

Curriculum Vitae of Prof. Dr. Melanie Wilke

Personal:

Contact Department of Cognitive Neurology
Medical School, Georg August University Göttingen
Robert-Koch-Straße 40, 37075 Göttingen
Phone: +49 (0) 551 3913131
Fax: +49 (0) 551 39 13243
E-mail: melanie.wilke@med.uni-goettingen.de

Birth 1976

Education:

- 2001- 2005** PhD (Dr. rer. nat) in Neural and Behavioral Sciences ('summa cum laude'),
Max Planck Institute for Biological Cybernetics (Dept. Cognitive
Neurophysiology); Advisors: Prof. Dr. N.K. Logothetis and Dr. D.A. Leopold
Topic: 'Neuronal underpinnings of perceptual suppression'
- 1997-2001** M.A. in Psycholinguistics, Neuropsychology and Neurobiology ('very good'),
Ludwig-Maximilians-University, Munich, Germany
- Master Thesis at Max Planck Institute for Human Cognitive and Brain Sciences,
Leipzig; Advisor: Dr. E. Ferstl
*Topic: 'Effects of encoding perspective on recognition of textual information
following damage of the frontal lobe'*
- 1995-1997** Study of Political Sciences and Literature at the University of Leipzig and at the
Ludwig-Maximilians-Universitaet, Munich (LMU)

Working experience:

Since 04/2011. Schilling Foundation Professor (W3), Director of the Department of Cognitive Neurology and Head of the MR-Research Unit, UKG, Georg August University Göttingen

Since 04/2011. Co-Investigator of the 'Decision and Awareness Group' (DAG) at the German Primate Center (DPZ)

2008–2011. Postdoctoral Fellow in the Division of Biology, Caltech, Pasadena
Advisor: Prof. R.A. Andersen

2005-2008. Postdoctoral Fellow in the Laboratory of Neuropsychology, NIMH, Bethesda
Advisor: Dr. D.A. Leopold

2001-2005. PhD student at the Max Planck Institute for Biological Cybernetics, Tuebingen.

Scientific award:

- Fellows Award for Excellence in Biomedical Research, National Institutes of Health, 2008

Invited lectures:

Conference Symposia & Tutorials

- **2012.** Attention Workshop, Tübingen, Germany
- **2012.** Symposium from the Mind Science Foundation. Samoset, USA
- **2011.** Minisymposium at the Society for Neuroscience Meeting. Washington, D.C., USA
- **2011.** Satellite Meeting at the 15th Meeting of the Association for the Scientific Study of Consciousness, Kyoto, Japan
- **2010.** Symposium at the 14th Meeting of the Association for the Scientific Study of Consciousness, Toronto, Canada
- **2009.** Symposium at the 32th Meeting of the Japanese Neuroscience Society, Nagoya, Japan

- **2009.** Symposium at the workshop for "Scientific Studies of Consciousness" organized by National Institute for Physiological Sciences, Okazaki, Japan
- **2006.** Tutorial at the 9th Meeting of the Association for the Scientific Study of Consciousness, Pasadena, USA

Invited talks

- **2012.** BENEFRI Neuroscience Workshop, Fribourg, Switzerland
- **2010.** Brain & Spine Institute (ICM)/Hôpital Pitié-Salpêtrière, Paris, France
- **2009.** University of Southern California, Los Angeles, USA
- **2009.** Okinawa Institute of Science and Technology (OIST), Okinawa, Japan
- **2007.** California Institute of Technology, Pasadena, USA
- **2007.** Salk Institute, La Jolla, USA
- **2007.** Harvard Medical School, Boston, USA
- **2007.** Vanderbilt University, Nashville, USA

Professional services

- Head of the Primate Platform of the CNMPB at the German Primate Center (DPZ) to establish a monkey model of Parkinson's disease (since 2011)
- Head of MR-research facility at the University Clinic Göttingen
- Review editor for "Frontiers in Consciousness Research"
- Program Committee of the 15th Meeting of the Association for the Scientific Study of Consciousness (ASSC), 2011, Kyoto, Japan
- Co-organizer of the workshop "Neural mechanisms of attention and perception", 2011, Okazaki, Japan
- Ad-hoc reviewer: Journal of Neuroscience, Journal of Vision, Nature Neuroscience, Neuron, Proceedings of the Royal Society (London), Journal of Cognitive Neuroscience

Lectures (Vorlesungen):

- M5.1 Module at the Medical School, 2011, Göttingen: 'Higher Cognitive Functions'

Major Research Interests of the Department of Cognitive Neurology

The long-term goal of our research is to understand how neural activity gives rise to spatial awareness and how distributed information is integrated to guide the selection of movement goals. Furthermore we are dedicated to perform translational research from monkey models of cognitive disorders to human patients. **Current research focuses on the question how thalamic nuclei and cortical areas interact during visual perception and decision making.** Another line of research is concerned with **the neural mechanisms underlying spatial neglect**, which is a frequent and severe consequence of brain damage in humans. Specifically we are investigating pathological and compensatory changes in large-scale brain networks in human stroke patients by means of imaging (DTI, fMRI) and stimulation (tACS, tDCS, TMS) methods. We develop and employ monkey models of spatial neglect to study the underlying neural mechanisms by means of fMRI, electrophysiological recordings, inactivation and stimulation techniques with the goal to develop new therapeutic interventions.

Publications:

Journal Articles:

- Helms, G. Garea-Rodriguez, E., Schlumbohm, C., König, C., Dechent, P. Fuchs, E., **Wilke, M.** Comprehensive structural and quantitative neuroimaging of the common marmoset monkey using a clinical MRI system. *Journal of Neuroscience Methods*. 2013. (in press)
- **Wilke, M.**, Kagan, I., & Andersen, R. A. Effects of pulvinar inactivation on spatial decision making between equal and asymmetric reward options. *Journal of Cognitive Neuroscience*. 2013. (minor revision).
- Hwang, E.J., Hauschild, M., **Wilke, M.**, Andersen, R.A. Neural basis of optic ataxia revealed by parietal reach region inactivation. *Neuron*. 2012.
- **Wilke, M***, Kagan I*, Andersen RA. Functional Imaging Reveals Rapid Reorganization of Cortical Activity after Parietal Inactivation in Monkeys. *PNAS*. 2012. **109**, 8274-8279.
- **Wilke, M.**, Turchi, J., Smith, K., Mishkin, M., Leopold, D.A. Pulvinar inactivation disrupts selection of movement plans. *Journal of Neuroscience*. 2010. 30:8650-8659.
- Schmid, MC., Mrowka, S., Turchi, J., Saunders, R., **Wilke, M.**, Ye, F., Leopold, D.A. Blindsight functions depend on the lateral geniculate nucleus. *Nature*. 2010. Jul 15;466(7304):373-7.

- **Wilke, M.**, Mueller, K-M., Leopold, D.A. Visibility related modulation of neural responses in visual thalamic nuclei. *PNAS*. 2009. Jun 9;106(23):9465-70.
- Mueller, K-M., **Wilke, M.**, Leopold, D.A. Neural responses in monkey area V4 following visual shape adaptation. *Neuroscience*. 2009. Jun 30;161(2):655-62.
- Cui J, **Wilke M.**, Logothetis NK, Leopold DA, Liang H. Visibility states modulate microsaccade rate and direction. *Vision Res*. 2009. Jan;49(2):228-36.
- Maier, A., **Wilke, M.**, Aura, C., Zhu, C., Ye, F.Q. & Leopold, D.A. Divergence of electrical and fMRI signals in primary visual cortex during perceptual suppression. *Nature Neuroscience*. 2008. Oct;11(10):1193-200.
- **Wilke, M.**, Logothetis, NK., Leopold DA. Local field potentials reflect perceptual suppression in monkey visual cortex. *PNAS*. 2006. Nov 14; 103(46):17507-12.
- **Wilke M.**, Logothetis NK, Leopold DA. Generalized flash suppression of salient visual targets. *Neuron*. 2003. Sep 11;39(6):1043-52.
- Maier A, **Wilke M.**, Logothetis NK, Leopold DA. Perception of temporally interleaved ambiguous patterns. *Current Biology*. 2003. Jul 1;13(13):1076-85.
- Leopold DA, **Wilke M.**, Maier A, Logothetis NK. Stable perception of visually ambiguous patterns. *Nature Neuroscience*. 2002. Jun;5(6):605-9.

Reviews/Book chapter:

- **Wilke, M.**, Dechent, P. & Schmidt-Samoa, C. Experimentelle Modelle für räumlichen Neglect(Studien in humanen und nicht-humanen Primaten). *Neuroforum*. 01/2012
- Leopold, DA & **Wilke, M.** Neuroimaging: seeing the trees for the forest. *Curr Biol*. 2005 Sep 20; 15(18):766-8.
- Leopold, D.A., A. Maier, **M. Wilke** and N.K. Logothetis: Binocular rivalry and the illusion of monocular vision. Binocular rivalry and perceptual ambiguity. 2005. (Eds.) David Alais and Randolph Blake, MIT Press, Cambridge, MA.

Recent conference abstracts from the department:

- Dechent, P., Schmidt-Samoa, C., **Wilke, M.** (2012) Transcranial Direct Current Stimulation (tDCS) Modulates Connectivity in Human Attention Networks. In: Society for Neuroscience Meeting New Orleans.
- Domínguez-Vargas, A.U., Graß, A., **Wilke, M.**, Kagan, I. (2012) High reward and risk modulate effort-based spatial decisions in monkeys. In: Society for Neuroscience Meeting New Orleans.
- Schmidt-Samoa, C., **Wilke, M.**, Dechent, P., Andersen, R.A., Kagan, I. (2012) Spatial decision differently activates frontoparietal network in humans and in monkeys. In: Society for Neuroscience Meeting New Orleans.
- Weinrich, C., Schmidt-Samoa, C., Dechent, P., Bähr, M., **Wilke, M.** (2012) Task-dependent activation of thalamo-cortical networks with tACS. In: Society for Neuroscience Meeting New Orleans.

Grant Support

- **2012-2015.** DFG Einzelantrag (WI 406/1-1).
Topic: "Neural basis of spatial neglect symptoms in thalamo-cortical circuits."
Principle Investigators: M. Wilke, Co-Investigator: I. Kagan
276.985 Euro for 36 months.
- **2012-2015.** ENC Network project - cycle 4. Topic: "Towards a non-invasive approach to evaluate abnormal network oscillations in Parkinson's Disease: combined tACS and fMRI studies." (Principle Investigators: M. Wilke & M. Bähr, Co-Investigators: P. Achermann, H. Berendse)
129.000 Euro for 36 months.