



LAY ABSTRACT TEMPLATE FOR AWARDEES

Principal Investigator(s): Philip Milliken

Project Title: Splenic nerve stimulation to reduce inflammation-driven Parkinson's progression and LRRK2 mutation-driven Parkinson's risk

Study Rationale:

In two or three sentences, describe the background and scientific rationale for this project. Approximately 100 words

Galvani Bioelectronics combines expertise in biology and electronics to develop devices that can interact with nerves - the body's natural electrical signaling pathways - to treat certain diseases. The Galvani therapy involves implanting a small device in the body that electrically stimulates the nerve going to the spleen. Stimulating this nerve causes changes in immune cells and proteins that may reduce inflammation and tissue damage across the body potentially including the brain during Parkinson's Disease. One gene mutation (LRRK2), which is a known risk for developing Parkinson's Disease, has been shown to increase such inflammation, triggering tissue damage by immune cells, which our treatment may counter.

Hypothesis:

In one sentence, describe the question this study seeks to answer or theory you hope to prove. Approximately 50 words

Stimulating the nerves of the spleen acts on different immune cells involved in inflammation, changing their behavior, and decreasing the damaging chemical signals they produce which will be protective or reduce the progression and damage associated with Parkinson's Disease.

Study Design:

In two or three sentences, in lay-oriented language, describe how you will carry out the project. Approximately 100 words

Cell lines from Parkinson's patients will be used to test the effect of the bioelectronic therapy in this disease, mimicking the effect splenic nerve stimulation has on derived inflammatory cells. Further, studies using disease models of Parkinson's will be used to confirm the effects of stimulating the nerves to the spleen. This combined approach will provide the first proof of concept for the therapy for Parkinson's, in altering immune and inflammation processes that could stop or reduce the disease damage within the brain.

Impact on Diagnosis/Treatment of Parkinson's disease:

In one or two sentences, explain how the project holds potential to impact the way Parkinson's is diagnosed and/or treated. Approximately 50 words

Parkinson's is a complex condition with many potential symptoms and current therapies mostly only manage the disease symptoms. The bioelectronic therapy acts to alter the inflammatory processes that may cause and worsen the disease to provide a treatment that may prevent the onset as well as slow or even stop the progression in Parkinson's Disease.

Next Steps for Development:

In one or two sentences, describe the next steps toward clinical application of the results of this study, if successful. Approximately 50 words

This therapy is already in two clinical trials for another disease. The work in this project will determine the potential application of the bioelectronic therapy in Parkinson's and its ability to alter key processes involved in progression of the disease.