

NOVEL BRAIN TECHNOLOGY FOR THE TREATMENT OF NEUROPSYCHIATRIC DISORDERS USING ELECTRICAL STIMULATIONS

Tech ID: 29072 / UC Case 2014-156-0

INVENTION NOVELTY

This invention is a novel technology developed to treat a patient’s neurological and/or psychiatric conditions. It consists of a system of implantable devices and computational algorithms that not only has autonomous control in sensing and stimulation of electrical signals in the patient’s brain, but also enables interactions with the external environment, thereby enhancing training and learning.

VALUE PROPOSITION

Current methodologies such as deep brain stimulation and responsive neurostimulator systems are insensitive to variability in patient responses due to environment, physiology and/or behavior. This invention overcomes such limitations by enabling real-time monitoring and enhancement of brain states as the external environment changes during therapy.

This novel invention provides the following advantages:

- ▶ **Ameliorate symptoms** of neuropsychiatric disorders such as Major Depressive Disorder, Addiction, Bipolar Disorder and Post-Traumatic Stress Disorder.
- ▶ **Automatic internal and external real-time modulation** of electrical signals in the patient’s brain based on behavioral, physiological and environmental sensing.
- ▶ **External sensing** enables the flexibility of incorporating dynamic real-life or more controlled conditions into the therapy of the patient, e.g. brain signal changes from medication or from environmental stimuli.

TECHNOLOGY DESCRIPTION

Researchers at the University of California, San Francisco have developed a novel technology to treat neuropsychiatric disorders. It involves implanting a set of devices into specific locations of the patient’s brain to sense, receive, record and generate electrical signals in a closed feedback loop. Internal electrical signals from the brain are automatically recorded by the devices and then processed to algorithmically select parameters to generate the appropriate electrical signals back to the brain. The invention has also incorporated software and wireless technology to additionally combine

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OTHER INFORMATION

KEYWORDS

Deep Brain Stimulation,
Responsive Neurostimulator
System, Brain, Electrical
Stimulation, Electrical
Signals, Neuropsychiatric
Disorders, Major Depressive
Disorder, Generalized
Anxiety Disorder, Post-
Traumatic Stress Disorder,
Addiction, Anorexia,
Obsessive-Compulsive
Disorder, Bipolar Disorder,
Neural Plasticity

CATEGORIZED AS

- ▶ **Medical**
- ▶ **Devices**
- ▶ **Disease: Central Nervous System**

input from the external environment, which can provide a more interactive and dynamic therapeutic treatment, e.g. for patient-specific calibration and fine-tuning of the electrical stimulation in a more controlled environment.

LOOKING FOR PARTNERS

To develop and commercialize this technology for the therapeutic treatment of neuropsychiatric disorders.

STAGE OF DEVELOPMENT

Clinical.

INVENTORS PROFILE

Edward Chang

DATA AVAILABILITY

Under NDA/CDA.

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	11,911,619	02/27/2024	2014-156
European Patent Office	Published Application	3606598	02/12/2020	2014-156

Additional Patent Pending

- ▶ [Rehabilitation](#)
- ▶ [Software](#)
- ▶ [Therapeutics](#)

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2014-156-0

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