Modelling human adult brain injury environment for repair

Project description:
Neurons are not replaced after brain injury or in neurodegeneration, but there are promising avenues for replacement, by transplantation of direct reprogramming from glial cells into new neurons. However, the integration of these new neurons is potently influenced by the injury environment, about which still little is known for human patients. Therefore we aim here to characterize the extracellular matrix environment by proteomics and decellularization of neurosurgical human brain resection material. Human iPSC-derived young neurons or glial cells will be cultured on the decellularized matrix from different pathology conditions towards identification of ideal conditions direct glia to neuron reprogramming and synapse formation. Modelling defined components in defined 3D hydrogels will be pursued in interaction within the Hector Fellow Academy to construct an optimal environment.

Keywords
Human brain pathology, neuronal replacement, decellularization, extracellular matrix, human induced pluripotent stem cell-derived neurons and glia

Entry requirements
Master in Biology or Material Chemistry

Location
Biomedical Center, LMU & Institute for Stem Cell Research, Helmholtz Center Munich, Germany

Starting date
Flexible within 2026

Funding
Four years of funding (3+1, three years with the possibility to extend for one year)

How to apply

Please apply via the HFA application portal.

The Hector Fellows will arrange interviews (via skype or if feasible in-person) with the most promising applicants. The final candidates will be invited to give an online presentation. The final decisions will be announced in the following days after the presentation.

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Application Deadline
October 15, 2025

Enquiries
For further details about the project, please contact Prof. Dr. Magdalena Götz at: magdalena.goetz@helmholtz-munich.de

For questions related to making your application, please contact Hector Fellow Academy Office: application@hector-fellow-academy.de or www.hector-fellow-academy.de

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