

Abstract Submitted
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Effect of Transcranial Magnetic Stimulation on Neuronal Networks AHMET UNSAL, RAVI HADIMANI, DAVID JILES, Iowa State University — The human brain contains around 100 billion nerve cells controlling our day to day activities. Consequently, brain disorders often result in impairments such as paralysis, loss of coordination and seizure. It has been said that 1 in 5 Americans suffer some diagnosable mental disorder. There is an urgent need to understand the disorders, prevent them and if possible, develop permanent cure for them. As a result, a significant amount of research activities is being directed towards brain research. Transcranial Magnetic Stimulation (TMS) is a promising tool for diagnosing and treating brain disorders. It is a non-invasive treatment method that produces a current flow in the brain which excites the neurons. Even though TMS has been verified to have advantageous effects on various brain related disorders, there have not been enough studies on the impact of TMS on cells. In this study, we are investigating the electrophysiological effects of TMS on one dimensional neuronal culture grown in a circular pathway. Electrical currents are produced on the neuronal networks depending on the directionality of the applied field. This aids in understanding how neuronal networks react under TMS treatment.

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