Ultrasound device stimulates brain from 'outside in'

Arizona State University

ASU scientist William Tyler and his team's research with “transcranial pulsed ultrasound,” which stimulates brain circuits "from the outside in," has captured the attention of the Pentagon and Wired magazine. The Defense Adfvanced Research Projects Agency (DARPA) awarded Tyler, an assistant professor in ASU's School of Life Sciences, a 2010 Young Faculty Award.

According to Wired reporter, Katie Drummond, Tyler plans to expand the uses of the ultrasound and improve the device’s spacial resolution even more, making it a veritable all-in-one brain stimulation device. Using a microcontroller device, the ultrasound would stimulate different brain regions to boost troop alertness and cognition, relieve stress and pain, and protect them against traumatic brain injuries.

Tyler is quotes as saying, “The really damaging part of a TBI isn’t the initial injury. It’s the metabolic damage, the free radicals and the swelling that are happening in the hours afterward. If you can flick your remote and trigger an immediate intervention, you’d be curbing what might otherwise be lifelong brain damage.”

DARPA selected 33 up-and-coming researchers at 24 U.S. universities to participate in the Young Investigator Award progam. In addition to $300,000 in funding over two years, the program addresses mentoring, with industry and Department of Defense (DOD) networking, to help awardees to frame their research in the context of DOD's needs. The award program was developed to “support the next generation of academic scientists, engineers and mathematicians in key disciplines and encourage them to focus a significant portion of their careers on Defense and National Security issues.” Tyler was recognized at a ceremony on September 21-22, 2010 in Arlington, Virginia.

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