

Topic: Targeting brain cells to help treat neurological disorders

Article Title: Going Deep

Article Source: Discover Magazine's Top 100 Science Stories of 2017

What: A group of researchers internationally have come to the conclusion that they have developed, a non-invasive way of treating and lessening the symptoms of neurologic disorders in cases where conventional treatment is not effective such as; Parkinson's disease, Major depression, Obsessive-compulsive disorder, Tourette syndrome, schizophrenia as well as Epilepsy; which triggers seizures. Right now the treatment for neurological disorders is a invasive surgery called deep brain stimulation. Deep brain stimulation is when a brain pacemaker or neuro stimulator along with implanted electrodes are inserted into the chest brain. The brain pacemaker then sends pulses to the electrodes to the spots in the brain that they are attempting to treat. The biggest downfall with the current treatment is that it is a invasive surgery. There can be side effects such as hallucinations, depression or cognitive dysfunction. Since it is surgery there are risks of the brain shifting, brain bleeds and infections. The new alternate discovery and innovation is a new method called temporal interference.

How: Where they use two brain frequencies that alone would be too high on their own to activate neurones in the brain for it to be stimulated, however when the two frequencies meet they are enough to create a low enough frequency to touch the hard-to-reach neurones. They have never been able to get at the inside of the brain of a living thing without actually operating so this new innovation is bound to be revolutionary. Tested on mice temporal interference has been proved effective for triggering motor function, which can be highly effective in patients with neurological disorders such as Parkinsons.

Who: The United Nations reported that in 2007 there is an estimate of 1 billion people who are affected by neurological disorders meaning that nearly 1/6 of our population could be helped by temporal interference. According to the Cambridge brain sciences blog temporal interference can be effective for not only replacing these invasive surgeries in order to treat neurological deficits that would usually be treated by deep brain stimulation a much more risky procedure, it will also be of help to scientists to figure out how the brain works and could possibly even improve the brains of completely healthy people which could be a big step for humankind.

Why: To reduce the amount of invasive brain surgeries performed to treat neurological deficits which will help make the recovery process for any kind of brain disorder much easier. To increase the amount of people that will be able to get treatment for any type of neurological deficit. For scientists to discover more about the human brain, and how it works. For humans to improve on their quality of life.

Where: This innovation will be helpful internationally, because there are humans all over the world struggling with neurological disorders.

Reaction: I think that it is a very relevant and important innovation because of the amount of people who struggle with neurological disorders, and have to decide if they want to undergo invasive surgery to receive therapeutic treatments. I agree with using this innovation in cases of neurological disorders, as well as further exploring the brain of a living human because as of right now exploratory surgery for brain discoveries is a lot harder to perform on a living thing as it encompasses evasive surgery. The only common times you will hear about scientists doing tests on brains just to learn things are when the brain is no longer in a living body. I don't fully know how I feel with this being done on healthy people in order to improve their cognitive function because it reminds me of talk about implanting a chip in the brain to improve intelligence and it just seems unnatural to me. I think it's very interesting how they might be able to improve brain function but I wouldn't get it done on myself as long as my brain is healthy. This article helped me to understand how stimulation in the brain works and a lot about the treatment patients with brain deficits must undergo. I hope to learn more about the exact science of brain stimulation and how the frequencies work inside the brain. Something I did find quite disturbing was the animal testing but I do wonder if it will be as successful on humans.

World Impact: This innovation will have an everlasting impact on the world - if it does in fact help to improve human brains with deficits successfully it will definitely improve the quality of life of so many people. Maybe one day it will even lead to the further innovation of being able to completely cure brain disorders. It's very linked to the central idea of improving the brain and evolving the human species for the better. If it does lead to the option of improving healthy brains who knows where the world will go from there, even though it strikes me as unnatural with the improvement on brain function how much more will the world be able to accomplish.

Sources

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