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## The Technology

Focused ultrasound is an early-stage, disruptive, noninvasive therapeutic technology with the potential to improve the lives of millions of patients with a variety of serious medical disorders by providing an alternative or complement to surgery, radiation therapy, drug delivery and cancer immunotherapy.

This game changing technology has the potential to increase the quality and longevity of life and decrease the cost of care for countless patients by transforming the treatment of a range of conditions including tumors of the brain, breast, prostate, liver and pancreas; Parkinson's and Alzheimer's disease and epilepsy; depression and obsessive compulsive disorder; and arthritis and hypertension. With further technological development, laboratory research and clinical trials focused ultrasound could be as revolutionary to therapy as MR scanning has been to diagnosis.

Focused ultrasound treats tissue with multiple intersecting beams of high-frequency sound focused accurately on targets deep in the body without damaging surrounding structures, much like beams of light can be focused on a point with a magnifying glass. At the focal point where the beams converge the ultrasound energy induces a variety of biological effects including destroying tissue, delivering drugs in high concentrations, enhancing radiation therapy and stimulating the immune response. The multiple biological effects create the possibility to treat a wide range of disorders. Magnetic resonance or ultrasound imaging is used to identify the targets and guide and control the treatment in real time.

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## The Problem

Unfortunately, it can take decades for a new therapeutic technology like focused ultrasound to become mainstream. Every year we shave off that process could reduce death, disability and suffering for countless people.

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## The Focused Ultrasound Foundation

The Foundation is a unique medical research, education, and advocacy organization created as the catalyst to accelerate the development and adoption of focused ultrasound. The Foundation is a tax-exempt 501(c)(3) corporation started in 2006.

To achieve its goals, the Foundation utilizes an approach that is entrepreneurial, high-impact, high performance, market-driven and results oriented.

We advance the field by leveraging opportunities and overcoming barriers, thereby shortening the time from laboratory research to widespread patient treatment as a standard of care.

### Major initiatives include

- Influencing the direction of the field, identifying priorities and defining areas of clinical benefit
- Fostering collaboration and stimulating innovation
- Providing resources, both financial and human capital
- Creating knowledge by organizing, conducting and funding research
- Aggregating and sharing knowledge through our website, newsletter, social media, webinars, and open-source journal
- Overcoming barriers, including regulatory and reimbursement challenges
- Cultivating the next generation of researchers by supporting internships and fellowships
- Convening the community through meetings, symposia, and workshops
- Increasing awareness through events and media outreach

This work is made possible by the philanthropic support of our donors, who recognize the urgent needs of patients, the potential of focused ultrasound and the value of the Foundation's disciplined, entrepreneurial approach.

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Focused Ultrasound Foundation

For more information, visit [www.fusfoundation.org](http://www.fusfoundation.org) or contact, Nora Seilheimer, [REDACTED]

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## Mechanisms of Action

Focused ultrasound is a platform technology that affects tissue through multiple mechanisms, thereby enabling the treatment of a wide variety of medical disorders.

### TISSUE DESTRUCTION

Thermal ablation  
Mechanical cellular damage  
Microvascular disruption

### DRUG DELIVERY

Increased vascular permeability  
Localized drug release from nanoparticles  
Disruption of cell membranes

### IMMUNOMODULATION

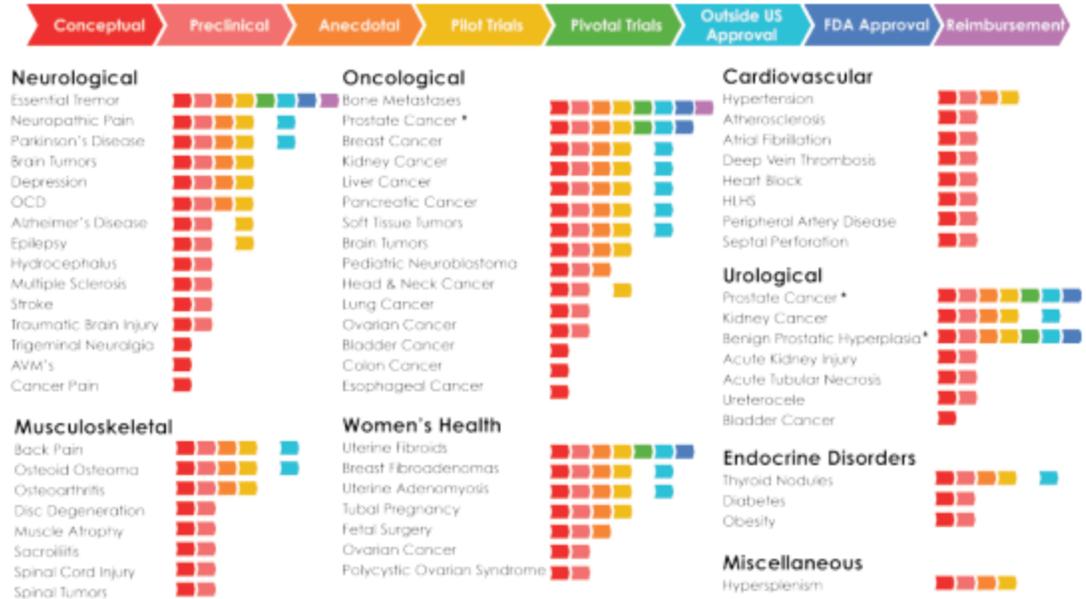
Release of tumor antigens  
Increased immunotherapeutic delivery  
Increased immune cell trafficking to tumors

### RADIOSENSITIZATION

Non-ionizing alternative to radiotherapy  
Tissue preconditioning

## Adoption Status

This chart portrays the global status of focused ultrasound as it evolves to widespread adoption. The number of indications is increasing rapidly, but most are in the early stages of development.



\*The FDA approved two focused ultrasound systems in 2015 that could be used to treat these prostate diseases.

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The Foundation's Council is a group of passionate, enthusiastic advocates who connect us to the greater community, share our story, and promote our mission.

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