Docket #: S22-416

Continuous Monitoring of Neurodegenerative Diseases to Assess Brain Function

This invention is a neurally-derived estimate of the degree of dysfunction of a region of the brain is experiencing due to injury such a stroke. Currently, there is no mechanism to estimate the functional impact on brain injury, but this invention provides one of the first meaningful estimates of brain function that are well correlated with motor function (movement). This solves a critical problem in brain injury treatment, such as stroke assessment and rehabilitation to understand the functional extent of injury and could provide a biomarker with which to inform rehabilitation.

Stage of Development

- Pre-clinical studies

Applications

- **Brain-machine interface** to assess the extent of brain injury and provide guidance for rehabilitation titration.

Advantages

- **Novel** – first physiological method to assess brain function
- **Full system and method** – pairs with other monitoring devices, such as electroencephalography (EEG) and functional magnetic resonance imaging (fMRI).
- Can use these neurological signals to predict whether a patient with a neurodegenerative disease is going to have a "good day" or a "bad day"

Publications

- Bray, Iliana E., Stephen E. Clarke, Kerriann M. Casey, Paul Nuyujukian, and Brain Interfacing Laboratory. ["Neuroelectrophysiology-Compatible Electrolytic Lesioning."](#) *bioRxiv* (2022): 2022-11.

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