Electrical stimulation of the claustrum for treatment of epilepsy

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Field
Neurology, Epilepsy

Objective
Seeking development and licensing partners

Keywords
Claustrum, area tempestae, deep brain stimulation, low-frequency stimulation, pharmaco-resistant epilepsy, medically-intractable epilepsy, alteration of awareness, complex partial seizures, epilepsy, generalized seizures.

Applications:
- Treatment of epilepsy

Advantages:
- Provides therapy for patients that do not respond to drugs

Patent Status:
Patent Application filed

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One third of people with epilepsy – around 1 million in the US alone – do not respond to antiepileptic medications. Yet, existing technologies offer very limited benefits in controlling seizures in these patients with pharmaco-resistant epilepsy.

The present invention presents a method for treating pharmaco-resistant epilepsy by deep brain electrical stimulation. This invention uses a closed-loop system to detect seizures and apply electrical stimulation to the claustrum to inhibit loss of consciousness or alternation of awareness. Alternatively, a simpler system with constant low frequency stimulation may also be effective.

The claustrum is a thin sheet of grey matter located deep in the brain, and is thought to play a main role in integration of conscious percepts. A recent clinical case study by the inventor showed that the claustrum may be involved in focal epilepsy by alteration of awareness that accompanies seizures.

The treatments are currently being tested on rats and preliminary results are very promising.