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Synchronized Multi-Modal Tinnitus Therapy (20120070, Dr. Hubert Lim)

A non-invasive or minimally-invasive method for the suppression of tinnitus using synchronized brain stimulation.

IP Status: US Patents Issued; Patent No. 10,265,527 , Patent No. 10,940,315 , Patent No. 12,138,456; US Patent Pending; Application #. 18/903,394

Synchronized brain stimulation as a potential tinnitus cure

Prof. Lim at the University of Minnesota has developed a new method to suppress and potentially cure tinnitus using synchronized multi-modal stimulation of the brain. The technology consists of algorithms and devices that non-invasively or transcutaneously stimulate auditory and non-auditory pathways in a highly synchronized fashion. The technique stems from the hypothesis that tinnitus patients who experience abnormal brain representations continue to retain the normal (original) brain representations; and, by "shocking" specific regions of the brain, the brain can be switched back to the normal representation. Using highly synchronized multi-modal stimulation of specific regions in the brain, this technology acts as a "neural switch" that can switch neural activity to suppress tinnitus and phantom limb pain.

Neural switch therapy shocks brain back to normal state

Tinnitus, the perception of sound with no external source, affects 15-20% of the population and currently has no cure. Existing therapies include medications, using masking noises, or simply retraining the brain using individually programmed tonal music. While these methods eases tinnitus to a certain degree, they do not address the underlying cause. The technology disclosed here, on the other hand, induces a strong synchronous shock to specific regions of the brain to reset it from an abnormal state back to the normal state. Owing to such novel method of action, this non-invasive treatment technology has the potential to successfully switch the firing pattern of tinnitus-affected neurons to suppress and cure tinnitus and phantom limb pain.

Phase of Development

- Prototype developed. Animal testing in progress.

Key Benefits & Differentiators

- **Non-invasive** electrode stimulation avoids surgery, infection, and reduce the cost of administration
- Focused on **addressing the underlying cause** rather than simply reducing the symptoms
- Medication-free treatment
- Synchronous multimodal stimulation to achieve maximum optimized 'shock' to switch neural activities
- May treat other neurological disorders

Applications

Technology ID
20120070

Category
Engineering & Physical Sciences/Instrumentation, Sensors & Controls
Life Sciences/Human Health
Life Sciences/Medical Devices
Life Sciences/Neuroscience
Software & IT/Algorithms
Agriculture & Veterinary/Veterinary Medicine

View online

- Tinnitus treatment
- Phantom limb pain
- Neurology/audiology/ENT
- Neurological disorders involving abnormal brain plasticity

Researchers

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Publications

A new concept for noninvasive tinnitus treatment utilizing multimodal pathways
Conf Proc IEEE Eng Med Biol Soc. 2013;2013:3122-5
Investigating a new neuromodulation treatment for brain disorders using synchronized activation of multimodal pathways
Scientific Reports volume 5, Article number: 9462 (2015)

Ready for Licensing

This technology is now available for license! The University is excited to partner with industry to see this innovation reach its potential. Please contact us to share your business' needs and your licensing interests in this technology. The license is for the sale, manufacture or use of products claimed by the patents.