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	POSITION TITLE
Kerschensteiner, Daniel	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. Hsiang JC, Johnson K, Madisen L, Zeng H, **Kerschensteiner D.** Local processing of visual information in neurites of VGluT3-expressing amacrine cells. **bioRxiv** 2017 127159
2. Kim T, **Kerschensteiner D**. Inhibitory control of feature selectivity in an object motion sensitive circuit of the retina. **Cell Rep** 2017; 19(7):1343-50
3. Tien NW, Soto F, **Kerschensteiner D.** Homeostatic plasticity shapes cell-type-specific wiring in the retina. **Neuron** 2017; 94(3):656-65
4. **Kerschensteiner D.** Aligning a synapse. **Neuron** 2017; 93(6):1241-43
5. **Kerschensteiner D**. Glutamatergic retinal waves. **Front Neural Circuits** 2016; May 10
6. 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
7. Faits MC, Zhang C, Soto F, **Kerschensteiner D**. Dendritic mitochondria reach stable positions during circuit development. **Elife** 2016; Jan 7
8. Soto F, **Kerschensteiner D**. Synaptic remodeling of neuronal circuits in early retinal degeneration. **Front Cell Neurosci** 2015; Oct 7
9. **Kerschensteiner D**. Superior colliculus does play dice. **Neuron** 2015; 87(6):1121-3
10. 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
11. 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
12. Pearson JT, **Kerschensteiner D**. Ambient illumination switches contrast preference of specific retinal processing streams. **J Neurophysiol** 2015; 114(1): 540-50
13. Kim T, Soto F, **Kerschensteiner D**. An excitatory amacrine cell detects object motion and provides feature-selective input to ganglion cells. **Elife** 2015; 4
14. 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.
15. Rao B, Soto F, **Kerschensteiner D**, Wang LV. Integrated photoacoustic, confocal and two-photon microscope. **J Biomed Opt** 2014; 19(3):36002
16. **Kerschensteiner D**. Spontaneous network activity and synaptic development. **Neuroscientist** 2013.
17. 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
18. Akrouh A, **Kerschensteiner D**. Intersecting circuits generate precisely patterned retinal waves. **Neuron** 2013; 79(2):322-34
19. 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
20. 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
21. 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
22. 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
23. **Kerschensteiner D**. Circuit assembly: the repulsive side of lamination. **Curr Biol** 2011; 21(4):R163-6
24. **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

25. **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
26. **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
27. Schubert T, **Kerschensteiner D**, Eggers ED, Misgeld T, Kerschensteiner M, Lichtman J, Lukasiewicz PD, Wong RO. Development of presynaptic inhibition onto retinal bipolar cell axon terminals is subclass-specific. **J Neurophysiol** 2008; 100(1):304-16

D. Research Support

Ongoing Research Support

R01 EY023341 NIH/NEI **Kerschensteiner (PI)** **01/01/2014 to 31/12/2017**
Neuronal plasticity in retinal circuit development
To reveal how plasticity mechanisms cooperate across different levels of neural organization, between different neuronal compartments, and in response to different triggers to guide the development of specific class of neurons *in vivo*.

R01 EY026978 NIH/NEI **Kerschensteiner (PI)** **09/01/2016 to 07/31/2020**
Synaptic organization and visual processing in interneuron circuits of the retina
To decipher synaptic interactions in motion processing circuits of the retina, and to link these interactions to characteristic behaviors elicited by different forms of visual motion.

R01 EY027411 NIH/NEI **Kerschensteiner (PI)** **04/01/2017 to 03/31/2022**
Molecular mechanisms of retinal circuit assembly
To elucidate molecular mechanisms that control axon and dendrite size, and synapse formation in the retina.

Completed Research Support

Hope for Vision New Investigator Award **Kerschensteiner (PI)**

Alfred P. Sloan Research Fellowship **Kerschensteiner (PI)**

Whitehall Foundation, Inc. **Kerschensteiner (PI)**

Edward J. Mallinckrodt, Jr. Foundation **Kerschensteiner (PI)**

RPB Career Development Award **Kerschensteiner (PI)**

R01 EY021855 NIH/ NEI **Kerschensteiner (PI)**