Curriculum Vitae

Philip J O'Herron
Department of Physiology
Augusta University

Personal information

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Education

2002-2009 Johns Hopkins University: PhD, Neuroscience

2000-2002 George Mason University: BA (honors), Chemistry

1996-2000 Christendom College: BA (summa cum laude), Philosophy
Thesis: Substantial Form

Research Experience

2018-present Augusta University
Research Assistant Professor

2017-2018 Medical University of South Carolina
Research Assistant Professor

2011-2107 Medical University of South Carolina – Dr. Prakash Kara
Post-doctoral research

2009-2011 Johns Hopkins University – Dr. Rudiger von der Heydt
Post-doctoral research

2003-2009	Johns Hopkins University – Dr. Rudiger von der Heydt Thesis dissertation research *Thesis*: Short-Term Memory for Figure-Ground Organization in the Visual Cortex
5/03-8/03	Johns Hopkins University – Dr. Steven Yantis Laboratory rotation research: Visual processing
9/02-1/03	Johns Hopkins University – Dr. Ed Connor Laboratory rotation research: Visual processing
1/02-8/02	National Institute of Health – Dr. Sriram Subrimaniam Post-baccalaureate fellow research – High-resolution electronic microscopy of macro-proteins
6/01-12/01	George Mason University – Dr. Giorgio Ascoli Volunteer lab research – Creating biologically realistic computer-based neurons
1/01-5/01	George Mason University – Dr. Robert Smith Volunteer lab research – Effects of cocaine on developing rats

Awards/Prizes

2012	First prize MUSC research day for post-doctoral talks
2008	Neuroscience department – intradepartmental award for outstanding research poster at annual department retreat
2007	Vision Sciences Society Student Travel Award
2006-2007	Visual Neuroscience Training Program Grant
2002	NIH Post-baccalaureate Intramural Research Training Award

Society Memberships

Society for Neuroscience
American Heart Association
International Society for Cerebral Blood Flow and Metabolism

Funding

Current Research Support

NIH 1R21NS110069
4/01/2019-3/31/2021
The Physiological Mechanisms and Role in Neural Coding of Functional Hyperemia
Role: PI

Completed Research Support

NSF 1539034, NSF
Kalivas, Peter (PI)
08/01/15-07/31/19
Bridging Cognitive Science and Neuroscience Using Innovative Imaging Technologies
Role: Co-Investigator

NIH 1R01NS097775
Shih, Andy (PI)
08/01/2017-04/30/22
Deciphering the cerebral microinfarct and its role in vascular cognitive impairment
Role: Co-Investigator

NIH R21NS088827
Kara, Prakash (PI)
06/01/14-05/31/17
The spatial scale and cellular mechanisms of neurovascular coupling in vivo
Role: Post-doc – O'Herron et al. 2016 *Nature* stemmed from this grant.

Publications and Presentations

Journal Articles:

O'Herron P., Levy M., Woodward J. J. & Kara P. (2020) An Unexpected Dependence of Cortical Depth in Shaping Neural Responsiveness and Selectivity in Mouse Visual Cortex. **eNeuro**, ENEURO.0497-0419.2020

O'Herron, P., Summers, P. M., Shih, A. Y., Kara, P. & Woodward, J. J. (2020) In Vivo Two-Photon Imaging of Neuronal and Brain Vascular Responses in Mice Chronically Exposed to Ethanol. **Alcohol** 85:41-47

O'Herron P, Chhatbar PY, Levy M, Shen Z, Schramm AE, Lu Z, Kara P (2016) Neural correlates of single-vessel haemodynamic responses in vivo. **Nature** 534:378-382

Spolighted in Neuron: Denfield George H, Fahey Paul G, Reimer J, Tolias Andreas S (2016) Investigating the Limits of Neurovascular Coupling. **Neuron** 91:954-956

O'Herron, P., and von der Heydt, R. (2013). Remapping of border ownership in the visual cortex. **Journal of Neuroscience** 33(5): 1964-1974

O'Herron P., Shen Z., Lu, Z., Schramm A., Levy M., & Kara P. (2012). Targeted Labeling of Neurons in a Specific Functional Micro-domain of the Neocortex by Combining Intrinsic Signal and Two-photon Imaging. **Journal of Visualized Experiments** (70): e50025

Shen, Z.M., Lu, Z.Y., Chhatbar, P.Y., O'Herron, P., Kara, P. (2012). An artery-specific fluorescent dye for studying neurovascular coupling *in vivo*. **Nature Methods** 9, 273-276.

O'Herron, P., and von der Heydt, R. (2011). Representation of object continuity in the visual cortex. **Journal of Vision** 11(2): 12.

O'Herron, P., and von der Heydt, R. (2009). Short-term memory for figure-ground organization in the visual cortex. **Neuron** *61*, 801-809.

Zhang P, Borgnia MJ, Mooney P, Shi D, Pan M, O'Herron P, Mao A, Brogan D, Milne JL, Subramaniam S (2003) Automated image acquisition and processing using a new generation of 4K x 4K CCD cameras for cryo electron microscopic studies of macromolecular assemblies. **J Struct Biol** 143: 135-144.

Meeting Abstracts:

O'Herron P., Woodward J.J., Kara, P. (2017) The effect of cortical depth on response properties in mouse V1. Soc. Neurosci. Abstr.

O'Herron P., Levy M., Lopez M.F., Woodward J.J., Kara, P. (2015) In vivo two-photon imaging reveals modulation of synaptic and spiking activity in visual cortex following acute and chronic exposure to alcohol. Soc. Neurosci. Abstr.

O'Herron P., Chhatbar, P.Y., Levy M., Schramm A., Kara, P. (2014) Neural correlates of single-vessel hemodynamic responses in vivo. Soc. Neurosci. Abstr.

O'Herron, P., Chhatbar, P.Y., Kara, P. (2012) Comparing the orientation selectivity of neurons and blood vessels in cat visual cortex. Soc. Neurosci. Abstr.

Chhatbar, P., O'Herron, P., Kara, P. (2012). Improved blood velocity measurements with a hybrid image filtering and iterative radon transform algorithm. Soc. Neurosci. Abstr.

Kara, P., Shen, Z.L., Lu, Z.Y., Chhatbar, P.Y., O'Herron, P. (2011) An Artery-Specific Fluorescent Dye for studying cortical neurovascular coupling *in vivo.* Soc. Neurosci. Abstr. 175.06

O'Herron, P.J., and von der Heydt, R. (2010). Trans-saccadic memory for border ownership in neurons of the visual cortex. Soc. Neurosci. Abstr.

O'Herron, P.J., and von der Heydt, R. (2010). Border Ownership Signals Reflect Visual Object Continuity. J. Vision 10.

O'Herron PJ, von der Heydt R (2009) Persistence of border ownership signals does not reflect capture of attention. J Vision 9(8):936, 936a.

O'Herron PJ, von der Heydt R (2007) Persistence of the neural border ownership signal indicates short-term memory in perceptual organization. J Vision 7: 310-310a.

O'Herron PJ, von der Heydt R (2007) Studying the neural mechanisms of persistence in figure-ground organization. Soc Neurosci Abstr 229.9.

O'Herron PJ, von der Heydt R (2006) Onset, persistence and reset of border ownership signals. Soc Neurosci Abstr 437.11.

Manuscripts in preparation:

O'Herron P., Hartmann D., Kara P., Shih A. An all-optical method for controlling and monitoring blood flow in the cerebral cortex. Target Journal: JCBF&M or Neurophotonics

Manuscript Review

Reviewer for Journal of Neurophysiology, Journal of Neuroscience, Scientific Reports, i-Perception, Journal of Visualized Experiments.

Grant Review

Charleston Conference on Alzheimer's Disease – February 2019

Invited Extramural Lectures

Johns Hopkins University Bodian Seminar Series – 11/20/2014
Augusta University – 3/15/2018
Truett McConnell University – 9/12/2019

Intramural Lectures

MUSC:
Post-doc Seminar Series – 2/28/2014
Works in Progress Seminar – 2/3/2017
Faculty Candidate Job Talk – 8/14/17

Augusta University:
Vascular Biology Center Seminar Series – 1/9/2019
Department of Neuroscience and Regenerative Medicine Seminar Series – 1/28/2019
Vision Discovery Institute Annual Retreat – March 2019

Teaching/Outreach/Mentoring/Service

Co-director Physiology Department Seminar series – October 2019 – present.

Committee for reviewing Hamilton Scholar Award and Clinton Webb Post-Doc award winners – September 2019.
Lecture – MCG Augusta University (BIOM8033) "Optical Imaging Techniques for Biological Sciences" – January 2019

Guest lecturer – College of Charleston (PHYS 394) "Digital Signal and Image Processing with Biomedical Applications" – Spring 2018

Fundamentals of Neuroscience (NSCS 730) – vision lectures for core neuroscience course for graduate students – Spring 2018

Co-Instructor: Advanced Imaging Techniques in Neuroscience – MUSC Graduate Neuroscience elective, Fall 2017

Lecture/Workshop at the South Carolina Junior Academy of Sciences (SCJAS) annual meeting 4/16/2016

Lecture/Workshop at the South Carolina Junior Academy of Sciences (SCJAS) Fall Workshop 10/29/2016

Lecture/Workshop at the South Carolina Junior Academy of Sciences (SCJAS) annual meeting 3/25/2017

Lecture/Workshop on Visual Neuroscience at the South Carolina Junior Academy of Sciences (SCJAS) annual meeting 4/14/2018

Mentor High School Thesis from Charleston Academic Magnet High School – Spring/Summer 2018