

# IRP RESEARCH PROJECTS FUNDED IN 2024-26



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## IRP RESEARCH GRANTS – BASIC

**Brüningk Sarah**, ETH Zurich, Basel, Switzerland

*In silico trials - a digital health solution to assess recovery from traumatic Spinal Cord Injury*

The plan is to develop an artificial intelligence tool that will analyse data from previous clinical trials and studies, bringing together the many variables that are documented. The new tool will enable researchers to enter the parameters of the trial they are proposing and receive good information on how to plan their trial.

**CHF 149'000.- from 2023-25**

**Grubb Matthew**, King's College, London, United Kingdom

*How does plasticity in excitatory interneurons influence functional recovery during neuronal regeneration?*

This research is addressed to the mechanisms of plasticity. Grubb wishes to work out the details of how the interneurons respond to regeneration, then use stimulation methods to activate specific types to work out best to get recovery.

**CHF 150'000.- from 2023-25**

## IRP RESEARCH GRANTS – CLINICAL

**Alvarez Pinto Zaida**, Institute for Bioengineering of Catalonia, Spain

*Human vascularized Spinal Cord organoid device for drug discovery after traumatic injury*

The project is to develop a new model of spinal cord injury using tissue derived from human stem cells. What makes this model original is that Alvarez Pinto will combine neurons, vascular cells and inflammatory cells to make a more representative organoid model than has been achieved before. These organoids will be injured, and protective treatments will be assessed. This could be a useful non-animal model for testing new spinal protection treatments.

**CHF 149'500.- from 2024-26**

**Courtine Grégoire**, EPFL, Geneva, Switzerland

*Reversing upper limb paralysis through brain-controlled electrical stimulation of the cervical Spinal Cord*

The current application is focused on restoring hand function to people injured at higher spinal levels who have some arm function but diminished hand function. Two patients have already received implants. The money from the grant will pay for at least a further three.

**CHF 150'000.- from 2023-25**

**Filli Linard**, Balgrist University Hospital, Zurich, Switzerland

*Probing the integrity of the main descending motor systems in SCI*

The group have developed electrophysiological tests that allow them to measure the function of the corticospinal, reticulospinal and rubrospinal pathways. The degree to which patients will recover, and the treatment that they need depends on the integrity of the different motor pathways. This is the first time that all three pathways have been assessed in individual patients. This will be a useful set of measurements which will indicate the best form of therapy for recovering patients.

**CHF 118'092.- from 2024-26**

**Monastyrskaya Katia**, University of Bern, Bern, Switzerland

*Effect of early treatment with Onabotulinumtoxin A on the bladder function of patients with acute Spinal Cord Injury in single cell resolution*

The project addresses issues arising from the use of Botulinum toxin to paralyze the bladder to prevent unintended bladder emptying in Spinal Injury patients. The understanding from this project will hopefully lead to better bladder treatments.

**CHF 150'000.- from 2023-25**

**Seif Maryam**, Balgrist University Hospital, Zurich, Switzerland

*Revealing SCI-induced perfusion impairment in the lumbar cord: a longitudinal MRI study*

The application uses a new imaging method to measure oxygenation and blood flow in the injured spinal cord. The lumbar cord below the injury will be studied. There is preliminary data showing that blood flow and oxygenation here is affected in spinal injury and cervical myelopathy. The plan is to correlate the imaging data with the patients' clinical state and recovery. The hypothesis is that poor oxygenation will predict poor recovery, and so the new imaging method will be useful for planning the clinical treatment of injured patients and for assessing patients with cervical myelopathy.

**CHF 149'120.- from 2024-26**

**Walter Matthias**, University of Basel, Basel, Switzerland

*Identification, tracking and quantification of cardiac changes in the acute stages of Spinal Cord Injury*

The aim is to learn more about the changes in the cardiovascular system resulting from injury in the short and longer term. Little focus has been applied to the circulation so far.

**CHF 148'223.- from 2023-25**



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