SynAGE - The Aging Synapse

Hast Du Lust auf ein Jahr in der Forschung?

Unser Graduiertenkolleg beschäftigt sich mit molekularen, zellulären und verhaltensbiologischen Mechanismen des kognitiven Leistungsabfalls im Alter mit einem Fokus auf der gesunden synaptischen Alterung.

Wir bieten

- ✓ modernste Technologien und Forschungsansätze
- ✓ methodisches Training
- ✓ internationale Netzwerke
- ✓ Karriereunterstützung
- ✓ 12 Monate Stipendium (1095 EUR /Monat)

Wir suchen Studenten mit

- ➢ Interesse an Forschung
- ➢ abgeschlossenem Physikum
- ➢ Pausieren des Studiums
- ➢ guten Englischkenntnissen

Themen…

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MD topics – Squad A

A1.2 (Prof. A. Dityatev: Alexander.Dityatev@dzne.de)
behavioural analysis of contextual and spatial memories in adult and aged mice following knockdown of Piezo1 in hippocampal neurons or astrocytes, or most efficient ECM-targeting treatment

A2.2 (Prof. O. Stork: oliver.stork@ovgu.de)
potential of recovering synaptic functionality, physiology and learning in aged animals by blocking Ndr2 signalling. Late inactivation of the Ndr2 gene will be achieved in conditional Ndr2 knock out mutants with the systemic injection of PHP.eB AAV bearing CamKII promoter-driven CRE recombinase

A3.2 (Prof. D. Dieterich: daniela.dieterich@med.ovgu.de)
test drugs in vitro that target relevant molecules in mechano-transduction and their effect on Hippo signalling activation in neurons and astrocytes in vitro. To model age-enhanced stiffness, we will use hydrogel cultures and monitor down-stream effects on astrocytic filopodia and neuronal spine morphology with GFP-Actin under standard or LTD-inducing conditions

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MD topics – Squad B

B1.2 (Prof. A. Dityatev: Alexander.Dityatev@dzne.de)
pharmacological treatments, immunohistochemistry and behavioural analysis to validate the effects of Empagliflozin and Minocycline in mice

B2.2 (Prof. S. Schreiber: stefanie.schreiber@dzne.de)
blood testing for NVU, ECM markers and cytokines and analyse the dynamics of these data to find new biomarkers of "microvascular brain ageing" and to assess their co- and independent variance within the MRI/blood composite score

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MD topics – Squad C

C1.2 (Prof. M. Kreutz/ Prof. C. Seidenbecher: Michael.Kreutz@lin-magdeburg.de)
biofluid-based investigation of synaptic proteins like PSD-95 in healthy humans and AD or CSVD patients and correlation with inflammation and metabolic markers

C2.2 (Prof. S. Remy: Stefan.Remy@lin-magdeburg.de)
neuronal morphometric analyses and generation of cell cluster databases (based on morphology, electrophysiology, synaptic function, connectivity) and generation of computational models of septal circuit function

C3.2 (Prof. E. Düzel/Dr. G. Ziegler: Gabriel.Ziegler@dzne.de)
layer-specific functional connectivity analysis in MCI and its relationship to glucose metabolism with PET

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MD topics – Squad D

D1.2 + D2.2 (Prof. A. Maass: Anne.Maass@dzne.de & Prof. J. Pakan: janelle.pakan@lin-magdeburg.de)
joint project to directly evaluate the translational potential of cross-species results from A-/T- older participants (D1.2) and the aged mice group (D2.2). Using normalized measures of activity (BOLD response in humans and population change in fluorescence in mice) in posterior-midline regions during the presentation of familiar and novel stimuli we will perform a representational similarity analysis (RSA), which enables us to directly compare activity-based correlation matrices for aged subjects in relation to behavioural performance across species

D3.2 (Prof. S. Remy: Stefan.Remy@lin-magdeburg.de)
high-resolution morphological reconstructions of neurons recorded in multipatch approach. These data will give a detailed morphological understanding of synaptic connectivity including dendritic (re-)distribution of synaptic inputs (both intralaminar and HC-RSC) during the ageing process and will thus aid the generation of a detailed computational model of ageing-related synaptic circuit function by including distance-dependent synaptic computations and morphology.

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MD topics – Squad E

E1.2 (Prof. M. Kreutz: Michael.Kreutz@lin-magdeburg.de)
electrophysiological characterization of the role of Calneuron-1 for M1R function in mossy fibre plasticity

E2.2 (Prof. O. Stork: oliver.stork@ovgu.de)
emotional aspects of ageing induced deficits in DG/ CA3 activation, novelty detection and novelty responding, using social isolation as a stressor

E3.2 (Prof. M. Ullsperger: markus.ullsperger@ovgu.de)
pharmacological challenge study with a choline esterase inhibitor in old healthy participants using a novelty oddball task

E4.2 (Prof. M. Rothermel: markus.rothermel@med.ovgu.de)
cognitive decline in aging individuals is always accompanied by a decrease in olfactory perception, with the earliest signs detectable before cognitive deficits emerge. We explore this connection in humans and animal models

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