Press release

Lausanne, 5 December 2019

NeuroRestore: a new center to develop innovative surgical-based approaches for restoring lost neurological function

The Defitech Foundation has teamed up with EPFL, CHUV and UNIL to widen access to the groundbreaking neurotechnology developed under the 2018 STIMO study, which allowed paraplegic patients to walk again. Their aim is also to develop new neurosurgical treatments for people suffering from Parkinson's disease or from neurological disorders following a head injury or stroke.

NeuroRestore is a new Center set up by the Defitech Foundation, Lausanne University Hospital (CHUV), the University of Lausanne's (UNIL) Faculty of Biology and Medicine (FMB), and EPFL to harness expertise in neurorehabilitation and neurosurgical implant technologies across the four partner institutions. Doctors, engineers and researchers will join forces to develop "electroceuticals" – a type of neurotherapy that uses electrical stimulation to help restore motor function in paraplegic and quadriplegic patients, as well as in people suffering from Parkinson's or the after effects of a stroke. The NeuroRestore team will trial innovative, personalized treatments that, once proven, will be made available to hospitals and patients. The center will also train a new generation of health-care practitioners and engineers in the use of these breakthrough therapies.

Accelerating research

On 1 November 2018, EPFL neuroscientist Grégoire Courtine and CHUV neurosurgeon Jocelyne Bloch published the findings of the STImulation Movement Overground (STIMO) study in the journal *Nature*. The research established a revolutionary new therapeutic framework to improve recovery from spinal cord injury, combining targeted electrical stimulation of the spinal cord (controlled by a pacemaker) and an intelligent bodyweight-support system. After undergoing the groundbreaking therapy, eight paraplegic patients were able to take a few steps unassisted.

The Defitech Foundation has partnered with EPFL, CHUV and UNIL to found NeuroRestore, a center that will build on the findings of the STIMO study and fast-track the development of these innovative therapies to make them widely available as soon as possible. Potential patients can register their interest by completing an online form at www.neurorestore.swiss.

The NeuroRestore team will be spread across several sites: CHUV in Lausanne, CRR SuvaCare (a Sion-based rehabilitation clinic and one of the project's financial partners), and EPFL's Campus Biotech in Geneva. The researchers, based at CHUV

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and EPFL, will also work with the Wyss Center for Bio and Neuroengineering in Geneva. Patients will undergo surgery at CHUV, while the rehabilitation sessions will take place at either CHUV or CRR SuvaCare. Jocelyne Bloch and Grégoire Courtine will serve as the center's co-directors.

Wide-ranging applications

NeuroRestore's founding members have entered into a five-year agreement. The next clinical study, STIMO-2, will use the technologies developed as part of the original STIMO study – which addressed patients with chronic injuries (dating back three years or more) – to treat up to 20 paraplegic patients with recent spinal cord damage. It will be a multicenter trial in Switzerland, Germany and the Netherlands.

Further information: www.neurorestore.swiss

Press kit: go.epfl.ch/NeuroRestore2019

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About the Defitech Foundation

The Defitech Foundation was set up by Logitech founder Daniel Borel and his wife Sylviane Borel. It contributes, in Switzerland and abroad, to research into the development of products and technologies aimed at helping those with physical, psychological or mental disabilities. The foundation is the lead financial partner for the NeuroRestore project.

About Jocelyne Bloch

Jocelyne Bloch is co-director of NeuroRestore and serves as head of stereotactic and functional neurosurgery at CHUV. She studied medicine at the University of Lausanne and qualified as a neurosurgeon in 2002. She is heavily involved in translational research, with a longstanding interest in new therapeutic indications in neuromodulation and cell therapy. Since meeting Grégoire Courtine in 2012, she has been involved in helping paraplegic patients walk again as part of the STIMO project.

About Grégoire Courtine

Grégoire Courtine is co-director of NeuroRestore and heads a research laboratory at EPFL. He studied physics and neuroscience in France. Drawing on his interest in translational neuroscience, Courtine has focused his research on developing new neurotechnologies aimed at improving motor function. After winning an important distinction during his postdoc at UCLA, he set up his own lab at the University of Zurich in 2008 before joining EPFL, where he continues to work on paraplegia. He launched the STIMO study together with Jocelyne Bloch.