Joint Department of

BIOMEDICAL ENGINEERING

UNC CHAPEL HILL | NC STATE UNIVERSITY

Coulter Seminar Series Presents

"Ultrasound-enabled agent transport out and into the brain for diagnosis and treatment of brain disease"

Hong Chen, PhD
Associate Professor
Department of Biomedical Engineering
Department of Radiation Oncology
Washington University in St. Louis

Hong Chen is an Associate Professor of Biomedical Engineering at Washington University in St. Louis. She earned her Ph.D. degree in Bioengineering from the University of Washington in 2011. She was a postdoctoral research scientist in the Department of Biomedical Engineering at Columbia University from 2012 to 2015. Since joining Washington University in St. Louis in 2015, her research has been focused on developing ultrasound-brain interfacing techniques for the diagnosis and treatment of brain diseases and understanding brain functions. Her research has been funded by NIH BRAIN Initiative, NIBIB, NIA, NIMH, NCI, NSF, and DoD. She has co-authored over 60 publications and received numerous awards, including the Frederic Lizzi Early Career Award from the International Society of Therapeutic Ultrasound, the Young Investigator Award at the International Symposium on Focused Ultrasound, and Outstanding Teaching Award.

ABSTRACT

How do agents transport in and out of the brain? Can agent transport in the brain be mechanically manipulated by ultrasound? Ultrasound is the only available technology that can noninvasively deliver external energy through the intact human skull deep into the brain and focus at any depth in the brain with millimeter spatial precision without ionizing radiation. Recent FDA approval of focused ultrasound for thermal ablation treatment of essential tremors marked the beginning of a new era for incisionless neuro-interventions. Building on existing technology advancements, Dr. Chen and her team developed an ultrasound technique to release brain disease-specific DNA, RNA, and protein biomarkers from the brain to the blood, enabling noninvasive molecular diagnosis of brain diseases by blood tests. They also developed an ultrasound technique to enhance the glymphatic transportation of intranasally administered drugs and genes into the brain for treating brain diseases. This talk will present their progress in developing these ultrasound techniques and highlight their recent success in clinical translation.

Friday, February 10th
12:00 Noon

Presented From: 4142 Engineering Building III (NC State)
Videoconferenced to: 321 MacNider Hall (UNC)