magnetic INSIGHT

Advancing *In Vivo* Research Through Quantitative, Non-invasive **Magnetic Particle Imaging**

Magnetic Particle Imaging: An Introduction and Applications Presentation

Magnetic Particle Imaging (MPI) is a novel molecular imaging modality, the first new tomographic imaging modality to come along in many decades. MPI is tracer-based, imaging iron-oxide nanoparticles, which are the same or similar to those used for T2/T2* contrast imaging in MRI, except that MPI is more sensitive and more quantitative.

MPI has been used in a range of longitudinal applications from stem cell tracking to drug-delivery monitoring to the quantitation of inflammation to the tracking T cells. MPI imagery can be combined with MRI, CT, or any other tomographic modality. In addition, the same gradient-magnet technology can generate regional hyperthermia zones for the localized magnetic stimulation of nanoparticles, as a direct ablation therapy or as an adjunct to radiation or immune therapies.

Magnetic Particle Imaging can be used for:
- *In vivo* systemic tracking and quantitation of immune, stem, and other cells
- Localized RF hyperthermia for ablation, tumor immunogenesis, and nanoparticle actuation
- Drug delivery monitoring and image-guided theragnostics

Results from immune cell tracking, *in vivo* quantitation, drug-delivery monitoring, inflammation quantitation, and localized hyperthermia will be discussed.

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Teams Invitation Link: JOIN MEETING

Presenter: James Mansfield
James R. Mansfield is a scientist with over 25 years of experience in instrumentation and application development for the Life Sciences. His work has been in in vivo and pathology imaging and analysis, multispectral imaging, in vivo spectroscopy and applied data analysis, directed towards finding novel methods for the diagnosis and monitoring of medical conditions. Jim is an associate editor of two journals, holds 8 patents, and has over 60 peer-reviewed publications.

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