



A Deft Touch

UT researchers develop ultra-fast laser method to take on tumors

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[See the [related video](#) from UT Media.]

In ancient times, many physicians believed that any attempt to cure cancer might actually do more harm than good, and so opted for no treatment at all. UT researchers have recently developed their own hands-off method, but theirs involves laser radiation pulsing at speeds of one-quadrillionth of a second that can find and map tumors, allowing for precisely-targeted destruction of cancerous tissue.

The technology, developed by Associate Physics Professor Christian Parigger and his colleagues Jacqueline Johnson and Robert Splinter, tailors ultra-short, femtosecond laser radiation for imaging and therapeutic purposes. The approach not only finds damaged tissue and maps its size, it also allows for an increase in temperature in the targeted area that can kill tumor cells. The imaging mechanism can work through thin layers of bone, such as the skull, and can help define a targeted treatment strategy for persistent cancer. The radiation delivery is focused and selective, and can be performed as a non-invasive outpatient procedure. This method overcomes limitations posed by current solutions such as photodynamic therapy that has restricted acceptance, surgery that may not be an option if not all carcinogenic tissue can be removed, or radiation that may damage portions of healthy brain tissue.

Both Parigger and Johnson are part of the faculty at the UT Space Institute in Tullahoma. Johnson is an associate professor of materials science and engineering, and both she and Parigger are involved with the institute's Center for Laser Applications, or CLA. The center was established in 1984 as a state Center of Excellence and serves as a hub of research, education, and technology-transfer in laser development and applications. Splinter, of Splinter Consulting, holds a doctorate in physics and medical engineering and has worked for more than two decades in device development.

The technology is being shepherded for broader impact through the University of Tennessee Research Foundation (UTRF), a non-profit corporation responsible for commercializing the university's technologies and supporting UT research. Parties interested in learning more about this technology or exploring possible research and/or commercialization arrangements can contact UTRF at (865) 974-1882, or send an e-mail to utrfinnovations@tennessee.edu with reference to PD 12092.