

Mechanisms of therapeutic efficacy of deep brain stimulation in Parkinson's disease

<https://www.neurodegenerationresearch.eu/survey/mechanisms-of-therapeutic-efficacy-of-deep-brain-stimulation-in-parkinsons-disease/>

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Canada

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Research Abstract

Parkinson's disease (PD) is the second most common neurodegenerative disease, affecting more than 100,000 Canadians and more than 5 million people worldwide. Clinically, it is characterized by a progression of motor symptoms that include slowness of movement, rigidity, tremor and postural instability. The main pathological feature involves a progressive loss of brain neurons containing the neurotransmitter dopamine. The dopamine precursor (L-DOPA) is the most effective pharmacotherapy for PD, but adverse effects hamper its chronic use. Within 5-10 years of L-DOPA treatment, most patients begin to experience motor complications including abnormal involuntary movements that can be more debilitating than the disease itself.

These patients can be proposed surgery that consists in the permanent implantation of stimulation electrodes. Despite its long history of improving the quality of life and motor symptoms in over half of the patients, the mechanisms by which deep brain stimulation (DBS) produces its therapeutic effects remain unclear. In addition, DBS is associated with a variety of adverse effects including acute or chronic neurological and neuropsychological complications. To further improve the effectiveness of DBS treatment for PD patients, while reducing its side-effects, our research project aims at generating insights into the underlying mechanisms of DBS using behavioural, neuroanatomical and biochemical studies in parkinsonian monkeys.

Further information available at:

Types:

Investments < €500k

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Canada

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