Kevin L Briggman, Ph.D.

Dept. of Computational Neuroethology
Centre of Advanced European Studies and Research (caesar)
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EDUCATION

Ph.D., Computational Neurobiology, November 2005
University of California, San Diego | La Jolla, CA, USA

B.S., Electrical Engineering (summa cum laude), May 2000
Case Western Reserve University | Cleveland, OH, USA

APPOINTMENTS

Director, Dept. of Computational Neuroethology *June 2017 – present*
Center of Advanced European Studies And Research (caesar) | Bonn, Germany

Scientific member of the Max-Planck-Society *June 2017 – present*

Investigator *July 2011 – May 2017*
National Institute of Neurological Disorders and Stroke, NIH | Bethesda, MD, USA

Postdoctoral Fellow, Dept. of Biomedical Optics *Nov. 2005 – June 2011*
Max Planck Institute for Medical Research | Heidelberg, Germany

HONORS, AWARDS

Pew Scholar in the Biomedical Sciences (2014-2018)
Capranica Foundation Award in Neuroethology (2006)
Grass Fellowship in Neurobiology (2005)
La Jolla Interfaces in Science Research Fellowship, Burroughs Wellcome Fund (2002-2004)

GRADUATE STUDENTS SUPERVISED

Ms. Kara Fulton – NIH/Brown University GPP Student (2014-present)
Mr. Matthew Schiel – NIH/Brown University GPP Student (2015-present)
Ms. Irene Melati Aji – IMPRS Graduate Student (2019-present)

PEER-REVIEWED PUBLICATIONS

Huang X, Rangel M, **Briggman KL**, Wei W. (2019) „Neural mechanisms of contextual modulation in the retinal direction selective circuit“ *Nature Communications* 10, 2431.

Graydon CW, Lieberman EE, Rho N, **Briggman KL**, Singer JH, Diamond JS. (2018) “Synaptic Transfer between Rod and Cone Pathways Mediated by AII Amacrine Cells in the Mouse Retina.” *Curr. Biol.* 28(17): 2739-2751

Tabor KM, Smith TS, Brown M, Bergeron SA, **Briggman KL**, Burgess HA. (2018) “Presynaptic Inhibition Selectively Gates Auditory Transmission to the Brainstem Startle Circuit.” *Curr. Biol.* 28(16): 2527-2535

Bae JA, Mu S, Kim JS, Turner NL, Tartavull I, Kemnitz N, Jordan CS, Norton AD, Silversmith WM, Prentki R, Sorek M, David C, Jones DL, Bland D, Sterling ALR, Park J, **Briggman KL**, Seung HS; Eyewirers.(2018) “Digital museum of retinal ganglion cells with dense anatomy and physiology” *Cell* 173: 1293-1306

Stabio, M.E., Sabbah, S., Quattrochi, L.E., Ilardi, M.C., Fogerson, P.M., Leyrer, M.L., Kim, M.T., Kim, I., Schiel, M., Renna, J.M., **Briggman, K**. & Berson, D.M. (2018) “The M5 cell: A color-opponent intrinsically photosensitive retinal ganglion cell” *Neuron* 97: 150–163

Sabbah S, Berg D, Papendorp C, **Briggman KL**, Berson DM (2017) A Cre mouse line for probing irradiance- and direction-encoding retinal networks. *eNeuro* 4: 0065-17.2017, 1-21

Sethuramanujam, S., Yao, X., deRosenroll, G., **Briggman, K.L.**, Field, G.D. & Awatramani, G.B. (2017) “‘Silent’ NMDA synapses enhance motion sensitivity in a mature retinal circuit.” *Neuron* 96: 1099-1111.

Ding H, Smith RG, Poleg-Polsky A, Diamond JS, **Briggman KL** (2016) Species-specific wiring for direction selectivity in the mammalian retina. *Nature* 535: 105-110.

Pallotto M, Watkins PV, Fubara B, Singer J, **Briggman KL** (2015) Extracellular space preservation aids the connectomic analysis of neural circuits. *Elife* 4:e08206.

Hoggarth A, McLaughlin AJ, Ronellenfitch K, Trenholm S, Vasandani R, Sethuramanujam S, Schwab D, **Briggman KL**, Awatramani GB. (2015) Specific wiring of distinct amacrine cells in the directionally selective retinal circuit permits independent coding of direction and size. *Neuron*. 86(1): 276-91.

Grimes WN, Hoon M, **Briggman KL**, Wong RO, Rieke F. (2014) Cross-synaptic synchrony and transmission of signal and noise across the mouse retina. *Elife* 3:e03892.

Mehta B, Ke J-B, Zhang L, Baden AD, Markowitz AL, Nayak S, **Briggman KL**, Zenisek DP, Singer JH (2014) Global Ca2+ signaling drives ribbon-independent synaptic transmission at rod bipolar cell synapses. *J. Neurosci.* 34(18): 6233– 6244.

Helmstaedter M, **Briggman KL**, Turaga SC, Jain V, Seung HS, Denk W. (2013) Connectomic reconstruction of the inner plexiform later in the mouse retina. *Nature* 500(7461): 168-74.

Briggman KL, Helmstaedter M, Denk W. (2011) Wiring specificity in the direction-selectivity circuit of the retina. *Nature* 471(7337): 183-8.

Briggman KL, Euler T. (2011) Bulk electroporation and population calcium imaging in the adult mammalian retina. *J Neurophysiol.* 105(5): 2601-9.

Helmstaedter M, **Briggman KL**, Denk W. (2011) High-accuracy neurite reconstruction for high-throughput neuroanatomy. *Nat Neurosci.* 14(8): 1081-8.

Andres B, Koethe U, Kroeger T, Helmstaedter M, **Briggman KL**, Denk W, Hamprecht FA. (2011) 3D segmentation of SBFSEM images of neuropil by a graphical model over supervoxel boundaries. *Med Image Anal.*

Turaga SC, Murray JF, Jain V, Roth F, Helmstaedter M, **Briggman KL**, Denk W, Seung HS (2010) Convolutional networks can learn to generate affinity graphs for image segmentation. *Neural Comput* 22(2): 511-538.

Briggman KL, Kristan WB Jr. (2006) Imaging dedicated and multifunctional neural circuits generating distinct behaviors. *J Neurosci.* 26(42): 10925-33.

Briggman KL, Abarbanel HDI, Kristan WB Jr. (2005) Optical imaging of neuronal populations during decision-making. *Science*. 307(5711):896-901.
high-throughput neuroanatomy. *Nat Neurosci.* 14(8): 1081-8

Briggman KL, Abarbanel HDI, Kristan WB Jr. (2005) Optical imaging of neuronal populations during decision-making. *Science* 307(5711): 896-901

REVIEW ARTICLES

Briggman KL, Bock DD (2012) Volume electron microscopy for neuronal circuit reconstruction. *Curr Opin Neurobiol.* 22(1): 154-61.

Denk W, **Briggman KL**, Helmstaedter M (2012) Structural neurobiology: missing link to a mechanistic understanding of neural computation. *Nat Rev Neurosci.*

Kleinfeld D, Bharioke A, Blinder P, Bock DD, **Briggman KL**, Chklovskii DB, Denk W, Helmstaedter M, Kaufhold JP, Lee WC, Meyer HS, Micheva KD, Oberlaender M, Prohaska S, Reid RC, Smith SJ, Takemura S, Tsai PS, Sakmann B. (2011) Large-scale automated histology in the pursuit of connectomes. *J Neurosci.* 31(45): 16125-38.

Helmstaedter M, **Briggman KL**, Denk W (2008) 3D structural imaging of the brain with photons and electrons. *Curr. Opin. Neurobiol.* 18(6): 633-641.

Briggman KL, Kristan WB Jr. (2008) Multifunctional pattern generating circuits. *Ann. Rev. Neurosci.* 31: 317-38.

Briggman KL, Denk W. (2006) Towards neural circuit reconstruction with volume electron microscopy techniques. *Curr Opin Neurobiol.* 16(5): 562-70.

Briggman KL, Abarbanel HDI, Kristan WB Jr. (2006) From crawling to cognition: analyzing the dynamical interactions among populations of neurons. *Curr Opin Neurobiol.* 16(2): 135-44.

BOOK CHAPTERS

Briggman KL (2017) Retinal connectomics. In: Decoding Structure and Function of Neural Circuits; Springer; Werner M, Celik A (Eds.)

Briggman KL, Kristan WB Jr., González JE, Kleinfeld D, Tsien RY. (2010) Monitoring integrated activity of individual neurons using FRET-based voltage-sensitive dyes. In Membrane Potential Imaging in the Nervous System, Canepari, M; Zecevic, D (Eds.)