

CURRICULUM VITAE

Axel Nimmerjahn, Ph.D.

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Education/Training:

1996-1998	University of Bayreuth, Bayreuth, Germany <i>Intermediate Diploma, Physics</i>
1998-2002	University of Heidelberg, Heidelberg, Germany <i>Diploma, Physics</i> (passed with distinction)
2002-2005	University of Heidelberg, Heidelberg, Germany <i>Ph.D., Physics</i> (magna cum laude) <u>Research Experience:</u> Modeling, development and application of miniaturized two-photon microscopes; development of fluorescence labeling techniques for cell population imaging; study of structural and functional cell dynamics in the intact rodent brain <u>Advisors:</u> Fritjof Helmchen and Bert Sakmann
2005-2010	Stanford University, Stanford, USA <i>Postdoctoral Fellow, Biology and Applied Physics</i> <u>Research Experience:</u> Development and application of two complementary approaches for imaging in awake behaving mice; study of neurovascular coupling mechanisms in awake behaving mice <u>Advisors:</u> Mark J. Schnitzer and Ben A. Barres

Positions:

2000-2001	<i>Diploma Student</i> Max Planck Institute for Medical Research, Heidelberg, Germany
2002-2005	<i>Ph.D. Student</i> Max Planck Institute for Medical Research, Heidelberg, Germany
2005-2010	<i>Postdoctoral Fellow</i> Stanford University, Stanford, CA, USA
2010-present	<i>Assistant Professor</i> Salk Institute for Biological Studies, La Jolla, CA, USA

Honors:

2002-2005	Ph.D. Scholarship, Boehringer Ingelheim Fonds
2006	Du Bois-Reymond Award, German Physiologic Society
2006	Otto-Hahn-Medal, Max Planck Society
2006	Feodor Lynen Research Fellowship, Alexander von Humboldt Foundation

2006-2009	Long-Term Fellowship of the International Human Frontier Science Program Organization
2010-present	Richard Allan Barry Development Chair, Salk Institute for Biological Studies
2011-present	Rita Allen Scholar, Rita Allen Foundation
2011-present	Whitehall Foundation Scholar, Whitehall Foundation

Peer-Reviewed Primary Publications (in Chronological Order):

1. Kim, J., Dittgen, T., Nimmerjahn, A., Waters, J., Pawlak, V., Helmchen, F., Schlesinger, S., Seeburg, P.H., and Osten, P. (2004). Sindbis vector SINrep(nsP2S⁷²⁶): a tool for rapid heterologous expression with attenuated cytotoxicity in neurons. **J. Neurosci. Methods** *133*, 81-90.
2. Goebel, W., Nimmerjahn, A., and Helmchen, F. (2004). Distortion-free delivery of nanojoule femtosecond pulses from a Ti:sapphire laser through a hollow core photonic crystal fiber. **Optics Letters** *29*, 1285-1287.
3. Goebel, W., Kerr, J.N.D., Nimmerjahn, A., and Helmchen, F. (2004). A miniaturized two-photon microscope using a flexible coherent fiber bundle and a gradient-index lens objective. **Optics Letters** *29*, 2521-2523.
4. Dittgen, T., Nimmerjahn, A.*, Komai, S.*, Licznarski, P., Waters, J., Margrie, T.W., Helmchen, F., Denk, W., Brecht, M., and Osten, P. (2004). Lentivirus-based genetic manipulations of cortical neurons and their optical and electrophysiological monitoring in vivo. **Proc. Natl. Acad. Sci. USA** *101*, 18206-18211. *Authors contributed equally
5. Nimmerjahn, A., Kirchhoff, F., Kerr, J.N.D., and Helmchen, F. (2004). Sulforhodamine 101 as a specific marker of astroglia in the neocortex in vivo. **Nature Methods** *1*, 31-37.
6. Nimmerjahn, A., Kirchhoff, F., and Helmchen, F. (2005). Resting microglial cells are highly dynamic surveillants of brain parenchyma in vivo. **Science** *308*, 1314-1318.
7. Sullivan, M.R., Nimmerjahn, A., Sarkisov, D.V., Helmchen, F., and Wang, S.S.-H. (2005). In vivo calcium imaging of circuit activity in cerebellar cortex. **J. Neurophysiol.** *94*, 1636-1644.
8. Flusberg, B.A.*, Nimmerjahn, A.*, Cocker, E.D.*, Mukamel, E.A., Barretto, R.P.J., Ko, T.H., Burns, L.D., Jung, J.C., and Schnitzer, M.J. (2008). High-speed, miniaturized fluorescence microscopy in freely moving mice. **Nature Methods** *5*, 935-938. *Authors contributed equally
9. Nimmerjahn, A., Mukamel, E.A., and Schnitzer, M.J. (2009). Motor behavior activates Bergmann glial networks. **Neuron** *62*, 400-412.
10. Mukamel, E.A., Nimmerjahn, A., and Schnitzer, M.J. (2009). Automated analysis of cellular signals from large-scale calcium-imaging data. **Neuron** *63*, 747-760.
11. Ghosh, K.K., Burns, L.D., Cocker, E.D., Nimmerjahn, A., Ziv, Y., El-Gamal, A., and Schnitzer, M.J. (2011). Miniaturized integration of a fluorescence microscope. **Nature Methods**, *in press*.

Other Publications:

Invited Reviews

1. Nimmerjahn, A. (2009). Astrocytes going live: advances and challenges. **J. Physiol.** *587*, 1639-1647.
2. Tremblay, M.-E., Stevens, B., Sierra, A., Wake, H., Bessis, A., and Nimmerjahn, A. (2011). The role of microglia in the healthy brain. **J. Neurosci.**, *in press*.

Invited Book Chapters

1. Nimmerjahn, A., Theer, P., and Helmchen, F. (2008). Two-photon laser scanning microscopy. In Ultrashort laser pulses in biology and medicine, W. Zinth, M. Braun, and P. Gilch, eds. (Springer, Heidelberg), pp. 29-51.
2. Nimmerjahn, A., and Helmchen, F. (2011). In vivo labeling of cortical astrocytes with sulforhodamine 101. In Optical Imaging in Neuroscience: A Laboratory Manual, F. Helmchen, and A. Konnerth, eds. (Cold Spring Harbor Laboratory Press, Woodbury, NY), pp. 673-683.
3. Nimmerjahn, A., and Schnitzer, M.J. (2011). Two-photon imaging of astrocytic and neuronal excitation in cerebellar cortex of awake mobile mice. In Optical Imaging in Neuroscience: A Laboratory Manual, F. Helmchen, and A. Konnerth, eds. (Cold Spring Harbor Laboratory Press, Woodbury, NY), pp. 745-761.
4. Nimmerjahn, A. (2011). Two-photon imaging of microglia in the mouse cortex in vivo. In Optical Imaging in Neuroscience: A Laboratory Manual, F. Helmchen, and A. Konnerth, eds. (Cold Spring Harbor Laboratory Press, Woodbury, NY), pp. 961-979.

Educational Material

1. Nimmerjahn, A., Sakmann, B., and Helmchen, F. (2005). Microglial cells – tireless sentries of the brain. Animated educational film. Design by Heil, E., art for biomed, Frankfurt, Germany.

Presentations:

Invited Talks

1. 7th European Meeting on Glial Cell Function in Health and Disease, Amsterdam, Holland, May 2005
Invited speaker, session “Glial cells in neurodegenerative diseases – new discoveries using mouse models and potential repair strategies”
2. Magdeburg Microglia Workshop, Magdeburg, Germany, September 2005
Invited speaker, session “Microglia in neuroinflammation: Basic mechanisms III”
3. 5th Forum of European Neuroscience (FENS), Vienna, Austria, July 2006
Co-chair and speaker, session “Dynamic interactions and plasticity in the developing and mature brain”
4. 8th European Meeting on Glial Cell Function in Health and Disease, London, UK, September 2007
Invited speaker, session “Functional role of Bergmann glia-Purkinje cell signalling”
5. Caesar Research Center Symposium, Bonn, Germany, November 2007
Invited speaker, symposium “Neurosensation, neuroproteomics, and neurophotonics – new vistas of the brain”
6. Gordon Research Conference on Barriers of the CNS, Tilton, NH, USA, June 2008
Invited speaker, session “Imaging barriers of the CNS in health & disease”
7. Cold Spring Harbor Conference on Glia in Health and Disease, Cold Spring Harbor, NY, USA, July 2008
Invited speaker, session “Gliovascular interactions”
8. Janelia Conference on Structural Plasticity in the Mammalian Brain, Ashburn, VA, USA, March 2010
Invited speaker, session “Imaging functional plasticity”
9. 7th Forum of European Neuroscience (FENS), Amsterdam, Holland, July 2010
Invited speaker, satellite symposium on “Tripartite synapses: From hypothesis to reality”

10. Cold Spring Harbor course on “Imaging structure and function in the nervous system”, Cold Spring Harbor, NY, USA, August 2010
Invited speaker, session “Organic calcium indicators: Bulk loading”
11. Kavli Institute for Theoretical Physics Workshop on Emerging Techniques in Neuroscience, Santa Barbara, CA, USA, September 2010
Invited speaker, session “The technological face of neuroscience”

Teaching:

2002-2003	Physics Practical Course, University of Heidelberg, Heidelberg, Germany <i>Teaching assistant</i>
2009	Course on “ <i>Imaging Structure and Function in the Nervous System</i> ”, Cold Spring Harbor, NY, USA <i>Teaching assistant</i> (instructors: Scott Thompson, William Tyler, Jack Waters)
2010	Course on “ <i>Imaging Structure and Function in the Nervous System</i> ”, Cold Spring Harbor, NY, USA <i>Teaching assistant and invited speaker</i> (instructors: Scott Thompson, William Tyler, Jack Waters)
2011	Course on “ <i>Imaging Structure and Function in the Nervous System</i> ”, Cold Spring Harbor, NY, USA <i>Teaching assistant and invited speaker</i> (instructors: Scott Thompson, David DiGregorio, Jack Waters)