

Benjamin K. Stafford, Ph.D.

Department of Neurobiology
Stanford University School of Medicine
Stanford, CA 94305
russbuss@stanford.edu

EDUCATION/DEGREES:

Ph.D. in Molecular, Cell, & Developmental Biology, University of California Santa Cruz (2009)

Non-Matriculated Graduate Student, Stanford University (2000-2001)

B.A. in Studio Art with concentration in Neuroscience, Williams College (1998)

ACADEMIC EXPERIENCE:

Project Scientist, Stanford University (2016-present)
PI: Andrew Huberman, Ph.D.

Project Scientist, University of California San Diego (2013-2016)
PI: Andrew Huberman, Ph.D.

Post-Doctoral Fellow, University of Michigan (2012-2013)
PI: Kwoon Wong, Ph.D.

Post-Doctoral Fellow, University of Michigan (2009-2012)
PI: Jonathan Demb, Ph.D.

Research Assistant, Stanford University (2003)
Advisor: Suzanne Pfeffer, Ph.D.

Junior Essel Fellow in Neuroscience, Williams College (1998-2000)

RESEARCH FUNDING:

Midwest Eye Banks Research Grant (2011-2013)

NIH-NRSA F-32 Ruth Kirschenstein Postdoctoral Fellowship (2010-2012)

NIH-NRSA T-32 Vision Science Research Training Program (2009-2010)

PUBLICATIONS

Laha B., **Stafford B.K.**, Huberman A.D. (2017) Regenerating optic pathways from the eye to the brain. *Science*, 356(6342):1031-1034.

Stafford B.K. and Huberman A.D. (2017) Signal integration in thalamus: labeled lines go cross-eyed and blurry. *Neuron*, 93(4):717-10.

Lim J.A., **Stafford B.K.**, Nguyen P.L., Lien B.V., Wang C., Zukor K., He Z., Huberman A.D. (2016) Neural activity promotes long-distance, target-specific regeneration of adult retinal axons. *Nature Neuroscience*, 19(8):1073-84.

Dhande O.S., **Stafford B.K.**, Lim J.A., Huberman A.D. (2015) Contributions of retinal ganglion cells to subcortical visual processing and behaviors. *Annual Review of Vision Science*, 1:291-328.

Osterhout J.A., **Stafford B.K.**, Nguyen P.L., Yoshihara, Y., Huberman A.D. (2015) Contactin-4 mediates axon-target specificity and functional development of the accessory optic system. *Neuron*, 86(4):985-99.

Stafford B.K., Manookin, M.B., Singer J.H., Demb, J.B. (2014) NMDA and AMPA receptors contribute similarly to temporal processing in mammalian retinal ganglion cells. *Journal of Physiology*, 592(22):4877-89.

Stafford B.K., Park S.J.H., Wong K.Y., Demb J.B. (2014) Developmental changes in NMDA receptor subunit composition at ON and OFF bipolar cell synapses onto direction-selective retinal ganglion cells. *Journal of Neuroscience*, 34(5):1942-8.

Speer C.M., Sun C., Liets L.C., **Stafford B.K.**, Chapman B., Chen H.J. (2014) Eye-specific retinogeniculate segregation proceeds normally following disruption of patterned spontaneous retinal activity. *Neural Development*, 9(1).

Zhao X., **Stafford B.K.**, Godin A.L., King W.M., Wong K.Y. (2014) Photoresponse diversity among the five types of intrinsically photosensitive retinal ganglion cells. *Journal of Physiology*, 592(7):1619-36.

Chung W.S., Clarke L.E., Wang G.X., **Stafford B.K.**, Sher A., Chakraborty C., Joung J., Foo L.C., Thompson A., Chen C., Smith S.J., Barres B.A. (2013) Astrocytes mediate synapse elimination through MEGF10 and MERTK pathways. *Nature*, 504(7480):394-400

Triplett J.W., Pfeifferberger C., Yamada J., **Stafford B.K.**, Sweeney N.T., Litke A.M., Sher A., Koulakov A.A., Feldheim D.A. (2011) Competition is a driving force in topographic mapping. *Proceedings of the National Academy of Sciences*, 108(47).

Manookin M.B., Weick M., **Stafford B.K.**, Demb J.B. (2010) NMDA receptor contributions to visual contrast coding. *Neuron*, 67(2):280-93.

Stafford B.K., Sher A., Litke A.M., Feldheim D.A. (2009) Spatial and temporal patterns of retinal waves underlying activity-dependent refinement of retinofugal projections. *Neuron*, 64(2):200-12.

Huberman A.D., Wei W., Elstrott J., **Stafford B.K.**, Feller M.B., Barres B.A. (2009) Genetic identification of on-off direction selective retinal ganglion cells reveals a layer specific subcortical map of posterior motion. *Neuron*, 62(3):327-34.

Stevens B., Allen N.J., Vazquez L.E., Howell G.R., Christopherson K.S., Nouri N., Micheva K.D., Mehalow A.K., Huberman A.D., **Stafford B.K.**, Sher A., Litke A.M., Lambris J.D., Smith S.J., John S.W.M., Barres B.A. (2007) The classical complement cascade mediates CNS synapse elimination. *Cell*, 131:1164-1178.

Bartoe J.L., McKenna W.L., Quan T.K., **Stafford B.K.**, Moore J.A., Xia J., Takamiya K., Haganir R.L., Hinck L. (2006) Protein interacting with C-kinase 1/protein kinase C alpha-mediated endocytosis converts netrin-1-mediated repulsion to attraction. *Journal of Neuroscience*, 26:3192-3205.

INVITED TALKS:

“Cell Type Specific Processing Across Multiple Visual Synapses” University of San Diego, November 9, 2017

“Synaptic Mechanisms of Retinal Circuit Development” University of Michigan, October 24, 2013.

“Developmental Changes in Subunit- and Pathway-Specific Expression of NMDA Receptors in Direction-Selective Ganglion Cells” ARVO Annual Meeting, May 8, 2013.

“Synaptic Mechanisms for Circuit Function and Formation in the Retina” University of California San Diego, March 22, 2013.

“Circuit Function and Formation in the Retina” University of California Santa Cruz, October 26, 2012.

“Developmental Characterization of NMDA Receptor Expression in Identified Retinal Ganglion Cells of the Mouse Retina.” ARVO Annual Meeting, May 10, 2012.

“NMDA Receptors in the Retina: From Visual Processing to Retinal Disease Models” San Jose State University, March 12, 2012.

MEETING ABSTRACTS

Dhande OS, **Stafford BK**, El-Danaf R, Nguyen PL, Percival KA, Hansen BJ, Brecha NC, Taylor WR, Callaway EM, Huberman AD. Molecular dissection of parallel visual pathways in primate and mouse. Society for Neuroscience Annual Meeting, October 2015

Stafford, BK, Wong, KY. NMDA receptor expression and functional contributions to the extrinsic light response in intrinsically photosensitive retinal ganglion cells. Society for Neuroscience Annual Meeting, October 2012

Zhao, X., Hill, DD, **Stafford, BK**, Wong, KY. Synaptic inputs and receptive field organization of intrinsically-photosensitive retinal ganglion cells (ipRGCs). ARVO Annual Meeting, May 2012.

Stafford BK, Demb JB. Microstructure of glutamate-mediated receptive field properties of mammalian retinal ganglion cells. ARVO Annual Meeting, May 2011

Stafford BK, Kupershtok M, Demb JB. Cell type-specific differences in NMDA receptor contributions to mouse retinal ganglion cell light responses. FASEB Retinal Neurobiology, July 2010.

Sher A, **Stafford BK**. Functional characterization of the mouse retina through large-scale multielectrode recordings. FASEB Retinal Neurobiology, July 2008.

Stafford BK, Feldheim DA. Role of ephs and ephrins in early retinal development. Society for Neuroscience Annual Meeting, November 2007.

OTHER EXPERIENCE

30 x 30 Art Show, Ann Arbor Art Center, 2012

Professional Cyclist, Webcor Builders Cycling Team (2003-2004)