

ELECTRODE DEVICE THAT PRECISELY STIMULATES SYMPATHETIC NERVES TO TREAT ASTHMA, HYPERTENSION AND OTHER CONDITIONS

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Value Proposition: *Implantable electrode device that can treat a plurality of medical diseases by stimulating or inhibiting select regions of sympathetic nervous system.*

Technology Description

Researchers at Washington University in St. Louis have developed “SIMPEL”, a small, implanted electrode device designed to manage a variety of conditions (such as asthma, hypertension or neuropathy) by delivering current from a defined, fixed position near specific sympathetic nerves. Currently, electrical stimulation can successfully treat epilepsy by targeting the parasympathetic nervous system. Adapting this approach for the sympathetic chain could potentially regulate unwanted stress response (e.g., increased blood flow, accelerated respiration, increased perspiration) that leads to conditions such as hypertension, asthma or hyperhidrosis. To do so, the electrode must be precisely positioned to stimulate or inhibit selective locations without damaging the nerve.

This invention uses a screw-shaped electrode that is anchored to the bone near the nerve allowing for the stimulation to remain targeted to the region of interest, preventing damage to the nerve by creating an electrical field in the vicinity of the ganglia without maintaining contact with the sympathetic chain.

Stage of Research

Prototype screw electrode that has been tested in a rat model

Applications

- Medical device to manage disorders associated with the sympathetic nervous system

Key Advantages

- Universal design to fit different locations and different patients (Small, Implantable)
- Stimulation or inhibition is targeted and safe
- Non-contacting to the nerve
- Adaptable to multiple disease states

Patents

- Systems and methods for stimulating sympathetic nervous system: [US11351381B2](#)

Related Web Links – [Eric Leuthardt Profile](#); [Leuthardt Lab](#)