LAYERED STIMULUS PATTERNING TO SYNERGISTICALLY OPTIMIZE BRAIN CLEARANCE AT MULTIPLE POINTS IN CLEARANCE SYSTEM AND REAL-TIME DIAL TO CHANGE DRUG DELIVERY PROFILES

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Overview

Waste removal from the central nervous system (CNS) is essential for maintaining brain homeostasis. Disruption of waste clearance can lead to protein accumulation. The aggregation of pathogenic proteins β-amyloid, α-synuclein, and C-tau in the brain may cause the deleterious effects of numerous diseases and disorders such as traumatic brain injury/chronic traumatic encephalopathy, epilepsy, Alzheimer's disease, and Parkinson's disease. Removal of these pathogenic proteins has been found to have substantial therapeutic benefit, for example, in treating traumatic brain injury/chronic traumatic encephalopathy, epilepsy, Alzheimer's disease, and Parkinson's disease. Disruption of glymphatic waste clearance is also implicated in several mental health disorders including depression, bipolar disorder (BPD), and anxiety.

The Invention

UW-Madison researchers have developed a method of synergistically facilitating the exchange of CSF and ISF by creating a layered electrical stimulus pattern that induces cerebral arterial wall movement and promotes AQP4 mediated CSF/ISF exchange during sleep. Moreover, separating the layered stimulation pattern with a high frequency stimulus after sleep helps to break down waste biomolecules and misfolded proteins for further CSF clearance.

Additional Information

For More Information About the Inventors

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Tech Fields

- Medical Devices : Neurological devices

For current licensing status, please contact Jeanine Burmania at jeanine@warf.org or 608-960-9846