



## Penetration Of Cerebral Spinal Fluid Into The Brain Parenchyma Using Temporally Patterned Neuromodulation

[View U.S. Patent No. 11,395,914 in PDF format.](#)

**WARF: P190197US02**

Inventors: Justin Williams, Kip Ludwig, Angela Williams, Samuel Poore

---

### The Invention

Electrical stimulation of specific facial and lingual nerves creates a more sustained pulsatility activity compared to stimulation of other cranial nerves. Pulsatility of arteries has intrinsic time constraints related to the time for vasodilation/constriction and time to return to baseline (TBL) after electrical stimulation which may affect the pulsatility response. Control of temporal patterning and the stimulation waveform maximizes the physiological response to cerebral pulsatility and its resulting effects on cerebral spinal fluid penetration into the brain parenchyma for a multitude of therapeutic uses including clearing misfolded proteins and/or administered pharmacological agents, diluting endogenous neurochemical concentrations within the brain, and reducing non-synaptic coupling.

### Additional Information

#### For More Information About the Inventors

- [Justin Williams](#)
- [Kip Ludwig](#)
- [Samuel Poore](#)

#### Tech Fields

- [Medical Devices : Neurological devices](#)

For current licensing status, please contact Jeanine Burmania at [jeanine@warf.org](mailto:jeanine@warf.org) or 608-960-9846