



PhD position on 7T-Microstructural Imaging & Aging

The [Institute for Cognitive Neurology and Dementia Research \(IKND\)](#) and the [German Center for Neurodegenerative Diseases \(DZNE\)](#) are unique research centers dedicated to the subject of dementia and all its facets, as well as other neurodegenerative diseases. The IKND and DZNE stand for excellence in research and science management, translation of scientific results into practice, interdisciplinarity, and internationalization. With over 1000 employees from 55 nations, spread over 10 sites in Germany, the DZNE is one of the leading research centers in the field.

This position will be based in the [Microstructural Plasticity & Aging Research Group](#) headed by Dr. Esther Kühn, which seeks (i) to understand fundamental mechanisms of human microstructural aging using 7T-MRI, (ii) to gain fundamental knowledge on structure-function interactions in the human sensory system, and (iii) to develop novel diagnostic tools and interventions that help maintain people's independence. In this project, we will investigate how human ageing affects the cortical myeloarchitecture in the somatosensory system, and its interaction with sensory processing mechanisms using a unique combination of 7T-MRI, psychophysical modelling, and machine learning. The position holder will be embedded in a vibrant local network of neuroscientists, and will participate in the [Otto-von-Guericke Graduate Academy](#).

What we are looking for:

Function: PhD Student
Start date: August 2019 or later
Location: [DZNE Magdeburg](#)

Who we are and what we do:

Research focus: Meso-scale imaging of the human sensorimotor system in healthy and pathological aging
Team: International and interdisciplinary research team, including psychologists, computer scientists, neurologists; strong interaction and collaboration with other research groups at the Science Campus Magdeburg (e.g., Groups of [Prof. Dr. Emrah Düzel](#), [Prof. Dr. Thomas Wolbers](#), [Prof. Dr. Oliver Speck](#))

Environment: Research dedicated 3T and 7T MRI scanners in walking distance
Cutting-edge, automatic, 7T-MRI-compatible sensory stimulation device
Strong methodological support for MRI and fMRI analyses
[Active local network](#) of neuroscience PhDs & postdocs

What your role would look like

Supervisor: Research Group leader Dr. Esther Kühn
Project: DFG-funded project “Cortical microstructure & aging”, which focuses on using multi-modal structural and functional meso-scale imaging to uncover the neuronal mechanisms of human sensorimotor aging
Tasks: Conduct neuroimaging experiments and use computational models to test the effect of cortical microstructure (myelin, iron) on functional and behavioural readouts
If desired, be involved in teaching activities
Profile: BSc/MSc in psychology, cognitive neuroscience, neuroimaging methods or related field
Broad statistical knowledge and programming experience (i.e., Python, R, Matlab) will be a plus
Strong interest in 7T-MRI methodology and human aging
Fluent in English
Reliable, flexible, passionate

Please submit your application (CV, Transcript of Records, abstract of Master Thesis, names of two referees) to esther.kuehn@dzne.de. Applications will be accepted until position is filled. More information about my research here: www.estherkuehn-science.org.

Further reading

Riemer M, Wolbers T, **Kuehn E** (2019) "Preserved multisensory body representations in advanced age" *Sci Rep* 9:2663 [\[link\]](#)

Lohmann G, Stelzer J, Lacosse E, Kumar VJ, Müller K, **Kuehn E**, Grodd W, Scheffler K (2018) "LISA improves statistical analyses for fMRI" *Nat Commun* 9:4014 [\[link\]](#)

Kuehn E, Sereno I M (2018) "Modelling the human cortex in three dimensions" *Trends Cogn Sci* 22:1073-1075. [\[link\]](#)

Kuehn E, Haggard P, Villringer A, Pleger B, Sereno M (2018). Visually-driven maps in area 3b. *J Neurosci* 38:1295-1310. [\[link\]](#)

Kuehn E, Perez M, Diersch N, Döhler J, Wolbers T, Riemer M (2018). Embodiment in the aging mind. *Neurosci Biobehav Rev* 86:207-225. [\[link\]](#)

Kuehn E, Dinse J, Jacobsen E, Villringer A, Sereno M, Margulis D (2017) Body topography parcellates human sensory and motor cortex. *Cereb Cort.* Feb 10:1-16. [\[link\]](#)