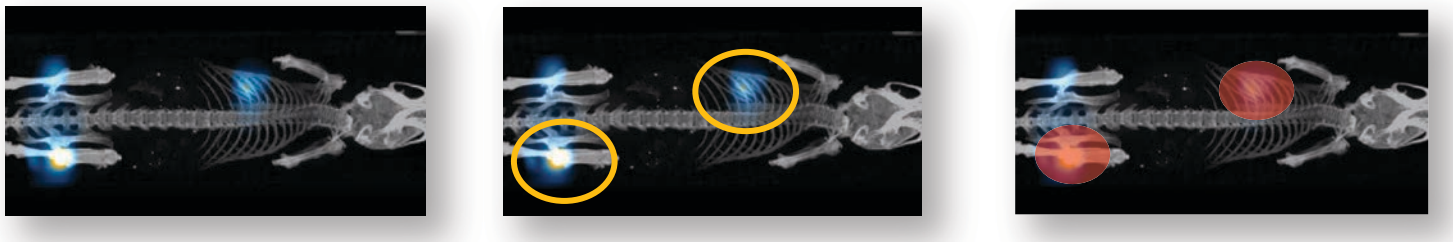
1010 Atlantic Avenue, Suite 100
Alameda, CA 94501, USA

info@magneticinsight.com
www.magneticinsight.com

Workflow: MPI-Guided Localized Hyperthermia

Measure Biodistribution → **Prescribe Treatment** → **Heat Locally**



A sequence of heating regions is first prescribed using image guidance. The image guidance can be from a co-sited MPI system, the included biplanar optical cameras, or imported DICOM data from a separate tomographic imaging modality. Once defined, the RF heating sequence is applied to the sample and only heats nanoparticles located within the chosen region. Throughout treatment, fiber optic sensors can be set up to monitor temperature.

Specifications*

**Specifications and information are subject to change without notice.*

—Bore size: 72 mm
—Available heating area: 7.2 x 7.2 x 12 cm
—Field gradient: Variable selection from 0.5 T/m to 2.0 T/m
—Heating ROI: 1 cm^3 to 43 cm^3 (using Synomag-D 70 nm, micromod.de)
—Radio Frequency: approximately 350 kHz at 0 to 20 mT amplitude
—Temperature monitoring: fiber optic, 2 channels 70
—Weight: 460 kg (1,012 lbs)
—Width of 1.5 m (60 inches)
—Depth of 0.8 m (32 inches)
—Height of 1.8 m (70 inches)
—Single- or dual-phase input at 208-240 V, 30 A

Features

—Mouse transport bed with multimodal fiducials
—Biplanar optical cameras
—Simple co-registration to MPI MOMENTUM images
—Supports co-registration of imported DICOM formats from most imaging modalities
—Real-time fiber optic temperature sensors for monitoring (two channels)
—Software controls for pulsed treatment sequences

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