



FOCUSED ULTRASOUND

A NOVEL APPROACH TO TREATING THE BRAIN

OVERVIEW

Focused Ultrasound (FUS) is an early-stage, non-invasive therapeutic technology with the potential to improve quality and longevity of life and decrease cost of care for patients with neurological disorders. It could open new frontiers and unlock treatment options for a wide range of neurological diseases.

This novel technology delivers concentrated beams of ultrasonic energy to precise targets deep in the brain, which stimulates a variety of therapeutic effects at the targeted area without damaging surrounding healthy tissue. Many patients are currently excluded from treatment because the diseased area is inaccessible, either due to the blood-brain barrier (BBB), which prevents drugs from entering the brain, or the proximity of the unhealthy tissue to highly eloquent healthy tissue. Promising pre-clinical and clinical studies have demonstrated that focused ultrasound could increase the options for these patients by permitting localized and temporary BBB disruption for drug delivery and non-invasive destruction of diseased tissue deep within the brain. These approaches can be used to combat neurodegenerative, psychiatric, and movement disorders.

STATE OF BRAIN RESEARCH & APPROVAL BY CLINICAL APPLICATION

Although research, development, and commercialization are increasing, most potential applications are in the early stages of development. Currently, focused ultrasound is approved in the US for treating essential tremor; outside of the US, it is approved for neuropathic pain and Parkinson's disease.

Clinical trials are underway for the treatment of brain tumors, epilepsy, OCD, and depression. Future applications include Alzheimer's disease and many more.



FOCUSED ULTRASOUND HAS THE POTENTIAL TO REVOLUTIONIZE BRAIN TREATMENT USING	
DRUG DELIVERY	TISSUE DESTRUCTION
to temporarily disrupt the blood-brain barrier (BBB) to allow drugs in the blood stream to enter the brain	to precisely heat and destroy tissue within the brain without the need for invasive surgery
Brain Tumors	
Essential Tremor*	
Parkinson's Disease*	
Dystonia	
Epilepsy	
OCD	
Depression	
Neuropathic Pain*	
Alzheimer's Disease	

*Focused ultrasound is approved to treat these conditions outside of the United States

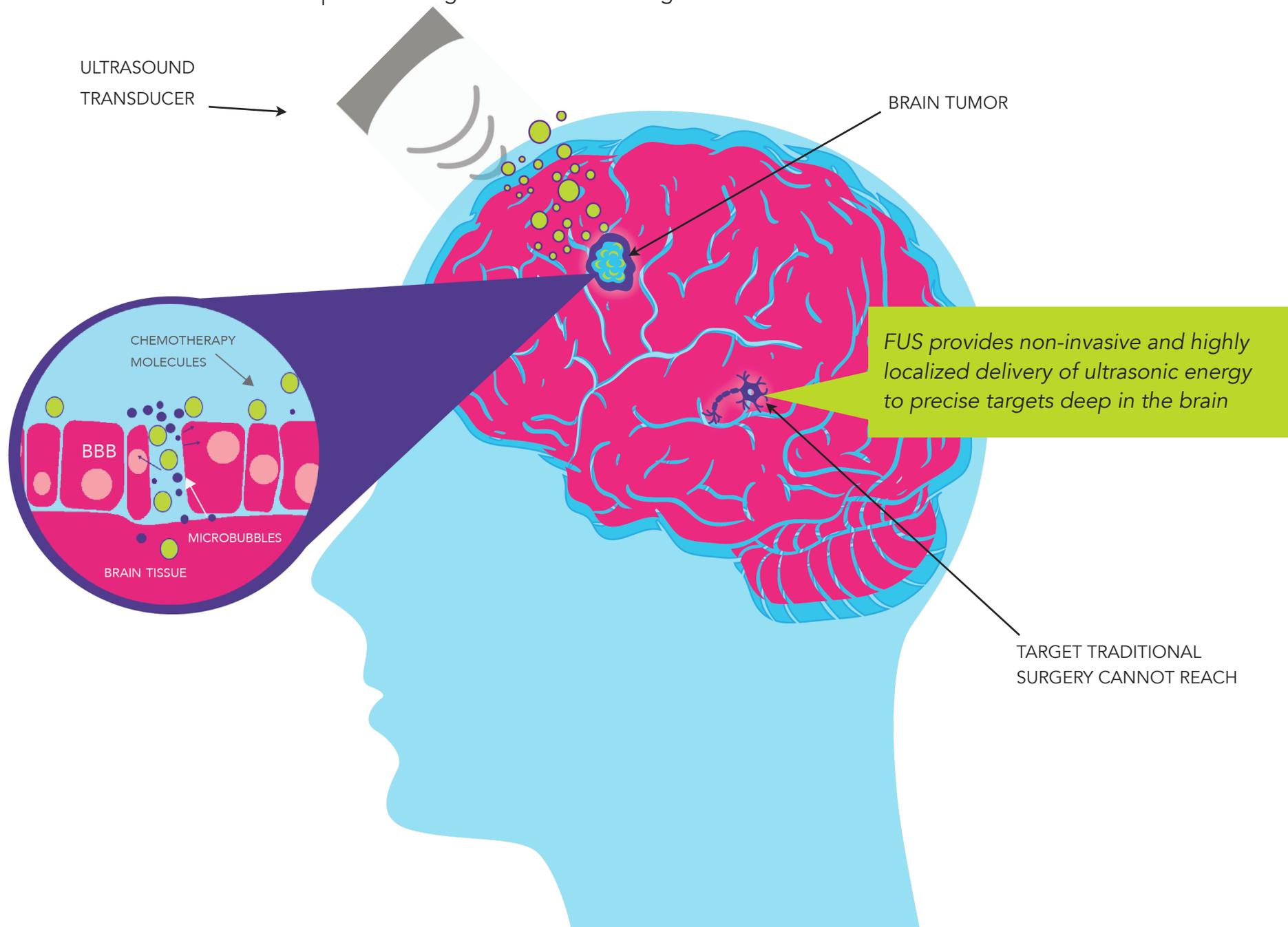


FOCUSED ULTRASOUND

A NOVEL APPROACH TO TREATING THE BRAIN

BENEFITS

Focused ultrasound has the potential to open new frontiers to treating the brain, providing the possibility for reduced pain, complications and cost and improved treatment outcomes and quality of life for patients living with serious neurological disorders.



	SURGERY*	RADIATION THERAPY	DRUG THERAPY
<p>Focused ultrasound can provide a variety of benefits when used as an alternative or complement to traditional brain therapy</p>	<ul style="list-style-type: none"> • Non-invasive and highly localized • Reduced risk of infection, hemorrhage, or impairment • Preserves healthy tissue <p>*Includes deep brain stimulation (DBS)</p>	<ul style="list-style-type: none"> • No ionizing radiation • Immediate and verifiable effect • No dose limit, treatments can be repeated • Preserves healthy tissue 	<ul style="list-style-type: none"> • Enables the use of drugs that do not cross the BBB • Non-invasive and highly localized • Reduced toxicity and side effects • Reduced risk of infection, hemorrhage, or impairment • Preserves healthy tissue