

PhD position on grid cell coding in old age

The [German Center for Neurodegenerative Diseases \(DZNE\)](#) is a unique non-university research center dedicated to the subject of dementia and all its facets, as well as other neurodegenerative diseases. The DZNE stands 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 [Aging & Cognition Research group](#), which seeks (i) to understand fundamental mechanisms of cognitive aging under naturalistic conditions, (ii) to establish novel clinical assessment tools, and (iii) to develop interventions that help maintain people's independence. In this project, we will investigate **how human ageing affects computations in the entorhinal grid cell system**, using a unique combination of **advanced virtual reality** and **cutting-edge neuroscience tools**.

What we are looking for:

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

Who we are and what we do:

Research focus: Cognitive Neuroscience research on spatial navigation, aging and dementia
Team: International and interdisciplinary research team, including cognitive scientists, psychologists, biologists and physicists
Environment: Research dedicated 3T and 7T MRI scanners
Cutting-edge virtual reality facilities
Mobile EEG, MEG, TMS and eye tracking systems
Active [local network](#) of neuroscience PhD students and Postdocs

What your role would look like:

Supervisors: Prof. Dr. Thomas Wolbers and Dr. Nadine Diersch
Project: With a combination of interactive VR technology and ultra-high field (7T) neuroimaging, you will characterize how human aging affects spatial coding in the grid cell circuit
Tasks: Conduct neuroimaging experiments and use computational models to test novel predictions for grid cell coding in humans
If desired, be involved in teaching activities
Profile: BSc/MSc in psychology, cognitive neuroscience, neuroimaging methods or applied statistics
Broad statistical knowledge and programming experience (i.e. Python, R, Matlab) will be a plus
Strong interest in cognitive aging and computational modelling
Fluent in English
Reliability, flexibility, passion

To submit your application, please visit <https://jobs.dzne.de/en/jobs/30309/form>

For further information about this unique opportunity, please email Thomas Wolbers (thomas.wolbers@dzne.de). To learn more about our research, please visit our [website](#) and follow us on Twitter.

Further reading:

Diersch, N., & Wolbers, T. (2019). The potential of virtual reality for spatial navigation research across the adult lifespan. **Journal of Experimental Biology**, 222.

Lester, A., Moffat, S., Wiener, J.M., Barnes, C.A., & Wolbers, T. (2017). The Aging Navigational System. **Neuron**, 95(5), 1019–1035.

Stangl, M., Achtzehn, J., Huber, K., Dietrich, C., Tempelmann, C., & Wolbers, T. (2018). Compromised grid-cell-like representations in old age as a key mechanism to explain age-related navigational deficits. **Current Biology**, 28(7), 1108-1115.

Stangl, M.*, Shine, J.*, & Wolbers, T. (2017). The GridCAT: A toolbox for automated analysis of human grid cell codes in fMRI. **Frontiers in Neuroinformatics**, 11:47.