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$413,000 grant to help Michigan State University improve electrical communication with the brain

A researcher in the Michigan State University College of Engineering will use a $413,000 grant from the National Institutes of Health (NIH) to explore why devices implanted in the brain lose their efficacy over time.

Erin Purcell, an assistant professor of biomedical engineering, electrical and computer engineering, and neuroscience, has received a two-year NIH R21 grant to further investigate the influence of neural implants on individual cells in the brain.

“Neural implants hold tremendous therapeutic potential for patients suffering from the devastating effects of neurological injury and disease,” Purcell said. “These devices are microelectrode arrays that can be used to deliver therapy for a variety of serious conditions when implanted into the nervous system, including hearing loss, Parkinson’s disease, and spinal cord injury.”

Purcell said the key is to improve the device interface.

She noted that the development of “electroceuticals” to treat neurological conditions has cracked open advanced research and clinical applications. Her research will explore the effects of implanted neuroprostheses on neurons. To do that, she and Joseph Salatino, a PhD student in biomedical engineering from Bloomfield Hills, Mich., will explore the impact of the device on the function of nearby neurons.

“Understanding the mode of action, and the failure mechanisms, of these devices remains incomplete. So we hope to
$413,000 grant
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improve understanding of the effects of neural implants on the function of neurons at the device interface. That knowledge will broadly impact the future development of neural prostheses for both research and clinical applications.”

The NIH grant is one of the first awarded to MSU’s new Department of Biomedical Engineering. The MSU Department of Biomedical Engineering was approved at the state level in spring 2016 as a focal point at MSU for technological innovations applied to the medical needs identified by physicians, nurses, and health scientists in hospital, clinic, and home settings.

Related Website: MSU Department of Biomedical Engineering
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