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## Research Provides New Keys to Destroying Tumors

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## Research Provides New Keys to Destroying Tumors

April 19, 2012

BLOOMINGTON, Ill.— Illinois Wesleyan physicist Gabe Spalding, working with an international research team, has successfully conducted experiments that may lead to technology for more precisely targeting and destroying tumors. These experiments may lead to advances in focused ultrasound technology combined with Magnetic Resonance Imaging (MRI), for use by surgeons to non-invasively destroy tumors.

Gabe Spalding on Ultrasound  
Research:

[http://www.youtube.com/watch?v=JhsS1GEyLpw&feature=player\\_embedded](http://www.youtube.com/watch?v=JhsS1GEyLpw&feature=player_embedded)

The research findings, recently reported in international physics journals and by the BBC, for the first time validated theories related to the momentum currents of acoustic and optical waves.

"While proving the theoretical predictions of wave behavior is important, most people will really be excited by the medical treatment applications of our research," says Spalding of experiments that involved creating a sort of sonic screwdriver that generated ultrasonic energy to pick up a 4-inch diameter, half-inch thick rubber disk and spin it around.

"Focused ultrasound surgery is already quite impressive in its capabilities to non-invasively destroy tumors, but you need to make sure that you can control where you're sending all of that energy, and the enhanced control we are exploring offers a great deal more potential for medical treatment, even behind the ribcage or inside the brain."

He went on to say that other members of the team have begun work to raise the operating frequency so that the device can be miniaturized and reduce power requirements through the use of resonators. This summer, Spalding and IWU senior Patrick Dahl will travel to the **Institute for Medical Science & Technology** at Ninewells Hospital in Dundee Scotland, to begin application studies.

In addition to Spalding, the research team included ultrasound physicist Christine Demore, biophotonics researcher Mike MacDonald and colleagues from the Institute for Medical Science and Technology. For the past 10 years, Spalding has been taking IWU students to Scotland where they take part in his collaborations with McDonald on various research projects.

**Learn more.**

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