Method for streamlining deep brain stimulation control parameters determination in Parkinson’s Disease

Unmet Need
Parkinson’s disease (PD) is estimated to impact 10 million people worldwide. Currently, there are no cures for the disease. While treatments have significantly improved symptoms in patients, side effects of the pharmaceutical treatments can be equally as debilitating for some. The advancement of deep brain stimulation (DBS) has provided a symptom control treatment for patients without or reduced medications. DBS is a powerful treatment modality where surgically implanted leads in the brain send electrical impulses by an adjustable control module to offset incorrect signaling from PD. There often is a lengthy process of trial and error to determine the correct electrical impulse parameters for each individual patient. There is a need for more precise method for determining the correct strengths and frequencies of the electrical impulses by the control module.

Technology
Duke inventors have developed a method to streamline deep brain stimulation control parameters determination. This is intended to be used for patients with Parkinson’s disease who have undergone use of surgically implanted electrical stimulation devices. Specifically, this is a software and selection method for monitoring patient response to stimulation parameters and predicting best changes to make for optimal performance. This has been demonstrated in clinic with patients stating better symptom control compared to the traditional process.

Other Applications
This technology could also be used for other deep brain stimulation devices such as treatment of epilepsy.
and/or severe depression. This could also potentially be applied to vagus nerve stimulation devices for sleep apnea.

**Advantages**

- Faster and more complete symptom relief compared to the traditional trial-and-error process
- Can be used with any DBS device
- Can be used retroactively after a DBS device has already been implanted