

# Prof. Dr. Thomas Wolbers

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## HIGHER EDUCATION

- 2005 Hamburg University: Ph.D. in Psychology (summa cum laude)  
1999 Free University Berlin / Hamburg University: Diploma in Psychology

## RESEARCH CAREER

- 2013 Offer for a full professorship for Multimodal Imaging of Sensorimotor Systems, Ludwig-Maximilians University Munich, Germany - Rejected  
Since 06/2012 Professor for Ageing and Cognition, German Center for Neurodegenerative Diseases (DZNE), University of Magdeburg, Germany  
2009 – 2012 Senior Lecturer at the Centre for Cognitive and Neural Systems (Director: Prof. Richard Morris), University of Edinburgh, UK  
2006 – 2008 Postdoctoral researcher at the Department of Psychology, UC Santa Barbara, USA, with Prof. Jack Loomis and Prof. Mary Hegarty  
2001 – 2005 Ph.D. student at the Department of Systems Neuroscience, University Medical Center Hamburg-Eppendorf, Germany, with Prof. Christian Büchel  
1999 – 2000 Research fellow at the Neurological Therapy Centre (NTC), Düsseldorf, Germany, with Prof. Volker Hömberg

## TEACHING EXPERIENCE

- 2014 – date Otto-von-Guericke University Magdeburg: Course organiser for the Integrative Neuroscience MSc course 'Learning & Memory'  
2010 – 2012 University of Edinburgh: Course organiser for the Honours Neuroscience course 'Cognitive Neuroscience'.  
2009 – 2012 University of Edinburgh: Spatial Cognition Practical: Demonstration of spatial cognition experiments to undergraduate students.  
2007 – 2008 University of California Santa Barbara: Course organiser for the Psychology research seminar 'Machine learning approaches to neuroimaging'.  
2002/2003 Hamburg University: Course organiser for the Psychology research seminar 'Functional brain imaging in cognitive psychology'.  
2001 – 2012 Hamburg University: Course organiser and faculty member for the annual course for Statistical Parametric Mapping (SPM), the leading software for neuroimaging data analysis.

## LEADERSHIP EXPERIENCE

- 2018 Member of the selection committee for Ph.D. fellowships of the la caixa foundation, Barcelona, Spain.  
2016 – date External expert of the EU Research Executive Agency (REA)

- 2017 – date Member of the organising committee for the neuroscience graduate program, Center for Behavioral Brain Sciences, Otto-von-Guericke University Magdeburg: <http://gp.cbbs.eu/>
- 2016 Helmholtz Management Academy: 3-day course 'Managing Cooperations'
- 2015 Helmholtz Management Academy: 7-day course 'Leading Your Research Group'
- 2009 – date Supervision of eight Postdocs, seven Ph.D. students, five MSc students, and multiple BSc students and research assistants
- 2009 – 2012 Member of the selection committee for Ph.D. students at the Centre for Cognitive and Neural Systems, University of Edinburgh, UK

## ORGANISATION OF CONFERENCES AND SYMPOSIA

- 2018 *Spatial navigation – a unique window into mechanisms of aging and dementia*. Symposium organised at the 2018 International Conference on Learning and Memory ([www.learnmem2018.org](http://www.learnmem2018.org)), Huntington Beach, USA.
- 2016 – date Main organizer and chair of the biannual *Interdisciplinary Symposium on Spatial Cognition in Aging and Neurodegeneration* (iSCAN, [www.dzne.de/iscan18](http://www.dzne.de/iscan18)), Magdeburg, Germany
- 2016 – date Main organizer and chair of the biannual *Interdisciplinary Symposium on Spatial Navigation* (<http://inavsymposium.com>)
- 2014 Organisation of the first *Vespucci Institute on Brain and Space*, Lisbon, Portugal.
- 2010 *Navigation and the head direction system: insights from animals, humans and computational models*. Symposium organised at the 7th meeting of the Federation of European Neurosciences (FENS) in Amsterdam, Netherlands.
- 2009 – 2012 Development of the first course on *Statistical Parametric Mapping (SPM)* in Scotland (University of Edinburgh). This course attracted >80 national and international participants each year.

## FUNDING ID

- 2018 – 2020 PI for the project 'GeViRe – Developing a face mask to measure heart rate variability and electrodermal activity with virtual reality headsets'. Funding body: German Ministry for Education and Research (BMBF)
- 2018 – 2021 PI for the project 'Caudate computations in support of spatial navigation'. Funding body: German Research Foundation (DFG).
- 2017 – 2019 Proof of Concept Grant for the project 'NEOMENTO – Redefining Virtual Reality Therapy for Anxiety Disorders'. Funding body: European Research Council (ERC)
- 2016 – 2018 PI for the project 'AGETIME'. Funding body: European Social Fund (ESF)
- 2014 – 2018 Research Grant for the project 'Probabilistic computation of location in the rodent and human hippocampus' (with Prof. Ila Fiete, University of Texas at Austin and Prof. Matthew Nolan, University of Edinburgh). Funding body: Human Frontiers Science Program (HFSP).
- 2013 – 2018 ERC Starting Grant for the project 'Spatial Navigation – A Unique Window into Mechanisms of Cognitive Ageing (AGESPACE)'. Funding body: European Research Council
- 2013 – 2017 PI for the project 'Towards a quantitative understanding of navigational deficits in aging humans' (with Prof. Ila Fiete, University of Texas at Austin). Funding body: BMBF / National Science Foundation (USA)
- 2011 – 2013 Co-PI for the project 'Examining the neural correlates of spatial interference effects' (with Dr. M. Avraamides, University of Cyprus, and PD Dr. Mark May, Helmut-Schmidt University, Hamburg, Germany), Funding body: Cyprus Research Foundation.

- 2009 – 2012 Co-I for the project 'Where is my goal? The functional, computational and neural basis of human survey knowledge' (with Dr. T. Meilinger, MPI for Biological Cybernetics, Tuebingen, Germany). Funding body: German Research Foundation (DFG).
- 2010 – 2011 PI for the project 'Pattern separation – a novel window into age related memory impairments?' Funding body: University of Edinburgh.
- 2009 – 2011 Co-I for the project 'Elucidating the neural substrates of motor imagery: A new analytical approach to a longstanding clinical and behavioural question' (with Dr. M. Keehner, University of Dundee). Funding body: Scottish Imaging Consortium SINAPSE.
- 2006 – 2008 PI for the project 'Update your environment: Neural foundations of spatial updating in real and virtual space'. Funding body: European Commission.
- 2007 – 2008 PI for the projects 'Coding for environmental geometry in the human brain - a neuroimaging study on sighted and congenitally blind participants' and 'Using Diffusion Tensor Imaging to elucidate neural foundation of individual differences in spatial updating abilities'. Funding body: UC Santa Barbara Faculty Research Grant.
- 2007 – 2008 PI for the project 'Bridging the gap between animal and human spatial cognition'. Funding body: UC Santa Barbara Harvey L. Karp Discovery Award.

### **PRIZES, AWARDS, AND PERSONAL FELLOWSHIPS**

- 2018 Innovation to Application Award, German Center for Neurodegenerative Diseases
- 2007 UC Santa Barbara: Harvey L. Karp Discovery Award
- 2006 European Commission: Marie Curie Outgoing International Fellowship
- 2005 Interdisciplinary College IK 2005: Travel award
- 2004 European Science Foundation: Travel award
- 2003 Conference on Spatial Information Theory (COSIT): Student award for the best presentation in the doctoral colloquium
- 2003 German Neurological Society (DGN): Poster award
- 2002 Organization for Human Brain Mapping: HBM travel award

### **EDITORIAL SERVICE**

Ad-hoc reviewer for the following international journals / funding organisations:

Scientific journals: Science, Nature Reviews, PNAS, Neuron, Current Biology, Journal of Neuroscience, Cerebral Cortex, Hippocampus, Journal of Neurophysiology, European Journal of Neuroscience, NeuroImage, Brain Research, Experimental Brain Research, Neuropsychologia, Psychological Science, Journal of Experimental Psychology, Quarterly Journal of Experimental Psychology, Psychological Research, Memory & Cognition, Visual Cognition, Neurobiology of Aging, Psychology and Aging

Funding bodies: Human Frontiers Science Program (HFSP), European Research Council (ERC), Medical Research Council (UK), Netherlands Organisation for Scientific Research, German Research Foundation (DFG), Swiss National Science Foundation (SNSF)

Guest editor: Learning and Memory (2018). Guest editor for a Frontiers Research Topic, together with M. Yassa (Irvine).

Spatial memory—a unique window into healthy and pathological aging (2014). Guest editor for a Frontiers Research Topic, together with P. Dudchenko (Stirling) and E. Wood (Edinburgh).

## INTERNATIONAL COLLABORATORS

Ila Fiete, University of Texas, Austin, USA

Mary Hegarty, University of California Santa Barbara, USA

Matthew Nolan, University of Edinburgh, UK

Alexander Stahn, University of Pennsylvania, Philadelphia, USA

Nanthia Suthana, University of California, Los Angeles, USA

Jan Wiener, Bournemouth University, UK

## KEY PUBLICATIONS

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, 1-8.

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

Shine, J., Valdes-Herrera, J.P., Hegarty, M. & **Wolbers, T.** (2016). The Human Retrosplenial Cortex and Thalamus Code Head Direction in a Global Reference Frame. *Journal of Neuroscience*, 36(24):6371-6381.

Vieweg, P.; Stangl, M., Howard, L.R. & **Wolbers, T.** (2015). Changes in pattern completion - a key mechanism to explain age-related recognition memory deficits? *Cortex*, 64: 343-351.

Wiener, J.M.; de Condappa, O.; Harris M. A. & **Wolbers T.** (2013). Maladaptive bias for extrahippocampal navigation strategies in aging humans. *Journal of Neuroscience*, 33(14): 6012-6017.

**Wolbers T.**; Klatzky R. L.; Loomis J. M.; Wutte M. G. & Giudice N. A. (2011). Modality-independent coding of spatial layout in the human brain. *Current Biology*, 21(11): 984-989.

**Wolbers, T.**; Hegarty, M. (2010). What determines our navigational abilities? *Trends in Cognitive Sciences*, 14(3), 138-146.

**Wolbers, T.**; Hegarty, M.; Büchel, C. & Loomis, J.M. (2008). Spatial updating: how the brain keeps track of changing object locations during observer motion. *Nature Neuroscience*, 11(10), 1223-1230.