Jörn Simon Wiegert, Ph. D. *Curriculum Vitae*

Name: Jörn Simon Wiegert
Date of birth: 18.08.1979
Nationality: German
Marital status: married, three children (4, 6, and 8 yr.)
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ACADEMIC POSITIONS

since 09/2018	**Professor for Neurophysiology and Optogenetics** at the University Medical Center Hamburg Eppendorf, ZMNH Hamburg, Germany RG Synaptic Wiring and Information Processing
04/2017-08/2018	**Independent group leader** at the ZMNH Hamburg, Germany RG Synaptic Wiring and Information Processing
03/2012-03/2017	**Senior postdoctoral fellow** at the ZMNH Hamburg, Germany Institute for Synaptic Physiology, laboratory of Prof. Thomas Oertner
09/2009-02/2012	**Marie-Curie postdoctoral fellow** at the Friedrich-Miescher Institute Basel, Switzerland Department of Neurobiology, laboratory of Dr. Thomas Oertner
04/2009-08/2009	**Postdoctoral fellow** at the University of Heidelberg, Germany Interdisciplinary Center for Neurosciences, laboratory of Prof. Hilmar Bading

EDUCATION

11/2005-03/2009	**PhD thesis** at the University of Heidelberg, Germany Interdisciplinary Center for Neurosciences, laboratory of Prof. Hilmar Bading Grade: 1.0 (magna cum laude)
08/2003-02/2004	**Internship** at the Monash University, Melbourne, Australia Monash Institute for Medical Research, laboratory of Prof. Ban-Hock Toh
2001-2005	**Research assistant** at MPI for Medical Research, Heidelberg, Germany, laboratory of Prof. Bert Sakmann
10/2000-11/2005	**Diploma in Biology** at the University of Heidelberg, Germany Grade: 1.0 (with distinction)

GRANTS / FELLOWSHIPS / AWARDS

2019	DFG grant: “Dopaminergic control of dorsal hippocampal networks during behavior” (part of SFB 936)
2019	DFG grant: “Optogenetic silencing tools for precise, all-optical analysis of synaptic circuits” (No. WI 4485/3-2, part of SPP1926)
2018	DFG grant: “Synaptic plasticity and stability in the context of hippocampal information processing” (No. WI 4485/2-2, part of research unit FOR2419)
2017	ERC starting grant: “LIFE synapses” (No. 714762)
2016	DFG grant: “Development of next-generation light-gated inhibitory ion channels to probe somatosensory integration in the Drosophila nociceptive circuit in vivo” (No. WI 4485/3-1, part of SPP1926)
2015 - 2018	DFG grant: “Dynamic rewiring of hippocampal circuits following synaptic plasticity” (No. WI 4485/2-1, part of research unit FOR2419)
2013, 2014	2x ‘Paper of the month’ selected by the University Medical Center Hamburg-Eppendorf
2010 - 2012	Marie-Curie Postdoctoral Fellowship (within EU/FP7 framework)
2008 - 2014	Travel grants awarded by the German Academic Exchange Service (DAAD), German Neuroscience Society (NWG) & “Deutsche Forschungsgemeinschaft” (DFG)
2005	Diploma in Biology with distinction

PUBLICATIONS

Peer reviewed:

1) Oppermann, J., Fischer, P., Silapetere, A., Liepe, B., Rodriguez-Rozada, S., Flores-Uribe, J., Peter, E., Keidel, A., Vierock, J., Kaufmann, J., Broser, M., Luck, M., Bartl, F., Hildebrandt, P., **Wiegert, J. S.**, Béjà, O., Hegemann, P., and Wietek, J., (2019). MerMAIDs: A novel family of metagenomically discovered, marine, anion-conducting and intensely desensitizing Channelrhodopsins. **Nat Commun** (in press), IF: 12.4

2) Binder, S., Molle, M., Lippert, M., Bruder, R., Aksamaz, S., Ohl, F., **Wiegert, J.S.**, and Marshall, L. (2019). Monosynaptic hippocampal-prefrontal projections contribute to spatial memory consolidation in mice. **J Neurosci** DOI:10.1523/JNEUROSCI.2158-18.2019 IF: 6.0

3) Dürst, C., **Wiegert, J.S.**, Helassa, N. Kerruth, S., Coates, C., Schulze, C., Geeves, M., Török, K., Oertner , T. G. High-speed imaging of glutamate release with genetically encoded sensors. **Nat Prot** 14(5):1401-1424 DOI:10.1038/s41596-019-0143-9, IF: 12.4

4) **Wiegert, J.S.**, Pulin, M., Gee, C.E., Oertner , T. G. (2018). The fate of hippocampal synapses depends on the sequence of plasticity-inducing events. **eLife** e39151 DOI: 10.7554/eLife.39151, IF: 7.6

5) Oda, K., Vierock, J., Oishi, S., Rodriguez-Rozada, S., Taniguchi, R., Yamashita, K., **Wiegert, J.S.**, Nishizawa, T., Hegemann, P., Nureki, O. (2018). Crystal structure of the red light-activated channelrhodopsin Chrimson. **Nat Commun** 9(1):3949 DOI: 10.1038/s41467-018-06421-9, IF: 12.4

6) Helassa, N., Dürst, C.D., Coates, C., Arif, U., Schulze, C., **Wiegert, J.S.**, Geeves, M., Oertner, T.G., Török, K. (2018). Ultrafast glutamate sensors resolve high-frequency

release at Schaffer collateral synapses, **Proc Natl Acad Sci USA** 115(21), 5594-5599 DOI: 10.1073/pnas.1720648115, IF: 9.5

7) Wietek, J., Rodriguez-Rozada, S., Tutas, J., Tenedini, F., Grimm, C., Oertner, T.G., Soba, P., Hegemann, P., **Wiegert, J.S.** (2017). Anion-conducting channelrhodopsins with tuned spectra and modified kinetics engineered for optogenetic manipulation of behavior. **Sci Rep** 7:14957 DOI: 10.1038/s41598-017-14330-y, IF: 4.2

8) **Wiegert, J. S.**, Mahn, M., Prigge, M. Prinz, Y., Yizhar, O. (2017). Silencing Neurons: Tools, Applications, and Experimental Constraints. **Neuron** 95 (3), 504-529 [REVIEW ARTICLE] DOI: 10.1016/j.neuron.2017.06.050, IF: 14.3

9) Bitzenhofer, S.H., Ahlbeck, J., Wolff, A. **Wiegert, J.S.,** Gee, C.E., Oertner, T.G., Hanganu-Opatz, I.L. (2017). Layer-specific optogenetic activation of pyramidal neurons causes beta-gamma entrainment of neonatal networks. **Nat Commun** 8:14563 DOI: 10.1038/ncomms14563, IF: 12.4

10) Wietek, J., Beltramo, R., Scanziani, M., Hegemann, P., Oertner, T.G., **Wiegert, J.S.** (2015). An improved chloride-conducting channelrhodopsin for light-induced inhibition of neuronal activity in vivo. **Sci Rep** 5:14807 DOI: 10.1038/srep14807, IF: 4.2

11) Blumer, C., Vivien, C., Genoud, C., Perez-Alvarez, A., **Wiegert, J.S.**, Vetter, T., Oertner, T.G. (2015). Automated analysis of spine dynamics on live CA1 pyramidal cells. **Med Image Anal** 19(1), 87-97 DOI: 10.1016/j.media.2014.09.004, IF: 5.4

12) Wietek, J.*, **Wiegert, J.S.***, Adeishvili, N., Schneider, F., Watanabe, H., Tsunoda, S., Vogt, A., Elstner, M., Oertner, T.G., Hegemann, P. (2014). Conversion of Channelrhodopsin into a light-gated chloride channel. **Science** 344 (6182): 409-412, ***first 2 authors equally contributing** DOI: 10.1126/science.1249375, IF: 41.1
Highlighted in Science, Science Signaling & Nature Methods

13) Biermann, B., Sokoll, S., Klyueva, J., Missler, M., **Wiegert, J.S.**, Sibarita, J.-B., Heine, M. (2014). Imaging of molecular surface dynamic in brain slices using single particle tracking. **Nat Commun** 5:3024 DOI: 10.1038/ncomms4024, IF: 12.4

14) **Wiegert, J.S.** and Oertner , T. G. (2013). Long-term depression selectively eliminates weakly integrated synapses. **Proc Natl Acad Sci USA** 110(47), E4510-E4519. DOI: 10.1073/pnas.1315926110, IF: 9.5

15) Huber, D., Gutnisky, D.A., Peron, S., O'Connor, D.H., **Wiegert, J.S.**, Tian, L., Oertner, T.G., Looger, L.L., and Svoboda, K. (2012). Multiple dynamic representations in the motor cortex during sensorimotor learning. **Nature** 484, 473-478. DOI: 10.1038/nature11039, IF: 41.6

16) Holbro, N., Grunditz, A., **Wiegert, J.S.**, and Oertner, T.G. (2010). AMPA receptors gate spine Ca2+ transients and spike-timing-dependent potentiation. **Proc Natl Acad Sci USA** 107(36), 15975-15980. DOI: 10.1073/pnas.1004562107, IF: 9.5

17) **Wiegert, J.S.** and Bading, H. (2011). Activity-dependent calcium signaling and ERK-MAP kinases in neurons: a link to structural plasticity of the nucleus and gene transcription regulation. **Cell Calcium** 49, 296-305. [REVIEW ARTICLE] DOI: 10.1016/j.ceca.2010.11.009, IF: 3.7

18) Queisser, G., **Wiegert, J.S.**, Bading, H. (2011). Structural dynamics of the cell nucleus: basis for morphology modulation of nuclear calcium signaling and gene transcription. **Nucleus** 2(2), 1-7. [REVIEW ARTICLE] DOI: 10.4161/nucl.2.2.15116, , IF: 2.2

19) Wittmann, M. *, Queisser, G. *, Eder, A. *, **Wiegert, J.S.** *, Bengtson, C.P. *, Hellwig, A. *, Wittum, G., and Bading, H. (2009). Synaptic activity induces dramatic changes in the geometry of the cell nucleus: interplay between nuclear structure, histone H3

phosphorylation, and nuclear calcium signaling. **J Neurosci** 29, 14687-14700. ***first 6 authors equally contributing** DOI: 10.1523/jneurosci.1160-09.2009, IF: 6.0

20) **Wiegert, J.S.**, Hofmann, F., Bading, H., and Bengtson, C.P. (2009). A transcription-dependent increase in miniature EPSC frequency accompanies late-phase plasticity in cultured hippocampal neurons. **BMC Neurosci** 10, 124. DOI: 10.1186/1471-2202-10-124, IF: 2.2

21) **Wiegert, J.S.**, Bengtson, C.P., and Bading, H. (2007). Diffusion and not active transport underlies and limits ERK1/2 synapse-to-nucleus signaling in hippocampal neurons. **J Biol Chem** 282, 29621-29633. DOI: 10.1074/jbc.m701448200, IF: 4.0

Other publications:

1) Yizhar, O. & **Wiegert, J. S.** Designer Drugs for Designer Receptors: Unlocking the Translational Potential of Chemogenetics. (2019). **Trends Pharmacol Sci** 40(6):362-364 DOI:10.1016/j.tips.2019.04.010., IF: 11.5

2) **Wiegert, J.S.**, Gee, C.E., and Oertner, T. G. (2017). Stimulating Neurons with Heterologously Expressed Light-Gated Ion Channels. **Cold Spring Harb Protoc** 2017 (2) DOI: 10.1101/pdb.top089714, no IF

3) Gee, C.E., Ohmert, I., **Wiegert, J. S.**, and Oertner, T. G. (2017). Preparation of Slice Cultures from Rodent Hippocampus. **Cold Spring Harb Protoc** 2017 (2) DOI: 10.1101/pdb.prot094888, no IF

4) **Wiegert, J.S.**, Gee, C.E., and Oertner, T. G. (2017). Single-Cell Electroporation of Neurons. **Cold Spring Harb Protoc** 2017 (2) DOI: 10.1101/pdb.prot094904, no IF

5) **Wiegert, J.S.**, Gee, C.E., and Oertner, T. G. (2017). Viral Vector-Based Transduction of Slice Cultures. **Cold Spring Harb Protoc** 2017 (2) DOI: 10.1101/pdb.prot094896, no IF

6) **Wiegert, J.S.** and Oertner, T.G. (2016). How (not) to silence long-range projections with light. **Nat Neurosci** 19, 527-528. DOI: 10.1038/nn.4270, IF: 19.9

7) **Wiegert, J.S.** and Oertner, T.G. (2015). Neighborly synapses help each other out. **Nat Neurosci** 18, 326-327. DOI: 10.1038/nn.3955, IF: 19.9

8) **Wiegert, J.S.** and Oertner , T. G. (2011). Shapeshifting for memory. **e-Neuroforum** 2(1), 6-12. [REVIEW ARTICLE] DOI: 10.1007/s13295-011-0014-5, no IF

Submitted manuscripts and preprints:

1) Perez-Alvarez, A., Fearey, B., Schulze, C., O'Toole, R.J., Moeyaert, B., Mohr, M.A., Arganda-Carreras, I., Yang, W., **Wiegert, J.S.**, Schreiter, E.R., et al. (2019). Freeze-frame imaging of synaptic activity using SynTagMA. **bioRxiv**, 538041, DOI: 10.1101/538041 revised version under review at Cell.