University of Maryland Marlene and Stewart Greenebaum Comprehensive Cancer Center
Kevin J. Cullen, MD, Director

NCI Comprehensive Cancer Center
A Cancer Center Designated by the National Cancer Institute

UNIVERSITY of MARYLAND
MARLENE AND STEWART GREENEBAUM
COMPREHENSIVE CANCER CENTER

FOCUSED ULTRASOUND NEUROSURGERY

Graeme F. Woodworth, MD, FACS

Associate Professor, Neurosurgery
Diagnostic Radiology Nuclear Medicine,
Anatomy Neurobiology

Director Of The Brain Tumor Treatment &
Research Center

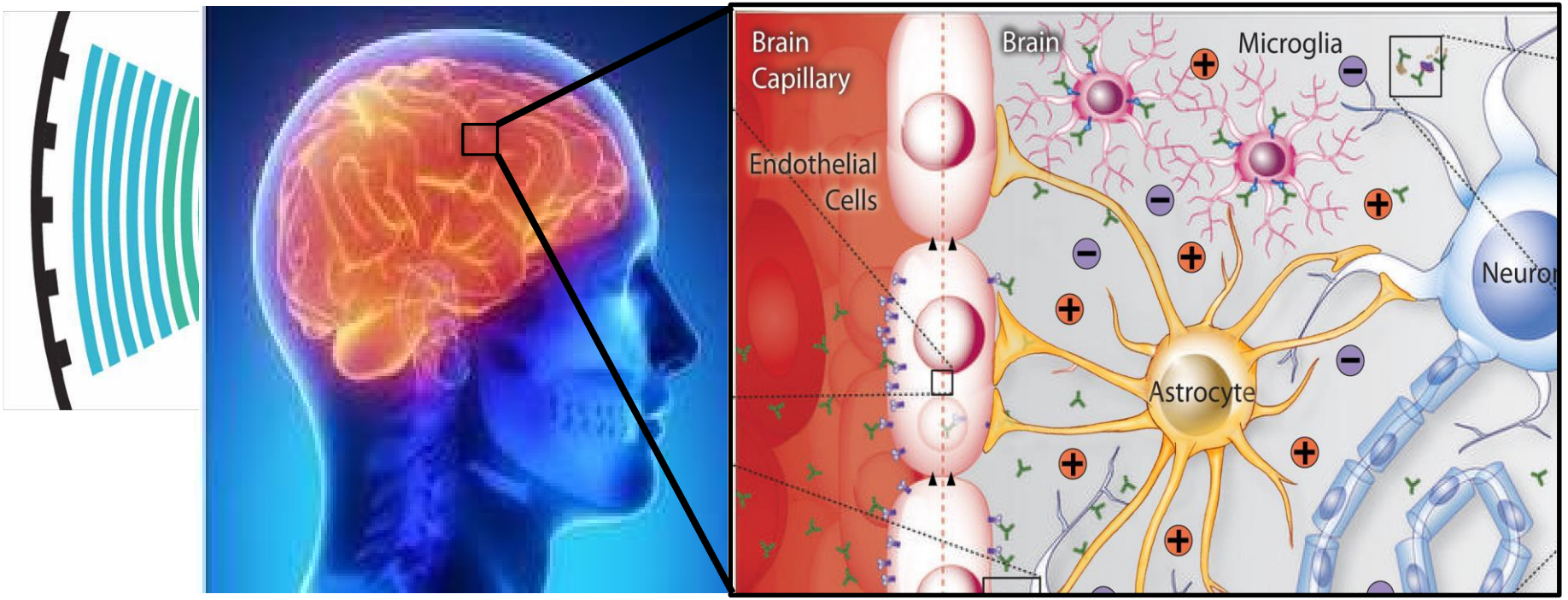
Bench to Bedside and Back

Preclinical and Clinical Systems

Center for Metabolic Imaging and Therapeutics

Focused Blood Brain Barrier Disruption

Ultrasound **Brain** **Blood Brain Barrier**



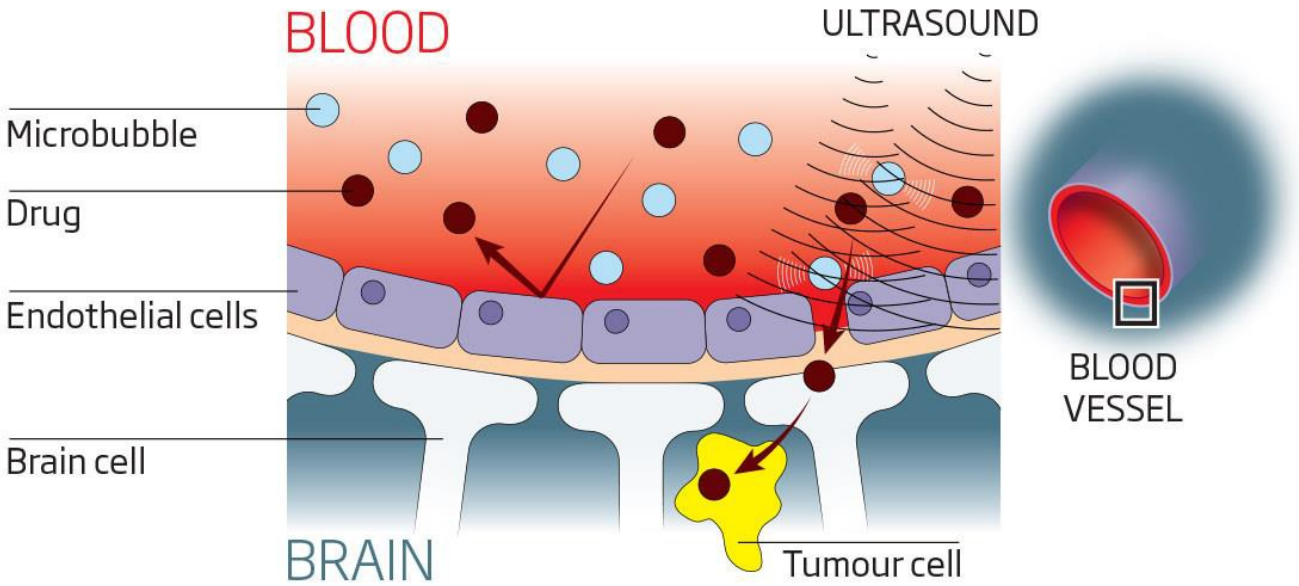
Science: Trans.Med. 2012

https://www.youtube.com/watch?v=pjokJqnzjx8

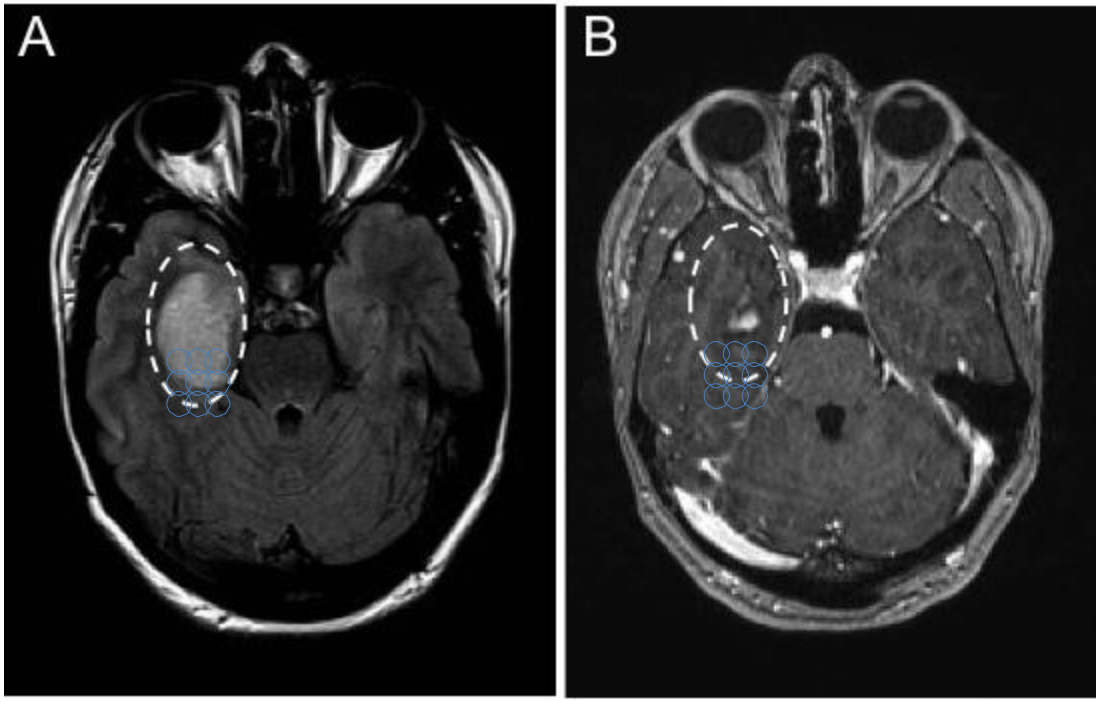
Focused opening of the Blood Brain Barrier Disruption offers hope to improve drug delivery and treatment of brain tumors

A real breakthrough

Microbubbles injected into the blood and then vibrated by ultrasound can force apart the protective endothelial cells that line the blood vessels in the brain. This enables drugs targeting tumour cells to breach the blood-brain barrier

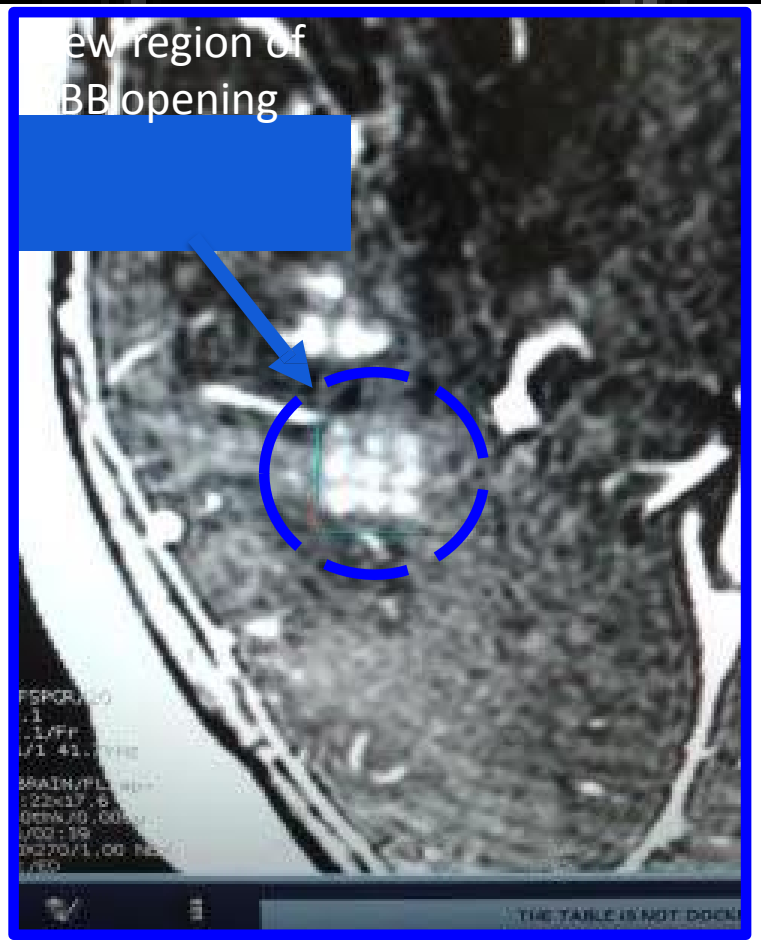


MR-guided Focused Ultrasound: *Clinical Potential*

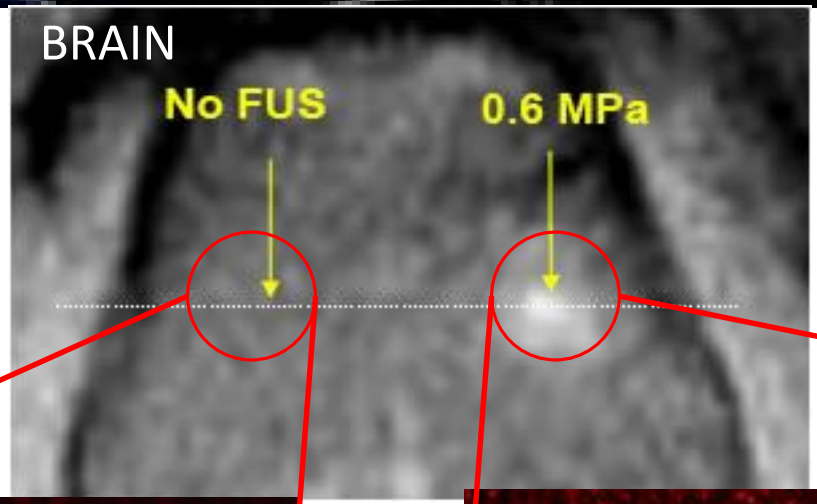


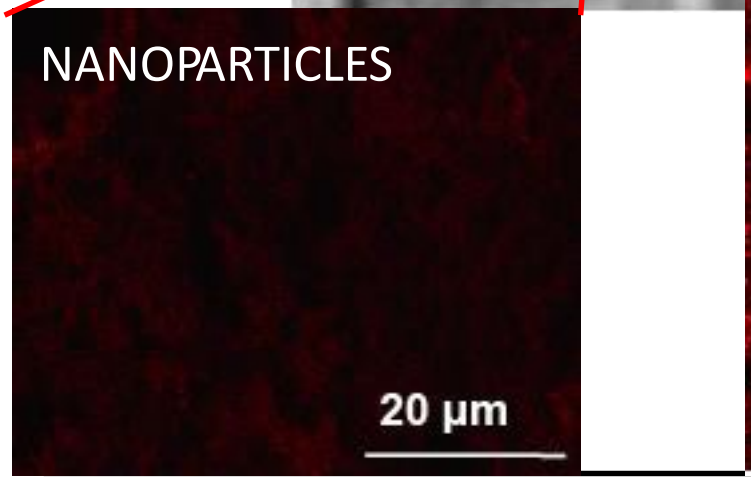
Courtesy of Utoronto

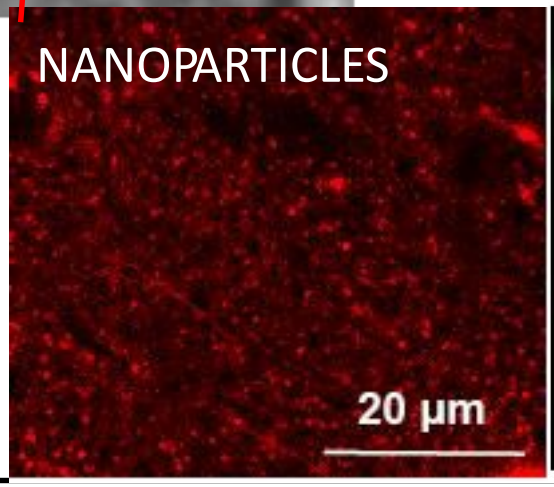
Clinicaltrials.gov NCT02343991

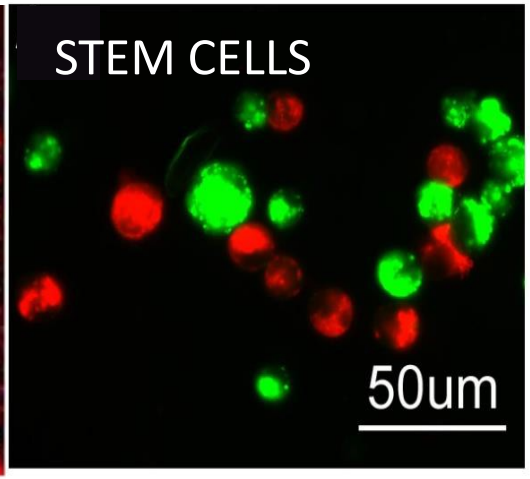


MR-guided Focused Ultrasound: *Clinical Potential*



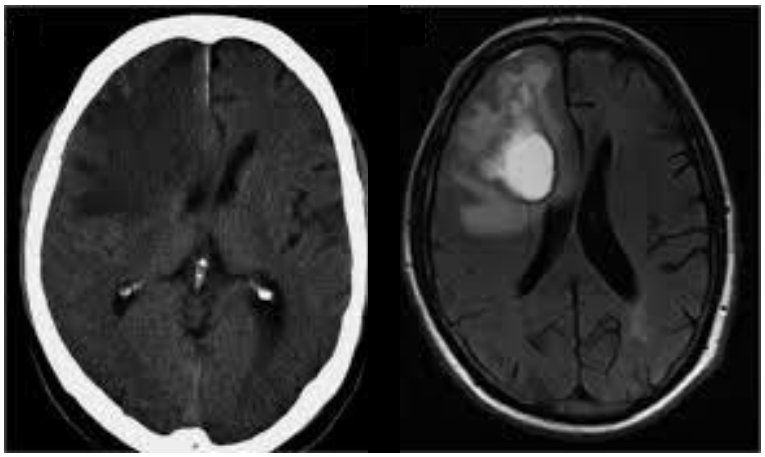


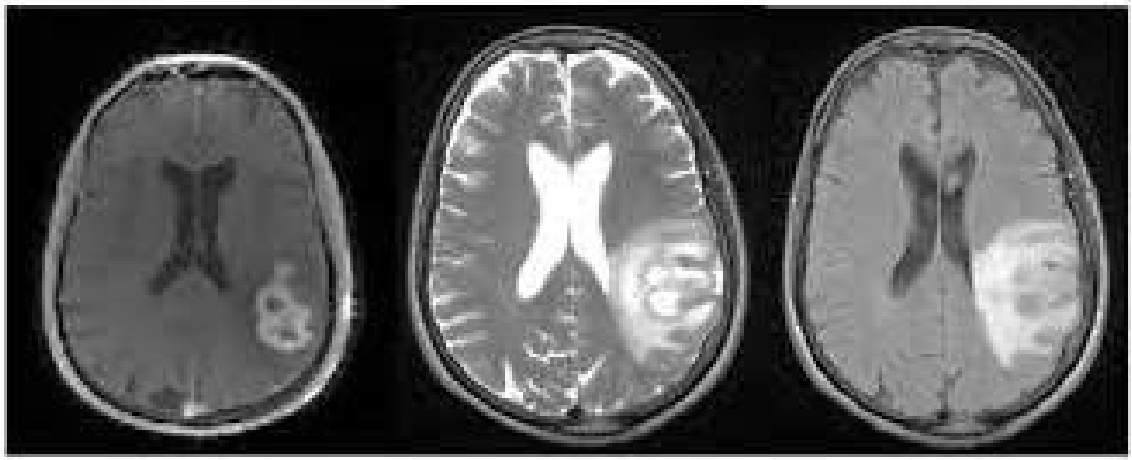




University of Maryland FUS-BBBD Clinical Trial: POTENTIAL PATIENTS

ANY Patient with a <u>non-enhancing</u> component of a GBM undergoing <u>standard</u> neurosurgery





FOCUSED ULTRASOUND NEUROSURGERY

Ultrasound-enhanced
NEUROSURGICAL INTERVENTIONS

Thank you

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David Hersh
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InSightec
Bringing therapy into focus

NSF

Focused Ultrasound Foundation

University of Maryland
School of Medicine