Quantitative MRI Phantoms & Biomimetic Nanoagents

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Program Goals

- Ensure that quantitative measures derived from MRI data are comparable over time, between subjects, between sites and between vendors.
- Develop multifunctional magnetic nanoagents based on biomimetic concepts
- Develop measurement systems to count/manipulate nanoparticles used as viral surrogates
Biomagnetic Imaging Program

Technology

- Develop accurate imaging reference samples
  - MRI system phantom
  - Application specific phantoms for DCE-MRI, Diffusion weighted MRI, Susceptibility phantom
- Develop and maintain chemico/physico database for MRI materials
- Develop agents based on mineralized/functionalized protein cages
- Develop magnetic bioassay sensors
Biomagnetic Imaging Program

Technology Applications

- Develop calibration samples to assure consistency of quantitative imaging in drug trials
- Assist in quantitative Fe mapping for neurological disease studies
- Develop biocompatible nanoagents that provide imaging and additional functionalities
- Develop magnetic nanoparticles for viral surrogates: Real time monitoring of water/air filtration integrity
- Validation of pharmaceutical filtration and purification techniques
- Detect magnetically labeled cells
Commercial Applications

- NIST will assist in the development of phantom specifications and components
- Multifunctional biocompatible agents
Collaboration Opportunities

- Seek collaborators to co-development application specific phantoms (presently working with NINDS and University of Colorado Health Sciences Center)
- Seek collaborators requiring viral surrogates and magnetic nanoagents based on biomimetic structures
Contact Information

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