

Improving the lives of Parkinson's Disease patients while reducing side-effects through tailored deep brain stimulation

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Principal Investigators

Institution

Contact information of lead PI

Country

European Commission

Title of project or programme

Improving the lives of Parkinson's Disease patients while reducing side-effects through tailored deep brain stimulation

Source of funding information

European Commission FP7-Seventh Framework Programme

Total sum awarded (Euro)

€ 4,980,907

Start date of award

01/09/2012

Total duration of award in years

4.0

The project/programme is most relevant to:

Parkinson's disease & PD-related disorders

Keywords

Research Abstract

The IMPACT project is about improving the lives of brain diseased patients through a novel approach that leaps beyond currently available Deep Brain Stimulation (DBS) devices and procedures. The initial project focus is on Parkinson's Disease (PD), but further brain-disease indications will be included in the later phase of the project. The personalized approach that IMPACT brings is essential in delivering full therapeutic benefits to DBS patients while preventing the stimulation-induced side-effects that occur with today's DBS implants.

PD is well known for its characteristic symptoms: shaking, rigidity, slowness of movement and postural instability. Millions are suffering from PD including famous people like Michael J. Fox. Drugs are used as first treatment, but as the disease progresses they become ineffective and increasingly higher doses are needed. This leads to many side-effects, while symptoms still persist.

DBS is a 'pacemaker for the brain', analogous to the function of pacemakers for the heart: mild electrical stimuli are delivered to brain tissue to suppress unwanted activity and restore desired neuronal functions. When stimulation is optimal, the impact of DBS is spectacular: shaking and rigidity are strongly improved, and medication doses may be lowered significantly.

Despite its successes, DBS is still in its infancy. Programming for optimal therapy is complicated since physicians lack the appropriate tools to support them. Around 15 – 30% of DBS patients suffer from stimulation-induced side-effects resulting from stimulation leaking outside intended target regions. IMPACT addresses these barriers to adoption exploiting the directivity provided by next generation high-resolution implants.

IMPACT delivers a physician tool for tuning the high-resolution implant based on a personalized patient brain stimulation model that takes into account imaging data (MRI, X-ray) as well as pre-operative data (local field potentials).

Lay Summary

Further information available at:

Types:

Investments > €500k

Member States:

European Commission

Diseases:

Parkinson's disease & PD-related disorders

Years:

2016

Database Categories:

N/A

Database Tags:

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