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PhysiolDBS: Physiological mechanisms of Deep Brain Stimulation in Parkinson's disease

Project Description





This consortium is proposed to uncover physiological mechanisms of deep brain stimulation (DBS) in Parkinson's disease as a model neurodegenerative disease. There is a pressing need to do this, because future advances in DBS technology including the development of more intelligent stimulation paradigms or closed-loop stimulation systems, will require a better understanding of the nature of abnormal brain activity, that needs to be modulated, and its interaction with extrinsic electrical stimuli. Because DBS has multiple effects on brain activity from a local cellular level to complex interactions with functional brain networks a collaborative approach of researchers from the fields of cellular physiology, systemic neurophysiology, behavioural and clinical neurosciences is required. We aim at coordinating the already existing, but geographically dispersed, high-level of research expertise in Europe on this topic. Project results will primarily increase our knowledge of Parkinsonian pathophysiology and the interaction of disease related brain activity with electrical stimulation. Some of the consortium outputs, however, may be suitable for patent protection. These spin-offs could be exploited in future cooperations with the medical industry. Therapeutically relevant results of the consortium will be immediately translated into clinical proof-of-principle studies, which will be possible through the close collaboration between basic and clinical scientists.



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