Duke University
Office of Licensing & Ventures
Technology Opportunity

ACTIVE STAINING FOR IN VIVO MR IMAGING IN THE BRAIN

File #3023

Application

Duke University is seeking a company interested in commercializing a novel and versatile method for active staining to enhance the MR signal in the brain of live animal, i.e., in vivo contrast-enhanced brain imaging.

Advantages

- Substantial increase in spatial resolution
- Increased definition of density

Technology

Researchers at Duke University have developed an active staining method that can be used to provide substantial increase in spatial resolution - more than 5X greater than what has been seen previously. The some method can be used with specific probes and experimental protocols to provide quantitative localized measure of neuronal activity in a live rodent: functional MR imaging of the mouse/rat brain, again, at spatial resolution substantially greater than has been demonstrated previously. Finally, with suitable probes and protocols, the method promises to help define the density of specific molecular targets in the brain in combination with very high-resolution 3D in vivo anatomic definitions.

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Inventors

Dr. G. Allan Johnson, Ph.D., is a Professor of Radiology in the Duke University Diagnostic Physics and Biomedical Engineering Department. He has spent the last thirty one years engaged in building and applying advanced imaging technologies ranging from work on the first CT scanner installed at Duke (1974) to installation of the world's first high filed (1.5 T) clinical MRI system (1983). He continues to serve the medical center in commissioning new imaging technologies.

Dr. Kathryn Nightingale, Ph.D., is an Assistant Professor of Biomedical Engineering at Duke University. Her research interests include: ultrasonic imaging, specifically nonlinear propagation, acoustic streaming and radiation force; the intentional generation of these phenomena for the purpose of tissue characterization; finite element modeling of normal and diseased tissue when exposed to ultrasound, and performing both phantom and clinical experiments investigating these phenomena. Other areas of interest include ultrasonic flow detection and cardiac imaging, the bioeffects of ultrasound, and beamforming.

Dr. Mark Palmeri, MD, Ph.D., is an Assistant Professor of Biomedical Engineering at Duke University. His research interests include ultrasonic imaging, specifically using acoustic radiation force to characterize tissue properties, and finite element analysis of soft tissue response to impulsive radiation force excitation. Other research interests include thermal bioeffects of ultrasound and mechanical testing of soft tissues.

Kristin Frinkley is a graduate student in the Biomedical Engineering Department at Duke University. Her research interests include ultrasonic imaging, specifically acoustic radiation force; high intensity focused ultrasound (HIFU), particularly with diagnostic systems.

Gabriel Howles-Banerji is a graduate student in the Biomedical Engineering Department at Duke University. He works in the lab of Dr. Allan Johnson in the Center for In Vivo Microscopy on a project exploring the uses of manganese as a neural contrast agent for small animal MRI.

Contact

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