

Curriculum Vitae

Bernd KUHN

Günzburg, Germany

Okinawa Institute of Science and Technology Graduate University (OIST)

1919-1 Tancha, Onna-son, Okinawa, Japan

Associate Professor

Optical Neuroimaging Unit

<https://groups.oist.jp/onu>

Education:

1990 – 1996

University of Ulm, Ulm, Germany, **Diploma** (1996) **Physics**

Diploma project conducted at the Max Planck Institute of Biochemistry, Martinsried, Germany

Modulation of 2D fluorescence spectra by the electric field over a neuronal membrane
(Prof. P. Fromherz)

1996 - 2001

Technical University Munich, Munich, Germany, **PhD** (2001) **Physics**

PhD project conducted at the Max Planck Institute of Biochemistry, Martinsried, Germany

Measurement of action potentials in dendrites of cultured and transfected hippocampal neurons with voltage-sensitive dyes
(Prof. P. Fromherz)

Postdoctoral Training:

2001 – 2002

Max Planck Institute of Biochemistry, Martinsried, Germany

Characterization and application of novel voltage-sensitive dyes
(Prof. P. Fromherz)

2002 – 2004

Max Planck Institute for Medical Research, Heidelberg, Germany

High sensitivity of Stark-shift voltage-sensing dyes by one- or two-photon excitation near the red spectral edge

and

In vivo two-photon voltage-sensitive dye recording in barrel cortex
(Prof. W. Denk)

2004 – 2010

Princeton University, Princeton, NJ, USA

In vivo optical recording in the cerebellum using virus-delivered genetically encoded Ca^{2+} indicators

(Prof. S.S.-H. Wang and Prof. S.J. Flint)

Academic Positions:

9.2010 – 10.2011	Principal Investigator, OIST School Corporation
11.2011 – 1.2016	Assistant Professor, OIST Graduate University
2.2016 – present	Associate Professor, OIST Graduate University

Other Positions and Employment:

Summer 2005	Lecturer, Neurobiology Summer Course, Marine Biological Laboratory Woods Hole, MA, USA
Summer 2006	Faculty, Neurobiology Summer Course, Marine Biological Laboratory Woods Hole, MA, USA

Publications:

A. Funamizu, **B. Kuhn**, and K. Doya* (2016) *Neural substrate of dynamic Bayesian inference in the cerebral cortex*
Nature Neuroscience 19: 1682-1689

C.J. Roome* and **B. Kuhn*** (2014) *Chronic cranial window with access port for repeated cellular manipulations, drug application, and electrophysiology*
Frontiers in Cellular Neuroscience 8: 379

S. Augustinaite*, **B. Kuhn**, P.J. Helm, and P. Heggelund (2014) *NMDA spike/plateau potentials in dendrites of thalamocortical neurons*
Journal of Neuroscience 34(33): 10892-10905

Cover of *The Journal of Neuroscience Special Issue for Japan Neuroscience Society Meeting Attendees* (2015)

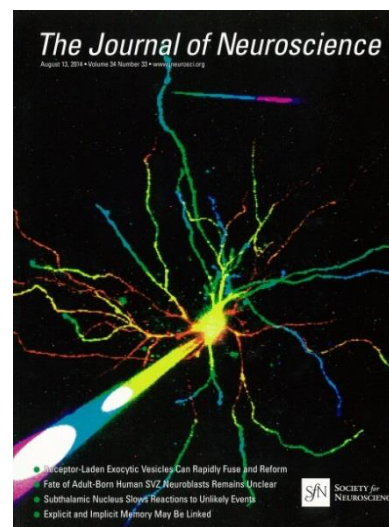
K.M. Seemann⁺ and **B. Kuhn**⁺* (2014) *Multi-photon excited luminescence of magnetic FePt core-shell nanoparticles*
Biomedical Optics Express 5(7): 2446-2457

H. Anwar*, C.J. Roome, H. Nedelescu, W. Chen, **B. Kuhn**, and E. De Schutter (2014) *Dendritic diameters affect the spatial variability of intracellular calcium dynamics in computer models*
Frontiers in Cellular Neuroscience 8: 168

K.M. Seemann*, R. Kiefersauer, U. Jacob, and **B. Kuhn*** (2012) *Optical pH Detection within a Protein Crystal*
J. Phys. Chem. B 116(33): 9873-9881

B. Kuhn⁺*, I. Ozden⁺, Y. Lampi, M.T. Hasan, and S.S.-H. Wang (2012) *An amplified promoter system for targeted expression of calcium indicator proteins in the cerebellar cortex*
Frontiers in Neuronal Circuits 6: article 49
Web of Knowledge: 8 times cited by 5/28/2015

A.E. Granstedt, M.L. Szpara, **B. Kuhn**, S.S.-H. Wang, and L.W. Enquist* (2009) *Fluorescence-based monitoring*



of in vivo neural activity using a circuit-tracing pseudorabies virus.
PLoS ONE 4(9): e6923

T.M. Hoogland*⁺, **B. Kuhn***⁺, W. Göbel, W. Huang, J. Nakai, F. Helmchen, S.J. Flint, and S.S.-H. Wang* (2009)
Radially expanding transglial calcium waves in the intact cerebellum
PNAS 106(9): 3496-3501

B. Kuhn*, W. Denk*, and R.M. Bruno* (2008) *In vivo two-photon voltage-sensitive dye imaging reveals top-down control of cortical layers 1 and 2 during wakefulness*
PNAS 105(21): 7588-7593
Communicated by Prof. B. Sakmann

P. Fromherz*, G. Hübener, **B. Kuhn**, and M.J. Hinner (2008) *ANNINE-6plus, a voltage-sensitive dye with good solubility, strong membrane binding and high sensitivity*
Eur. Biophys. J. 37: 509-514

B. Kuhn*, P. Fromherz, and W. Denk (2004) *High sensitivity of Stark-shift voltage-sensing dyes by one- or two-photon excitation near the red spectral edge*
Biophys. J. 87:631-639

B. Kuhn and P. Fromherz* (2003) *Anellated hemicyanine dyes in a neuron membrane: Molecular Stark effect and optical voltage recording*
J. Phys. Chem. B 107:7903-7913

Protocols

B. Kuhn, T.M. Hoogland, and S.S.-H. Wang* (2011) *Injection of Recombinant Adenovirus for Delivery of Genetically Encoded Calcium Indicators into Astrocytes of the Cerebellar Cortex*
CSH Protocols 2011(10):pdb.prot065797
Google Scholar: 8 times cited by 5/28/2015

B. Kuhn, T.M. Hoogland, and S.S.-H. Wang* (2011) *Cerebellar Craniotomy for In Vivo Calcium Imaging of Astrocytes*
CSH Protocols 2011(10):pdb.prot065805
Google Scholar: 3 times cited by 5/28/2015

T.M. Hoogland, **B. Kuhn**, and S.S.-H. Wang* (2011) *Preferential Loading of Bergmann Glia with Synthetic Acetoxymethyl Calcium Dyes*
CSH Protocols 2011(10):pdb.prot065813
Google Scholar: 1 time cited by 5/28/2015

A.E. Granstedt, **B. Kuhn**, S.S.-H. Wang, and L.W. Enquist* (2010) *Calcium imaging of neuronal circuits in vivo using a circuit-tracing pseudorabies virus*
CSH Protocols 2010(4):pdb.prot5410
Google Scholar: 8 times cited by 5/28/2015

Book Chapters

B. Kuhn, T.M. Hoogland, and S.S.-H. Wang (2011) *In vivo monitoring of astrocytic signaling in the cerebellum with synthetic and genetically encodable fluorescent calcium indicators*
In: *Imaging in Neuroscience*, 2nd Edition. F. Helmchen, A. Konnerth, and R. Yuste (Editors), CSHL Press, p. 707-720

P. Theer, **B. Kuhn**, D. Keusters, and W. Denk (2005) *Two-photon microscopy and imaging*
In: *Encyclopaedia of Molecular Cell Biology and Molecular Medicine*, Vol. 15, 2nd Edition. R. A. Meyers (Editor), Wiley, p. 61-88

Reviews

T.M. Hoogland and **B. Kuhn** (2010) *Recent developments in the understanding of astrocyte function in the cerebellum in vivo*
Cerebellum 9(3): 264-71

T.M. Hoogland, E.F. Civillico, and **B. Kuhn** (2007) *Molecular layer interneurons relay cerebellar cortical activity to Bergmann glial cells*
J. Neurosci. 27(42): 11167-11169

* Corresponding author

+ Equal contribution

Patents

B. Kuhn, C.J. Roome (2013) *Chronic cranial window allowing drug application and electrophysiology*
US61/918,193
PCT/JP2014/006262

B. Kuhn, G. Hübener, P. Fromherz, and W. Denk (2004) *Optimized determination of voltage-changes using a voltage-sensitive dye*
European Patent No. PCT/EP 2004/006916
U.S. Patent No. 10/562,308