Curriculum Vitae

Patrick C. Kerstein, Ph.D.

CONTACT

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EDUCATION

2015	Ph.D., Neuroscience, University of Wisconsin-Madison Dissertation Title: "Mechanochemical regulation of growth cone motility"
2007	B.A., Biology (with Honors), Ripon College Minor: Chemistry

RESEARCH POSITIONS

2021-	Assistant Professor, School of Health Sciences, Purdue University
2021-	Investigator, Purdue Institute for Integrative Neuroscience (PIIN), Purdue University
2021-	Investigator, Center for the Environment (C4E), Purdue University
2015-21	Post-doctoral Fellow, Vollum Institute, Oregon Health and Science University Advisor: Kevin M. Wright, Ph.D.
2009-15	Graduate Research Assistant, University of Wisconsin-Madison Advisor: Timothy M. Gomez, Ph.D.
2007-09	Research Technologist, Medical College of Wisconsin Advisor: Cheryl L. Stucky, Ph.D.
2006-07	Undergraduate Research Assistant, Ripon College Advisor: Robert L. Wallace, Ph.D.

FELLOWSHIPS & AWARDS

Fellowships

2019- 21	NIH NRSA Postdoctoral Award (F32 EY029974)
2018-19	Knights Templar Eye Foundation Career Starter Award
2018-19	Collins Medical Trust Research Grant
2012-14	NIH NRSA Predoctoral Award (F31 NS074732)
2011	Neuroscience Training Grant Award, UW-Madison (T32 GM007507)

Awards

2018	National Eye Institute Travel Award
2017	N.L. Tartar Trust Award, OHSU
2014	Vilas Travel Award, UW-Madison
2012	Neuroscience Training Program Travel Award, UW-Madison
2004-07	Academic All-Midwest Conference, Men's Soccer, Ripon College
2003-07	Honors Scholarship, Ripon College

PUBLICATIONS

1. **Kerstein PC**, Leffler J, Sivyer B, Taylor WR, Wright KM. "Gbx2 identifies two amacrine cell subtypes with

distinct molecular, morphological, and physiological properties." (2020) *Cell Rep.* 33(7):108382.

2. Schaser AJ, Stackhouse TL, Weston LJ, **Kerstein PC**, Osterberg VR, López CS, Dickson DW, Luk KC, Meshul CK, Woltjer RL, Unni VK. "Trans-synaptic and retrograde axonal spread of Lewy pathology following pre-formed fibril injection in an in vivo A53T alpha-synuclein mouse model of synucleinopathy." (2020) *Acta Neuropathol Commun*. 8(1):150.

3. O'Sullivan ML, Punal VM, **Kerstein PC**, Brzezinski JA, Glaser T, Wright KM, Kay JN. "Astrocytes Follow Ganglion Cell Axons to Establish an Angiogenic Template During Retinal Development." (2017) *Glia*. 65(10):1697-1716.

4. **Kerstein PC**, Patel KM, Gomez TM. "Calpain cleavage of FAK and Talin regulates adhesion dynamics during axon guidance." (2017) *J. Neurosci.* 37(6): 1568-1580.

5. **Kerstein PC**, Nichol RH, Gomez TM. **"**Mechanochemical regulation of growth cone motility." (2015) *Front. Cell. Neurosci*. 9:244.

6. Lehto SG, Weyer AD, Zhang M, Youngblood BD, Wang J, Wang W, **Kerstein PC**, Davis C, Wild KD, Stucky CL, Gavva NR. "AMG2850, a potent and selective TRPM8 antagonist, is not effective in rat models of inflammatory mechanical hypersensitivity and neuropathic tactile allodynia." (2015) *Naunyn Schmiedebergs Arch Pharmacol*. 388(4):465-76.

7. **Kerstein PC**, Jacques-Fricke BT, Rengifo J, Mogen BJ, Williams JC, Gottlieb PA, Sachs F, Gomez TM. **"**Mechanosensitive TRPC1 channels promote calpain proteolysis of talin in filopodia to regulate spinal axon outgrowth." (2013) *J. Neurosci* 33(1): 273-285.

8. Hillary CA, **Kerstein PC**, Vilceanu D, Barabas M, Retherford D, Brandow AM, Wandersee NJ, Stucky CL. "Mechanical hypersensitivity and nociceptor sensitization in murine sickle cell disease are mediated by TRPV1." (2011) *Blood*. 118(12):3376-83.

9. **Kerstein PC**, del Camino D, Moran MM, Stucky CL. "Pharmacological blockade of TRPA1 inhibits mechanical firing in nociceptors." (2009) *Mol Pain.* 5:19.

PRESENTATIONS

Invited Talks

2022 Neuroscience & Physiology Seminar, Dept. of Biological Sciences, Purdue Univ.
2022 Chemical Exposures Seminar, Center for the Environment, Purdue Univ.
2022 Neuroscience & Behavior Colloquium, Dept. of Psychological Sciences, Purdue Univ.
2021 Fall Seminar Series, School of Health Sciences, Purdue University
2021 Faculty Candidate Seminar, School of Health Sciences, Purdue University (virtual)
2020 CSHL meeting on Molecular Mechanisms of Neuronal Connectivity, Cold Spring Harbor Laboratories, NY (Virtual).
2018 Northwest Developmental Biology meeting, Friday Harbor Laboratories, WA.
2017 Northwest Developmental Biology meeting, Friday Harbor Laboratories, WA.
2014 CSHL meeting on Axon Guidance, Synapse Formation, and Regeneration, Cold Spring Harbor Laboratories, NY.
2014 National Graduate Student Symposium, St. Jude Children's Research Hospital, Memphis, TN.
2013 Society for Neuroscience Annual Meeting, San Diego, CA.
2013 MidBrains Neuroscience Conference, Carleton College, Northfield, MN.

Poster Presentations

2021 Retinal Circuits Symposium (virtual)

2019 Association for Vision Research and Ophthalmology Annual Meeting, Vancouver, BC, Canada.
2019 Keystone Symposium on Mammalian Sensory Systems, Allen Institute, Seattle, WA.
2018 GRC Neural Development, Newport, RI.
2018 Association for Vision Research and Ophthalmology Annual Meeting, Honolulu, HI.
2016 CSHL meeting on Axon Guidance, Synapse Formation, and Regeneration, Cold Spring Harbor Laboratories, NY.
2014 Society for Neuroscience Annual Meeting, Washington DC.
2012 Society for Neuroscience Annual Meeting, New Orleans, LA.
2011 American Society for Cell Biology Annual Meeting. Denver, CO.
2010 Society for Neuroscience Annual Meeting, San Diego, CA.
2009 Society for Neuroscience Annual Meeting, Chicago, IL.

MENTORSHIP

PhD Primary Mentorship
Labony Khandokar (Toxicology PhD Program)

PhD Thesis Committees
Sydney Stradtman (Committee Member, Toxicology, Mentor: Dr. Jennifer Freeman)

Undergraduate Students
Katlynn Mistina ’24 (Major: BMHS)
Jonah Chang ’25 (Major: BMHS)
Caleb Klopfenstein ’25 (Major: BMHS)

TEACHING & SERVICE

Teaching
2022 Invited Lecturer, HSCI 562: Analytical Toxicology & Pathology, Purdue Univ.
2022 Invited Lecturer, HSCI 390: Everyday Toxicology, Purdue Univ
2021 Invited Lecturer, HSCI 195: Health Sciences Freshman Honors Seminar, Purdue Univ.
2017-19 Invited Lecturer, Summer Undergraduate Neuroscience Course, Vollum Institute, OHSU
2016-17 Organizer, Vollum Friday Seminar Series, Vollum Institute, OHSU (2 speakers/week)
2013-15 Elected Student Member, Neuroscience Training Program Steering Committee, UW-Madison
2011-14 Invited Lecturer, BME 619: Microscopy of Life, UW-Madison
2010 Teaching Assistant, Neuro 625: Brain Cell Culture & Imaging, UW-Madison

Service
2022- Program Committee, Ocular Toxicology Specialty Section, Society for Toxicology
2021- Awards Committee, School of Health Sciences, Purdue Univ.
2021- Diversity, Equity, & Inclusion Taskforce, School of Health Sciences, Purdue Univ.

Journal Peer-Reviewer
2021 Neurotoxicology

Other Training Experience
2016 Brain Data Intensive Workshop, Allen Institute for Brain Science, Seattle, WA
2012 Developmental Neurobiology Course, OIST, Okinawa, Japan

FUNDING

Completed

F32 EY029974 (PI: Kerstein) 7/1/2019-8/15/2021
NIH/NEI $183,234
Gbx2 regulates the development of an atypical amacrine cell
The major goal of this project is to define the molecular mechanisms by which Gbx2 regulates the morphology and connectivity of amacrine cells.

KTEF Career Starter Grant (PI: Kerstein) 7/1/2018-6/30/2019
Knights Templar Eye Foundation $64,895
Transcriptional control of retinal circuit development
The major goal of this project is to determine the transcriptional role of Gbx2 in amacrine cells.

CMT Fellowship (PI: Kerstein) 3/1/2018-12/31/2019
Collins Medical Trust (CMT) $29,920
The role of Robo receptors during visual circuit development
The major goals of this project are to characterize the gross anatomical and synaptic layer phenotypes in knockout mice where Robo receptors were ablated from the entire retina.

F31 NS074732 (PI: Kerstein) 12/07/2012-12/06/2014
NIH/NINDS $66,516
Mechanisms of Mechanical Force Evoked Ca^{2+} Influx in Developing Neurons
The major goal of this project is to identify the roles of Transient Receptor Potential Channels and the downstream protease Calpain have on growth cone motility and neuronal morphogenesis.

T32 GM007507 (PI: T. Yin) 1/1/2011-12/31/2011
NIH/NIGMS $39,068
Neuroscience Training Program
This provided 1-year of graduate training support in neuroscience based on the student's merit.