

**BIOGRAPHICAL SKETCH**

Provide the following information for the Senior/key personnel and other significant contributors in the order listed on Form Page 2.  
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NAME Kerschensteiner, Daniel	POSITION TITLE Associate Professor of Ophthalmology & Visual Sciences Associate Professor of Neuroscience Associate Professor of Biomedical Engineering		
eRA COMMONS USER NAME (credential, e.g., agency login) dkerschensteiner			
EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)			
INSTITUTION AND LOCATION	DEGREE (if applicable)	MM/YY	FIELD OF STUDY
Georg-August University, Göttingen, Germany	MD	12/03	Neurology/Neuroscience
University College London, London, UK	Postdoc	02/04-02/05	Neuroscience Advisor: M. Stocker
University of Washington, Seattle, WA	Postdoc	03/05-06/09	Neuroscience Advisor: R.O. Wong

**A. Personal Statement**

My laboratory studies the development and function of neural circuits in the visual system, and the pathogenesis of neurodegenerative diseases of the eye using a combination of molecular, imaging, electrophysiological, engineering and computational approaches.

**B. Positions and Honors****Positions**

1996 - 2004 Student of Medicine & Resident in Neurology, University Hospital Göttingen, Germany (Passed all four nationwide medical exams with highest possible score >99.7 % rank)  
1998 - 2003 MD thesis research at the Max-Planck Institute for experimental Medicine, Göttingen, Germany  
2004 - 2005 Postdoctoral Fellow at University College London, UK (Advisor: M. Stocker)  
2005 - 2009 Postdoctoral Fellow at University of Washington, Seattle, WA (Advisor: Rachel Wong)  
2009 - 2015 Assistant Professor of Ophthalmology & Visual Sciences, of Neuroscience, and of Biomedical Engineering at Washington University School of Medicine, St. Louis, MO  
2011 - Member of the Hope Center for Neurological Disorders  
2015 - Associate Professor of Ophthalmology & Visual Sciences, of Neuroscience, and of Biomedical Engineering at Washington University School of Medicine, St. Louis, MO

**Honors**

1998 - 2002 Scholar of the German National Merit Foundation (Studienstiftung des deutschen Volkes)  
2003 *Summa cum laude* for MD Thesis  
2004 Otto-Hahn Medal of the Max Planck Society  
2007 - 2009 Fellowship of the German Science Foundation (Deutsche Forschungsgemeinschaft, DFG)  
2010 Hope for Vision New Investigator Award  
2010 - 2012 Alfred P. Sloan Research Fellow  
2010 Visiting Fellow at the Institute of Advanced Studies of the Technical University Munich  
2010 - 2013 Whitehall Foundation Award  
2010 - 2013 Edward Mallinckrodt, Jr. Foundation Award  
2012 - 2016 Research to Prevent Blindness Foundation Career Development Award  
2016 Distinguished Investigator Award (Washington University, St Louis)

### C. Selected Publications

1. **Kerschensteiner D.** Glutamatergic retinal waves. **Front Neural Circuits** 2016; May 10
2. Tien NW, Kim T, **Kerschensteiner D.** Target-specific glycinergic transmission from VGLUT3-expressing amacrine cells shapes suppressive contrast responses in the retina. **Cell Rep** 2016; 15(7):1369-75
3. Faits MC, Zhang C, Soto F, **Kerschensteiner D.** Dendritic mitochondria reach stable positions during circuit development. **Elife** 2016; Jan 7
4. Soto F, **Kerschensteiner D.** Synaptic remodeling of neuronal circuits in early retinal degeneration. **Front Cell Neurosci** 2015; Oct 7
5. **Kerschensteiner D.** Superior colliculus does play dice. **Neuron** 2015; 87(6):1121-3
6. Akrouh A, **Kerschensteiner D.** Morphology and function of three VIP-expressing amacrine cell types in the mouse retina. **J Neurophysiol** 2015; 114(4):2431-8
7. Tien NW, **Kerschensteiner D.** Genetically identified suppressed-by-contrast retinal ganglion cells in mice reliably signal self-generated stimuli. **J Neurosci** 2015; 35(30):10815-20
8. Pearson JT, **Kerschensteiner D.** Ambient illumination switches contrast preference of specific retinal processing streams. **J Neurophysiol** 2015; 114(1): 540-50
9. Kim T, Soto F, **Kerschensteiner D.** An excitatory amacrine cell detects object motion and provides feature-selective input to ganglion cells. **Elife** 2015; 4
10. Johnson RE, **Kerschensteiner D.** Retrograde plasticity and differential competition of bipolar cell dendrites and axons in the developing retina. **Curr Biol** 2014, 24(19):2301-6.
11. Rao B, Soto F, **Kerschensteiner D,** Wang LV. Integrated photoacoustic, confocal and two-photon microscope. **J Biomed Opt** 2014; 19(3):36002
12. **Kerschensteiner D.** Spontaneous network activity and synaptic development. **Neuroscientist** 2013.
13. Soto F, Watkins KL, Johnson RE, Schottler F, **Kerschensteiner D.** NGL-2 regulates pathway-specific neurite growth and lamination, synapse formation and signal transmission in the retina. **J Neurosci** 2013; 33(29):11949-59
14. Akrouh A, **Kerschensteiner D.** Intersecting circuits generate precisely patterned retinal waves. **Neuron** 2013; 79(2):322-34
15. Schwartz GW, Okawa H, Dunn FA, Morgan JL, **Kerschensteiner D,** Wong RO, Rieke F. The spatial structure of a nonlinear receptive field. **Nat Neurosci** 2012; 15(11):1572-80
16. Soto F, Ma X, Cecil JL, Vo B, Culican SM, **Kerschensteiner D.** Spontaneous activity promotes synapse formation in a cell-type-dependent manner in the developing retina. **J Neurosci** 2012; 32(16):5426-39
17. Morgan JL, Soto F, Wong RO, **Kerschensteiner D.** Development of cell type-specific connectivity patterns of converging excitatory axons in the retina. **Neuron** 2011; 71(6):1024-2
18. Soto F, Bleckert A, Lewis R, Kang Y, **Kerschensteiner D,** Craig AM, Wong RO. Coordinated increase of inhibitory and excitatory synapses onto retinal ganglion cells during development. **Neural Development** 2011; 6(1):31
19. **Kerschensteiner D.** Circuit assembly: the repulsive side of lamination. **Curr Biol** 2011; 21(4):R163-6
20. **Kerschensteiner D,** Morgan JL, Parker ED, Lewis RM, Wong RO. Neurotransmission selectively regulates synapse formation in parallel circuits *in vivo*. **Nature** 2009; 460(7258):1016-20
21. **Kerschensteiner D,** Wong RO. A precisely timed asynchronous pattern of ON and OFF retinal ganglion cell activity during the propagation of retinal waves. **Neuron** 2008; 58(6):851-8
22. **Kerschensteiner D,** Liu H, Cheng CW, Demas J, Cheng SH, Hui CC, Chow RL, Wong RO. Genetic control of circuit function: Vsx1 and Irx5 transcription factors regulate contrast adaptation in the mouse retina. **J Neurosci** 2008; 28(10):2342-52

