

Summary

Biologist and neuroscientist with a combined 14 years of experience in academia and industry.

- 10 years experience investigating the neuroscience of visual processing by the vertebrate retina
- 4 years experience surgically removing human corneas for transplantation and restoration of vision
- Strong funding history and first-author publication record in major scientific journals

Education

Northwestern University, NIH Postdoctoral Research Fellow 2014 – Present

University of Illinois at Chicago, Ph.D. Biological Sciences (focus in Neurobiology) 2013

University of Denver, B.A. Biological Sciences 2004

Research and Professional Experience

Northwestern University, Feinberg School of Medicine January 2014 – Present
NIH Postdoctoral Research Fellow

Project: Investigated the function and connectivity of neurons in the retina in order to determine their role in processing visual information. Discovered 3 retinal ganglion cell types in the mouse retina and characterized their physiology, morphology, and feature selectivity. Discovered a ganglion cell–amacrine cell microcircuit that signals the uniformity of steady illumination in a visual scene. Identified a novel amacrine cell gap-junction network that is regulated by light and nitric oxide.

Methodologies: Designed and implemented multiple research projects that utilized a precise combination of electrophysiology, functional imaging, fluorescent microscopy, genetic, and optogenetic approaches. Performed dual-patch clamp recordings between pairs of synaptically-coupled neurons to map the connectivity of novel retinal circuits. Developed an innovative electrophysiological method to test circuit function through targeted, cell-specific ablation.

Responsibilities: Published impactful, novel scientific research in top-tier journals. Mentored graduate and undergraduate neuroscience students in both practical and technical aspects of laboratory science. Initiated several team-based collaborations, both nationally and internationally, with scientists and physicians to design experimental paradigms and further mutual research interests. Spearheaded the setup and establishment of a highly productive electrophysiology and imaging laboratory at Northwestern University.

University of Illinois at Chicago, Department of Neurobiology August 2008 – December 2013
Doctoral Research

Project: Investigated the role played by retinal horizontal cells on the formation of visual contrast. My published findings impacted our field's understanding of lateral feedback inhibition between retinal horizontal cells and cone photoreceptors in the outer retina by clarifying the role that protons play in this process.

Methodologies: Research methods included electrophysiology, functional imaging, and fluorescent microscopy. Developed a novel methodology to monitor intracellular pH changes with a fluorescent dye.

Responsibilities in Teaching: Autonomously taught diverse classes of 25 undergraduate students within a laboratory setting. Evaluated student progress through practical examinations and project-based scientific writing. Provided guidance and mentorship to students pursuing graduate or medical school through one-on-one meetings and letters of recommendation.

Industry Experience

Human Cornea Recovery Technician

Eversight Illinois and Rocky Mountain Lions Eye Bank

September 2004 – July 2008

Responsibilities: Performed surgical recovery of ocular tissue from human donors (corneas and whole eyes) to be utilized for transplantation and research purposes. Evaluated the viability of tissue for transplant through careful review of the donor's medical records, medical and social history, slit-lamp screening of corneal membranes, and verbal consultations with coroners, physicians, nurses, and family members. Proficient designated requestor trained in approaching the potential donor's next-of-kin for obtaining consent for organ and tissue donation. Initiated the process of in-house, pre-cut corneas for Descemet's Stripping Automated Endothelial Keratoplasty (DSAEK) at Eversight Illinois.

Awarded Funding

National Institutes of Health, Ruth L. Kirschstein National Research Service Award (NRSA F32). Individual Postdoctoral Fellowship, National Eye Institute, August 2015, \$162,642.

Selected Publications

J. Jacoby & G.W. Schwartz (2017). Three Small-Receptive-Field Ganglion Cells in the Mouse Retina Are Distinctly Tuned to Size, Speed, and Object Motion. *Journal of Neuroscience*, 37 (3) 610-625.

J. Jacoby, Y. Zhu, S.H. DeVries, G.W. Schwartz (2015). An Amacrine Cell Circuit for Signaling Steady Illumination in the Retina. *Cell Reports*, 13, 2663–2670.

J. Jacoby, M. Kreitzer, S. Alford, R. P. Malchow (2014). Fluorescent imaging reports an extracellular alkalization induced by glutamatergic activation of isolated retinal horizontal cells. *Journal of Neurophysiology*, 111:(5) 1056-1064.

J. Jacoby, M. Kreitzer, S. Alford, H. Qian, B. Tchernookova, E. Naylor, R. P. Malchow (2012). Extracellular pH dynamics of retinal horizontal cells examined using electrochemical and fluorometric methods. *Journal of Neurophysiology*, 107:(3) 868-879.

Committees

- STEM Program Mentor, St. Viator High School (2017)
- Auxiliary Board Member, Eversight Illinois (2016)
- Social Committee, Northwestern University Postdoctoral Forum (2015)
- Department of Ophthalmology Research Committee, University of Illinois at Chicago (2011)

Honors and Awards

- Research featured on the cover of *Cell Reports* (Cell Press, 2015)
- Grants-in-Aid of Research Award Winner, Sigma Xi, The Scientific Research Society (2012)
- W.C. and May Preble Deiss Award for Graduate Research, University of Illinois at Chicago (2012)
- Research Achievement Award, University of Illinois at Chicago (2012)
- Society for Neuroscience Graduate Student Symposium, Citywide Competition, 2nd place (DePaul University, 2011)
- Graduate Student Neuroscience Symposium, 1st place, University of Illinois at Chicago (2011)
- Graduate Student Teaching Award, University of Illinois at Chicago (2011)
- Midwest Eye Banks Student Stipend Award recipient (2009, 2010, 2011)
- Member of the Society for Neuroscience (2009-2017)
- Certified Eye Bank Technician (CEBT) awarded by the Eye Bank Association of America (2008)