Matthew A. Kreitzer, Ph.D.

Professor of Biology
School of Physical and Applied Sciences
Indiana Wesleyan University
4201 S. Washington St.
Marion, IN 46953

Faculty Positions:

Professor of Biological Sciences, Indiana Wesleyan University, 2012-present.
Associate Professor of Biological Sciences, Indiana Wesleyan University, 2007-present.

Assistant Professor of Biological Sciences, Indiana Wesleyan University, 2003-2007.

Academic Preparation:

Undergraduate: Olivet Nazarene University, Bourbonnais, IL. Major: Biology, minor Chemistry. B.S., 1999.

Graduate: University of Illinois at Chicago, Chicago, IL. Major: Biological Sciences. Ph.D., 2003.

Publications:

Kreitzer MA & Malchow RP. (*2013).* Engaging Undergraduates in a Unique Neuroscience Research Opportunity: A Collaborative Research Experience Between a Primarily Undergraduate Institution (PUI) and a Major Research Institution. *Journal of Neuroscience Education* 12(1):A85-92.

Jacoby J, **Kreitzer MA**, Alford S, & Malchow RP. (2013) Fluorescent imaging reports an extracellular alkalization induced by glutamatergic activation of isolated retinal horizontal cells. *Journal of Neurophysiology* (online).

Kreitzer MA, Jacoby J, Naylor ER, Baker A, Grable T, Tran E, Booth SE, Qian H, & Malchow RP. (2012) Distinctive patterns of alterations in proton efflux from goldfish retinal horizontal cells monitored with self-referencing H+-selective electrodes. *European Journal of Neuroscience* 36(8):3040-50.

Jacoby J, **Kreitzer MA**, Alford ST, Qian H, Tchernookova BK, Naylor ER, & Malchow RP. (2012). Extracellular pH dynamics of retinal horizontal cells examined using electrochemical and fluorometric methods. *Journal of Neurophysiology* 107(3):868-79.

Runyan JD & **Kreitzer MA**. Book Review of *The Neuroscience of Religious Experience by Patrick McNamara.* (2010). *Christian Scholars Review.*

Kreitzer MA, Birnbaum AD, Qian H & Malchow RP. (2009). Pharmacological characterization, localization, and regulation of ionotropic glutamate receptors in skate horizontal cells. *Vis Neurosci.* **26**, 375-387.

Kreitzer MA, Collis LP, Molina AJA, Smith PJS, & Malchow RP. (2007). Modulation of extracellular proton fluxes from retinal horizontal cells of the catfish by depolarization and glutamate. *J Gen Physiol* **130**, 169-182.

Kreitzer MA, Andersen KA & Malchow RP. (2003). Glutamate modulation of

GABA transport in retinal horizontal cells of the skate. *J Physiol* **546**, 717-731.

Liao GY, **Kreitzer MA**, Sweetman BJ & Leonard JP. (2000). PSD-95 regulates Src- and insulin-mediated current modulation of mouse NMDA receptors expressed in Xenopus oocytes. *J Neurochem*. **75**, 282-287.

Synergistic publications/activities:

Tchernookova BK, Naylor ER, Osborn M, Skinner B, Steinke E, Rasmussen L, **Kreitzer MA**, & Malchow RP. (2013). Great Lakes Glia Conference. Glutamate-induced changes in proton fluxes measured from isolated Muller cells. Traverse City, Michigan.

Tchernookova BK, Naylor ER, Osborn M, Skinner B, Steinke E, Rasmussen L, **Kreitzer MA**, & Malchow RP. (2013). Neuroscience 2013. Glutamate-induced changes in extracellular H+ fluxes measured from isolated Muller cells of the tiger salamander retina. San Diego, CA.

Kreitzer MA. (2013). Regulation of Extracellular pH dynamics by cells of the outer retina. Neuro Group. University of Illinois at Chicago.

Jacoby J, Naylor E, Baker A, Grable T, Tran E, Qian H, Malchow RP, & **Kreitzer MA**. Dinstinctive patterns of alterations in proton efflux from goldfish retinal horizontal cells monitored with self-referencing pH-selective electrodes. (2012). *Neuroscience 2012*. New Orleans, LA.

Malchow RP, Jacoby J, Alford ST, Qian H, & **Kreitzer MA**. (2012). The pH-sensitive Dye HAF Reports An Extracellular Alkalinization Upon Stimulation Of Catfish Horizontal Cells: Testing The H+ Hypothesis Of Lateral Inhibition. *ARVO 2012*. Ft. Lauderdale, FA.

Naylor E, Jacoby J, Montgomery L, Qian H, Malchow RP & **Kreitzer MA**. (2011). Calcium-dependent regulation of H+ flux from isolated retinal horizontal cells. *Neuroscience 2011*. Washington D.C.

Jacoby J, Alford A, **Kreitzer MA**, Qian H & Malchow RP. (2011). Extracellular pH dynamics of retinal horizontal cells examined using electrochemical and fluorometric methods. *Neuroscience 2011*. Washington D.C.

Malchow RP, Jacoby J, Alford ST, Qian H & **Kreitzer MA**. (2011). Does H+ release from horizontal cells mediate lateral feedback inhibition in the outer retina? A tale of two techniques. *IBRO World Congress of Neuroscience*. Florence, Italy.

Malchow RP, Jacoby J, Booth SE, Alford ST, Qian H, & **Kreitzer MA**. (2011). Testing the H+ Hypothesis of Feedback Inhibition from Horizontal Cells to Vertebrate Photoreceptors: a Tale of Two Techniques. *ARVO 2011*. Ft. Lauderdale, FA.

Kreitzer MA & Malchow RP. (2010). Stimulating student interest and critical thinking in the Neurosciences: a unique collaborative research program involving a primarily undergraduate institution and a major research institution. *Neuroscience 2010*. San Diego, CA.

Kreitzer MA, Grable T, Naylor E, Montgomery L, & Malchow RP. (2010). Evoked and spontaneous extracellular alkalinizations in isolated goldfish horizontal cells. *Neuroscience 2010*. San Diego, CA.

Jacoby J, Alford ST, **Kreitzer MA**, Qian H, & Malchow RP. (2010). A tale of two responses: testing the H+ hypothesis of feedback inhibition from horizontal cells to vertebrate photoreceptors. *Neuroscience 2010*. San Diego, CA.

Grable T, Keller C, & **Kreitzer MA**. (2010). Depolarization-dependent extracellular alkalinizations from isolated goldfish retinal horizontal cells. *Midwest/Great Lakes Undergraduate Research Symposium 2010*. Ohio Wesleyan University.

Kreitzer MA & Malchow RP. (2009). Bridging the gap: Using Skype to initiate collaborative undergraduate neuroscience educational experiences between small and large educational institutions. *Neuroscience 2009*, Chicago, IL.

Malchow RP, **Kreitzer MA**, Molina AJA, Collis LP & Smith PJS. (2008). Testing the proton hypothesis of lateral inhibition: measurements of H+ flux from isolated horizontal cells of the catfish, skate and goldfish. ARVO. Fort Lauderdale, FA. Paper Presentation.

Kreitzer MA & Malchow RP. (2008). Modulation of horizontal cell AMPA/kainite glutamate receptor responses of the skate retina by extracellular zinc, calcium and H+. *Neuroscience 2008*. Washington D.C.

Kreitzer MA, Collis LP, Molina AJA, Smith PJS, & Malchow RP. (2007). Do protons mediate lateral inhibition in the outer retina? Proton flux measurements from catfish horizontal cells. *Neuroscience 2007*, San Diego, CA.

Undergraduate research mentor for 5 years (2004–present). In this capacity I have mentored ***29 undergraduate students*** through neurophysiological research. This experience significantly improved each students understanding of the scientific method and led to their research presentations at Indiana Wesleyan University's Celebration of Scholarship. **10 undergraduate students** have been authors on abstracts/papers presented at regional and international venues.

Kreitzer MA. (2011). Extracellular pH dynamics in the outer retina: An inter-institutional undergraduate adventure. Neurobiology Group, University of Illinois at Chicago.

Kreitzer MA & Malchow RP. (2010). Investigating the role of extracellular H+ in visual processing: linking cells, labs and undergrads. *Indiana University School of Medicine Research Seminar*, Indiana University School of Medicine Northwest.

Kreitzer MA. (2009). Using Skype to strengthen a collaborative research effort between two distant universities. *I-Light Gigapop Conference 2009,* Indianapolis, IN.

Research Awards/Service:

National Science Foundation Award (2009-present). RUI: The role of extracellular H+ in processing visual signals.

2013 Archive Vision and Change Scholar; American Physiological Society

2010 recipient of the Indiana Wesleyan University's President's Award for Meritorious Service for work in undergraduate research.

Hodson Science Summer Research Fund for research in the Summer Research Institute (2011-13). Examining the nature of calcium-dependent regulation of extracellular pH in the outer retina.

Summer Research Fellow at the Marine Biological Laboratory, Woods Hole, MA (2006). Award to conduct collaborative research at the BioCurrents Research Center at the MBL. "Regulation of hydrogen flux from cone and rod horizontal cells."

Received multiple Indiana Wesleyan University Institutional fellowships including a Lilly Initiative Scholarship and the Hinds Fellowship (Indiana Wesleyan University Institutional Research Award; 2006-2009, 2013-present). These awards are given to allow a faculty member devoted to undergraduate research to pursue a project designed to improve teaching, learning, and scholarship at the undergraduate level.

Indiana Wesleyan University Faculty Luncheon Presentation (2009). Envisioning a path for funding undergraduate research at IWU: An undergraduate study of visual processing.

Presented at Citizen's Advisory Council Breakfast with undergraduate research student (Luke Menner) (2009).

Seminar Presentation to Laboratory of Integrative Neuroscience program at University of Illinois at Chicago. "Examining the mechanism of lateral inhibition in the outer retina - the H+ hypothesis." (2007).

Committee member (currently) and co-organizer (w/ Mark Asnicar, Assistant Professor of Biology) of Indiana Wesleyan University's Institutional Animal Care and Use Committee (2009-present).

Indiana Wesleyan University Scholarship Award Review Committee member (2010-11).

Co-developed (w/ Jason Runyan, Assistant Professor of Psychology at IWU) interdisciplinary, Integrative Neuroscience Course at Indiana Wesleyan University (2009-present).

Oral Presentations at Indiana Wesleyan University's Science Faculty Sympsium (2004-08).

Committee member of Indiana Wesleyan University's Institutional Animal Care and Use Committee (2009-present).

Indiana Wesleyan University Scholarship and Executive Scholarship Council Member (2010-present).

Indiana Wesleyan University Scholarship Award Review Committee member (2010-11).

Professional Affiliations:

Society for Neuroscience Member (2000-present). International Organization with 38,000 members who comprise the leading Neuroscientist's worldwide.

American Physiological Society Member (2012-present).

Faculty for Undergraduates in Neuroscience Member. (2006-present). Organization focusing on the importance of developing undergraduate research opportunities in Neuroscience.

Course Experience at Indiana Wesleyan University:

Principles of Biology (BIO 125). 2012-present.

General Physiology (BIO 312). 2004-present.

Mammalian Anatomy (BIO 311). 2003-present.

Integrative Neuroscience (BIO 396). 2009-present.

Anatomy & Physiology I and II (BIO 111-112). 2003-present.

Undergraduate Research Course (BIO 495). 2004-present.

Institutional (IWU) Committee Service (years of service):

Faculty Senate (2011-present)

Executive Scholarship Council (2011-present)

Scholarship Council (2011-present)

Premedical Advisory Committee (2005-present)

Institutional Animal Care and Use Committee; co-developer and member (2009-present)

Health Science Committee (2011-12)

Instructional Technology Committee (2011-2012)

Higher Learning Commission criterion subcommittee (2009-10)

Biology Faculty Search Committee (2009-10)

University Technology Council (2009-10)

Technology Committee Chair (2008-9)

Academic Affairs Committee (2007-8)

Student Development Council (2006-7)

Technology Committee (2004-6)