CURRICULUM VITAE
Martha Bhattacharya, PH.D.

CHRONOLOGY OF EDUCATION

2000	Harvard University, A.B. *Magna Cum Laude*
2007	University of California, San Francisco; Ph.D.

CHRONOLOGY OF EMPLOYMENT (chronological)

2000-2001	Teaching Fellow, Phillips Academy Andover, Andover MA
2001	Research Technician, Joslin Diabetes Center
2008	Adjunct Instructor, San Francisco State University (Neuroscience, Developmental Biology)
2008	Adjunct Instructor, University of San Francisco (Physiology Laboratory)
2008-2014	Postdoctoral Fellow, Department of Developmental Biology, Washington University in St. Louis School of Medicine
2012	Adjunct Instructor, St. Louis College of Pharmacy (now University of Health Sciences and Pharmacy) (Advanced Physiology Laboratory)
2014-2016	Assistant Professor (tenure-track), Basic Sciences, St. Louis College of Pharmacy (now University of Health Sciences and Pharmacy)
2017-2023	Assistant Professor (tenure-track), Department of Neuroscience, University of Arizona; Joint Appointments with Departments of Neurology, BIO5 Institute, and Graduate Interdisciplinary Program in Neuroscience
2022-2024	Faculty Director, Vertically Integrated Projects (VIP) Program, University of Arizona
2023-	Associate Professor (with tenure), Department of Neuroscience, University of Arizona

SELECTED HONORS AND AWARDS (faculty level only)

2015	Bright Spot Awardee (Student Nominated Award), St. Louis College of Pharmacy
2020, 2021	Awardee, Herbst Foundation and Dean's Innovation and Education Award, College of Science, University of Arizona (award, renewal)
2021	Distinguished Early-Career Teaching Award, College of Science, University of Arizona (one awardee per year across 20 departments)
2022	Winner of the Five Star Faculty Award, a student nominated teaching and mentoring award, University of Arizona (one awardee per year for the entire university)

2022 Featured Faculty Member on social media for LiveLikeLou Foundation, an ALS Research Foundation

SERVICE/OUTREACH (selected)

University/Local Service and Outreach

2017 - Founder and Instructor, Graduate Fellowship Workshop for Neuroscience and Biological Sciences Students
- Mentor seniors and early PhD students in writing research proposals and personal statements for the National Science Foundation Graduate Fellowship Program
- *Impact: 5 Fellowships, 4 Honorable mentions for U of A student mentees (total of $690,000 awarded)*
- Now a formal course in CMM/NRSC programs (2023-)

2021- Workshop Leader, "Fly Racing!", Arizona STEM Adventure, Southern Arizona Regional Science and Engineering Foundation (SARSEF) (3rd-8th graders)
- 2021: Virtual presentation to ~30 classrooms, ~800 students
- 2022, 2023: In person presentation to ~200 students
- Vertically Integrated Project undergraduate research students assisted in presenting and helping kids with data collection

National/International Service and Outreach

2014-2017 Review Panelist, National Science Foundation Graduate Research Fellowships

2018-2022 Peer Reviewer for *Nature Scientific Reports*, *Biological Psychiatry*, *FEBS Letters*, *Brain Research*, *Cellular and Molecular Neurobiology*

2021-2024 Member, Public Education and Communication Committee, Society for Neuroscience

2022, 2023 Review Panelist, National Science Foundation, Directorate for Biological Sciences, Division of Integrative Organismal Systems, Neural Systems Cluster

2022-present Invited Instructor, "*Drosophila* Models of Neurodegenerative Disease", Cold Spring Harbor Laboratory Summer Course on *Drosophila* Neurobiology (lecture and laboratory components)

2023 Reviewer, Arizona Alzheimer's Disease Research Center Pilot Grants

2024-2027 Member, Professional Development Committee, Society for Neuroscience

2024 Invited Reviewer (Ad-Hoc), Cell and Molecular Biology of Neurodegeneration (CMND) Study Section, National Institutes of Health (declined, time conflict)

2025- (Planned) Target ALS, Independent Review Committee Standing Member

College Committees

2021-	Member, Student Scholarship Review Committee, College of Science

University Committees

2018-2021	Member, Admissions Committee, Neuroscience Graduate Interdisciplinary Program
2019-	Member, Microscopy Faculty Research Advisory Committee
2020-	Member, Vertically Integrated Project Working Group
2023-2024	Member, Undergraduate Research Task Force

Departmental Committees

2018-2020	Member, Student Awards Committee
2019-2023	Faculty Search Committee, Department of Neuroscience • Committee Member for Junior Faculty Search (2018-19, 2021-22) • Co-Chair for Head Search (2022-23) and Junior Faculty Search (2023-24)
2023-2024	Curriculum Committee, Neuroscience and Cognitive Science

PUBLICATIONS

Key: °undergraduate mentee, °°graduate student mentee, underlined: postdoctoral mentee, #post-baccalaureate trainee; @corresponding author; +equal author contributions;

1. Li R, **Chase M**, Jung SK, Smith PJ, @Loeken MR. Hypoxic stress in diabetic pregnancy contributes to impaired embryo gene expression and defective development by inducing oxidative stress. Am J Physiol Endocrinol Metab. 2005 Oct;289(4):E591-9. PubMed PMID: 15928021.
2. +**Bhattacharya MR**, +Bautista DM, Wu K, Haeberle H, Lumpkin EA, @Julius D. *Radial stretch reveals distinct populations of mechanosensitive mammalian somatosensory neurons. Proc Natl Acad Sci U S A. 2008 Dec 16;105(50):20015-20. PubMed PMID: 19060212; PubMed Central PMCID: PMC2604979.
3. **Bhattacharya MRC**, Gerdts J, Naylor SA, #Royse EX, °Ebstein SY, Sasaki Y, Milbrandt J, @DiAntonio A. A model of toxic neuropathy in *Drosophila* reveals a role for MORN4 in promoting axonal degeneration. J Neurosci. 2012 Apr 11;32(15):5054-61. PMID: 22496551; PMCID: PMC3336743.

Publications since independence:

4. @**Bhattacharya MRC**, Geisler S, Pittman SK, Doan RA, Weihl CC, Milbrandt J, DiAntonio A. TMEM184b Promotes Axon Degeneration and Neuromuscular Junction Maintenance. J Neurosci. 2016 Apr 27;36(17):4681-9. PMID: 27122027; PMCID: PMC4846669.

5. [@]**Bhattacharya, MRC.** (2020) A Chemotherapy-Induced Peripheral Neuropathy Model in *Drosophila* melanogaster. Methods Mol Biol. 2020; 2143:301-310. PMID: 32524489.

6. [+#]Cho TS, [+]Beigaitė E, [+#]Klein NE, Sweeney ST, [@]**Bhattacharya MRC**. The Putative *Drosophila* TMEM184B Ortholog Tmep Ensures Proper Locomotion by Restraining Ectopic Firing at the Neuromuscular Junction. Mol Neurobiol. 2022 Feb 2. PMID: 35107803.

7. [°°]Larsen EG, [#]Cho TS, McBride ML, Feng J, Manivannan B, Madura C, [#]Klein NE, [°°]Wright EB, Wickstead ES, [°]Garcia-Verdugo HD, [#]Jarvis C, Khanna R, Hu H, Largent-Milnes TM, [@]**Bhattacharya MRC**. TMEM184B is necessary for IL-31-induced itch. PAIN. 2022 May 1;163(5):e642-e653. PMID: 34629389.

8. [+°°]Larsen EG, [+°°]Wright EB, [°]Hart HR, [@]**Bhattacharya MRC**. Transmembrane protein 184B (TMEM184B) promotes expression of synaptic gene networks in the hippocampus. BMC Genomics 24, 559 (2023). PMID: 37730546, PMCID: PMC10512654

9. [+]Chapman, KA*, [+]Ullah F*, [+°°]Yahiku ZA*…[@]Davis EE, [@]**Bhattacharya, MRC**. Pathogenic variants in *TMEM184B* cause a neurodevelopmental syndrome via alteration of metabolic signaling. medRxiv (2024). PMID: 39006436. doi: 10.1101/2024.06.27.24309417.

OTHER SCHOLARSHIP

Patent Application

PCT Application July 29, 2021. International Application Number: PCT/ WO2021/151059. **Bhattacharya, Martha** and Largent-Milnes, Tally. Compounds and Methods for Treating or Reducing Pruritus. Application No. 62/965,556. Provisional Patent UA20-111, UNIA 20.01. Filing date January 24, 2020. U.S. Patent Application 17794939, filing date July 22, 2022.

AWARDED GRANTS AND CONTRACTS

Research Funding:

Title: Defining TMEM184b-Controlled Pathways in Nerve Terminal Maintenance and Axon Degeneration. Source: NIH, National Institute for Neurological Disorders and Stroke (NIH R01 NS105680) (PA-16-160)
Role: PI
Percent Effort: 35% academic year, 83% summer
Co-PIs: none
Total Amount: $1,783,858; Direct: $1,162,122; Indirect: $621,736
Award Period: 7/1/2018-11/30/2028 (renewed in 2023)

Title: Defining TMEM184b-Controlled Pathways in Nerve Terminal Maintenance and Axon Degeneration. Source: NIH, National Institute for Neurological Disorders and Stroke (NIH NS105680-01A1S1) (PA-18-591)
Role: PI
Percent Effort: 15% academic year, 10% summer
Co-PIs: none
Total Amount: $366,911; Direct: $240,273; Indirect: $126,638
Award Period: 9/18/2018-4/30/2019

Purpose: This grant was funded through the Alzheimer's Disease and Related Dementias Program and provided funds to investigate the role of TMEM184B in learning and memory. Data included in BMC Genomics (2023) publication.

Title: Defining TMEM184b-Controlled Pathways in Nerve Terminal Maintenance and Axon Degeneration. Source: NIH, National Institute for Neurological Disorders and Stroke, Research Supplements to Promote Diversity in Health-Related Research (PA-18-906)
Role: PI, Mentor to Ms. Elizabeth Shelton
Percent Effort: 0% (no salary support; 100% to Ms. Shelton)
Total Amount: $32,654; Direct: $21,273; Indirect: $11,381
Award Period: 6/1/2020-8/31/2021
Purpose: This award was a diversity supplement that supported the summer and academic year research of Ms. Elizabeth Shelton from June-December 2020, and also supported hiring her as a research technician after her December 2020 graduation while she completed graduate school applications.

Title: NSF CAREER: Mitochondrial transcellular transfer in the nervous system: Mechanisms of action and student training opportunities.
Source: National Science Foundation (NSF)
Role: PI
Percent Effort: 10%
Total Amount: $1,100,000
Award Period: 4/1/2023-3/31/2028
Purpose: This award supports both an investigation of mitochondrial transfer following nerve injury and also enables the growth of a course-based undergraduate research experience (CURE) established by Dr. Bhattacharya (in 2021) in the form of a Vertically Integrated Project.

Education Funding:

Title: Enhancing a Vertically Integrated Project course in Brain Communication Networks
Source: Arthur L. and Lee G. Herbst Endowment for Innovation, together with College of Science Dean's Innovation and Education Fund.
Role: PI
Percent Effort: N/A
Total Amount: $3000 (direct costs only)
Award Period: 1/1/2021-12/31/2021
Purpose: Support for new course-based laboratory experience for NSCS students.

Title: Flow Cytometry for a Vertically Integrated Project (VIP) Research Course
Source: Core Facilities Pilot Program grant (Flow Cytometry Shared Resource).
Role: PI
Percent Effort: NA (core facility usage fees only)
Total Amount: $4500 (direct costs only)
Award Period: 1/1/2021-12/31/2021 (extended into 2022).
Purpose: Support for students in new course-based research experience to learn and apply flow cytometry techniques.

Title: Plasma Membrane Proteomics for a Vertically Integrated Project (VIP) Research Course
Source: Core Facilities Pilot Program grant (Analytical and Biological Mass Spectrometry core).
Role: PI
Percent Effort: NA (core facility usage fees only)

Total Amount: $4500 (direct costs only)
Award Period: 2/15/2021-2/14/2022
Purpose: Support for students in new course-based research experience to learn and apply proteomics to generate new datasets from tissues of interest in *Drosophila*.

Title: Enhancing a Vertically Integrated Project course in Brain Communication Networks
Source: Arthur L. and Lee G. Herbst Endowment for Innovation, together with College of Science Dean's Innovation and Education Fund.
Role: PI
Percent Effort: N/A
Total Amount: $3000 (direct costs only)
Award Period: 1/1/2022-12/31/2022
Purpose: Renewal award. Provides additional support for the vertically integrated project course.

Title: Building CURE Courses in Neuroscience.
Source: CURE Institute, Undergraduate Research & Inquiry Collaborative, University of Arizona.
Role: Co-PI (Ulises Ricoy, Co-PI)
Percent Effort: N/A (funds entirely for course)
Total Amount: $7000 (direct costs only)
Award Period: 8/1/2021-7/30/2022
Purpose: Launching two course-based undergraduate research experiences in the Neuroscience and Cognitive Science program. Funds for laboratory supplies and work study support/aide.

Jessica Bowersock, M.S., Ph.D.

Formerly: Jessica McDonnell

jbowersock@arizona.edu | 978.328.3411

CURRENT TITLE & POSITION

- Research Instructor (faculty)
  - University of Louisville; School of Medicine; Department of Neurological Surgery
- Lecturer (faculty)
  - University of Arizona; Department of Neuroscience

Education & Training

DOCTOR OF PHILOSOPHY (PH.D.)

2016 – 2020

East Carolina University, Greenville NC
Bioenergetics and Exercise Science; Biomechanics & Motor Control Concentration
Dissertation: "Neurobehavioral Strategies of Skill Acquisition in Left & Right-Hand Dominant Individuals"

MASTER OF SCIENCE (M.S.)

2014 – 2016

East Carolina University, Greenville NC
Kinesiology, Biomechanics Concentration
Thesis: "Skipping The Injuries: A Biomechanical and Metabolic Comparison Between Skipping & Running"

BACHELOR OF SCIENCE (B.S.)

2007 – 2011

Sacred Heart University, Fairfield CT
Athletic Training

Background

EMPLOYMENT HISTORY

[2023 – 2024]

- Research Instructor (faculty) at the University of Louisville Department of Neurological Surgery
- Instructor at the University of Arizona Department of Neuroscience & Cognitive Science (career track)
- Instructor at Northern Arizona University
    - Department of Biological Sciences
    - Department of Physical Therapy & Athletic Training
- Anatomy & Physiology Expert Q&A Copywriter for study.com

[2020 – 2023]

- Post-Doctoral Associate; University of Louisville; School of Medicine; Department of Neurological Surgery

[2016 – 2020]

- Laboratory Manager, Sensory-Motor Integration Laboratory, Department of Kinesiology, East Carolina University

[2014 – 2016]

- Research and Teaching Assistant, Biomechanics Laboratory, Department of Kinesiology, East Carolina University

[2011 – 2014]

- Athletic Trainer (independent contractor: self-started transitional therapy program)
    - Jackson Physical Therapy, Laguna Beach, CA.
    - Capistrano Valley Christian High School, San Juan Capistrano, CA.
    - Ocean Physical Therapy, San Clemente, CA.
- Gait Technician at Running is Right (Owner & Operator)

Publications

PUBLISHED MANUSCRIPTS

- Willett, Andrew; Wylie, Scott Alan; **Bowersock, Jessica L**; Dawant, Benoit M; Rodriguez, William; Ugiliweneza, Beatrice; Neimat, Joseph S.; van Wouwe, Nelleke C. (2023). STN subregion stimulation modulates action-outcome learning in patients with Parkinson's Disease. *Brain Communications*
- Nicholas Dietz, Ahmad Alhourani, Scott Wylie, **Jessica L. McDonnell**, Fenna Phibbs, Benoit M. Dawant, William J. Rodriguez, Elise Bradley, Joseph Neimat, Nelleke C. van Wouwe (2022). Effects of Deep Brain Stimulation Target on the Activation and Suppression of Action Impulses (*Clinical Neurophysiology*)
- Kane, J., **McDonnell, J L**., Neimat, J., Hedera, P., van den Wildenberg, P.M., Phibbs, F., Bradley, E., Wylie, S., van Wouwe, N. (2022). Essential Tremor impairs the ability to suppress involuntary action impulses (*experimental brain research)*
- Vicente, Raul, et al. (2022). Enhanced interplay of neuronal coherence and coupling in the dying human brain. *Frontiers in Aging Neuroscience*: 80 (acknowledgments)

- **McDonnell, J L.**, Murray, N. P., Ahn, S., Clemens, S., Everhart, E., & Mizelle, J. C. (2021). Examination and Comparison of Theta Band Connectivity in Left-and Right-Hand Dominant Individuals throughout a Motor Skill Acquisition. *Symmetry, 13(4), 728*.
- **McDonnell, J L.**, Zwetsloot, K. A., Houmard, J., & DeVita, P. (2019). Skipping has lower knee jointcontact forces and higher metabolic cost compared to running. *Gait & Posture, 70*, 414-419.
- **McDonnell, J L.**, Willson, J., Zwetsloot, K., Houmard, J. & DeVita, P**.** (2017). Gait biomechanics of skipping are substantially different than those of running. *Journal of Biomechanics, 64,* 180-185.

MANUSCRIPTS UNDER REVIEW

Bowersock, J., Wylie, S., Alhourani, A., Zemmar, A., Bridwell, E., Ugiliweneza, B., Neimat, J., van Wouwe, N. (2024). Theta and beta power in the subthalamic nucleus respond to conflict across subregion and hemisphere. *Brain*

TEXTBOOK MATERIAL

- Disability and Motor Behavior: A Handbook of Research
  Chapter 13: Motor Behavior and Rehabilitation after Spinal Cord Injury.
  Jessica L. McDonnell, PhD & Collin D. Bowersock, PhD

Invited Lectures & Research Presentations

INVITED LECTURES

- Signal Requirements for Closed-Loop Neuromodulation: Insights from the STN
  Adaptive Neuromodulation workshop: Mayo Clinic Rochester (August 2024)
- Interpreting research for clinical action
  Northern Arizona University Pheonix Bioscience Core (June 2023)
- Bioenergetic of Adaptation
  Winston -Salem State University (March 2022)
- Techniques of Assessing Motor Control
  University of Hartford Department of Physical Therapy (March 2020)
- Identifying Neuro-Behavioral Indicators of Skill Acquisition
  University of Hartford College of Education, Nursing and Health Professions (March 2020)
- State or Trait? Identifying Neurobehavioral Indicators of Hand Dominance
  University of Louisville Department of Neurological Surgery (February 2020)
- Understanding Neuro-Behavioral Signatures of Skill Acquisition
  Marshall University Physical Therapy Department (January 2020)
- EEG Methodology: Theory and Application. East Carolina University
  East Carolina University Graduate Neuroscience Class (October 2019)
- Neurobiological Indicators of Left- and Right-Hand Dominance.
  North Carolina Research Triangle Research Symposium (October 2019)
- Neurobehavioral Indicators of Left and Right Hand Dominance
  Eastern Carolina Chapter Society For Neuroscience (October 2018)
- Does Exposure to Dynamic Surfaces Change Neuromotor Representations?
  Neuroscience Collaborative Meeting East Carolina University (December 2017)

ABSTRACTS & CONFERENCE PROCEEDINGS

- **J. Bowersock**, T. Stewart, A. Zemmar, J. S. Neimat, N. C. Van Wouwe. *Neurophysiological comparison of the STN and GPi during an action conflict task*. Society for Neuroscience conference proceedings. Chicago, IL (SFN 2024)

- **Bowersock**, J., Neimat, J., Stewart, T., Alhourani, A, Wylie, S., van Wouwe, N. *STN subregion function during motor conflict in PD.* International Parkinsons and Movement Disorders Society – Copenhagen, Aug 2023
- **McDonnell, J**., Neimat, J., Stewart, T., Alhourani, A, Wylie, S., van Wouwe, N. *STN subregion function during motor conflict in PD*. Human Single Neuron Conference – UCLA, 2022.
- **McDonnell, J**., Stewart, T., Neimat, J., Wylie, S., van Wouwe, N. *Differences in STN subregional activity during performance of a motor conflict task in humans with Parkinson's disease***.** 19th Biennial Meeting of the World Society for Stereotactic & Functional Neurosurgery (WSSFN 2022)
- **McDonnell, J**., Neimat, J., Alhourani, A., Wylie, S., van Wouwe, N., *Conflict induced relationship between multi-unit spike trains and behavior.* Society for Neuroscience conference proceedings. Chicago, IL (SFN 2021)
- **McDonnell, J**., Mizelle, J.C. Connectivity Patterns of Skill Acquisition in Left and Right Hand *Dominant Populations*. North American Society for the Psychology of Sports and PhysicalActivity (NASPSPA 2019) Podium presentation, Baltimore, MD.

  Published in Journal of Sport and Exercise Psychology, 41, S47.
- **McDonnell, J**., Shaver A, Hooks K, Mizelle, J.C. *It's Not Only Your Classroom, Learning isChaotic*. 2018 ECU Research & Creative Achievement Week. Greenville, NC.
- Shaver, A., **McDonnell, J.**, Hooks, K., Salter, N., Mizelle, J.C. *The Effects of Aging on CognitiveMotor Control in Everyday Tool Use*. 2018 Human Movement Science and Biomechanics Symposium. Chapel Hill, NC.
- Hooks, K., **McDonnell, J.**, Shaver, A., Mizelle, J.C., *The Role of Handedness and Task Complexityon Visuospatial Processing and Sensorimotor Integration*. 2017 Human Movement Science and Biomechanics Symposium. Chapel Hill, NC.
- **McDonnell, J**., Mizelle, J.C., Derrick, T., Meardon, S. *Movement Dynamics Associated withResponse Strategies in Running*. 2017 Society for Neuroscience conference proceedings. Washington, DC.
- **McDonnell, J**., DeVita, P., Meardon, S., *Midsole Hardness Properties Effect of Midsole Hardness on Injured & Non-Injured Runners*. 2016 Human Movement Science and Biomechanics Symposium.Podium presentation, Chapel Hill, NC.
- DeVita, P., **McDonnell, J**., Zwetsloot, K., Houmard, J., Rider, P. & Willson, J. *Skipping Has LowerKnee Joint Loads and Higher Metabolic Cost Compared to Running*. 2017 Bi-annual Congress of the International Society of Biomechanics conference proceedings. Brisbane, Australia.
- DeVita, P., Murphy, K., **McDonnell, J.** & Rider, P. *Per-step and Cumulative Loads Taken Withinthe Context of Experimental Design and Research Question*. 2016 American Society of Biomechanics conference proceedings. Raleigh, North Carolina.
- Kuhman, D. Price, V., **McDonnell, J**. & DeVita, P. *The Relationships Between Physical Capacity and Biomechanical Plasticity with Age During Level and Incline Walking*. 2016 ECU Research andCreative Achievement Week. Greenville, NC.
- Salter, N., **McDonnell, J.,** Hooks, K., Shaver, A., Mizelle, J.C. *A Research Study on the Effects ofVerbal Motivation on Maximal Effort Force Generation and Related Brain Activation*. 2016 ECUResearch & Creative Achievement Week. Greenville, NC.
- Price, V., **McDonnell, J.**, Kuhman, D. & DeVita. P. *Knee Joint Forces While Running on DifferingGround Surface Stiffnesses: A Research Proposal*. 2016 Human Movement Science and Biomechanics Symposium. Chapel Hill, NC.
- McGirt, A., Guadagno, E., Hooks, K., **McDonnell, J.** & DeVita, P. *Predicting Lower ExtremityLoads Through Biomechanical Modeling*. 2015 Annual Meeting of the Biomedical EngineeringSociety conference proceedings. Tampa, FL.
- Lei Xu, Ph.D., Linda Crane Mitchell, Ph.D., Alice Richman, PhD, MPH, **Jessica Lynn McDonnell**,Amanda Pittman. *Prenatal Chromosomal Microarray Genetic Testing for Autism-A Qualitative Study from Parent of Children with Autism Spectrum Disorders in Economically Disadvantaged Areas*. 2016 Genomics Forum program of the APHA, Annual Meeting & Expo. Denver, CO.

- **McDonnell, J**., Rider, P., Chadwick, S., Nelson, D. & DeVita, P. *A comparison of Skipping and Running Biomechanics and Metabolic Cost: A Thesis Proposal*. 2015 ECU Research and CreativeAchievement Week. Greenville, NC.
- **McDonnell, J**., Rider, P., Chadwick, S., Nelson, D. & DeVita, P. *Skipping as an Alternate Form ofLocomotion Aimed at Decreasing Injury and Increasing Metabolic Demand: A Proposal*. 2015 Human Movement Science and Biomechanics Symposium. Chapel Hill, NC.
- **McDonnell, J.**, Samdperil, G. *Effects of Concussion on High School Female Athlete*. 2011Proceedings of Sacred Heart Undergraduate Research. Fairfield, CT.

Teaching, Mentoring & Advising

UNDERGRADUATE & *GRADUATE COURSE INSTRUCTION

University of Arizona

- NROS 307: Cellular Neurophysiology
- NROS 308: Methods in Neuroscience
- NROS 310: Cellular and Molecular Biology of Neurons
- NROS 330: Principles of Neuroanatomy: Cells to Systems
- NROS 412: Molecular Mechanisms of Learning and Memory

Northern Arizona University

- *AT 520: Anatomy
- BIO 442: Biomechanics
- BIO 365: Scientific Writing

East Carolina University

- KINE 2202: Motor Learning
- KINE 2850: Structural Kinesiology
- KINE 3850: Introduction to Biomechanics
- HLTH 1000: Health in Modern Society
- KINE 4992: Research Internship in Exercise Physiology

UNDERGRADUATE INTERNSHIP MENTORING

September 2022 – December2022

- Undergraduate Engineering Senior Capstone Project
    - Wenndy Arreguin
    - Farhiya Awale
    - Neha Anil
    - Savannah Jordan

January 2019 – May 2019

- Ms. Sydney Rossback
  Bachelor of Science in Exercise Physiology, Department of Kinesiology, East Carolina University, Greenville, NC.

- Sydney's work in the lab was been awarded the competitive Undergraduate Research andCreative Activities Award, and she is now attending graduate school doing research.

- Ms. Hannah Cooper
  Bachelor of Science in Exercise Physiology, Department of Kinesiology, East Carolina University, Greenville, NC.
  - Hannah transitioned to graduate studies in the Doctor of Physical Therapy Program in the Department of Physical therapy, Miller School of Medicine, University of Miami.

January 2018 – May 2018

- Mr. Adam Modzik
  Bachelor of Science in Exercise Physiology, Department of Kinesiology, East Carolina University, Greenville, NC.
- Ms. Geena White
  Bachelor of Science in Exercise Physiology, Department of Kinesiology, East Carolina University, Greenville, NC.
- Ms. Hannah Simpson
  Bachelor of Science in Exercise Physiology, Department of Kinesiology, East Carolina University, Greenville, NC.
  - Hannah transitioned to graduate studies in the Master of Science program (Biomechanics andMotor Control) in the department of kinesiology at ECU, graduated 2020, and now works an industry job.

January 2017 – May 2017

- Ms. Kelsey Reeves
  Bachelor of Science in Exercise Physiology, Department of Kinesiology, East Carolina University, Greenville, NC.
  - Kelsey transitioned and graduated from the Master of Science program (Biomechanics and Motor Control) in the department of kinesiology at ECU and now works as a lab manager at UK
- Ms. Natalie Salter
  Bachelor of Science in Exercise Physiology, Department of Kinesiology, East Carolina University, Greenville, NC.

September 2015 – May 2016

- Ms. Emily Guadagno
  Bachelor of Science in Exercise Physiology, Department of Kinesiology, East Carolina University, Greenville, NC.
  - Emily transitioned to graduate studies in the Master of Science program (Athletic Training) inthe Department of Exercise and Sports Science in cooperation with the Division of Sports Medicine and Department of Athletics at UNC-Chapel Hill

January 2015 – May 2015

- Ms. Ashley Wilford
  Bachelor of Science in Exercise Physiology, Department of Kinesiology, East Carolina University, Greenville, NC.

Professional Service

INSTITUTIONAL SERVICE

- 2021 Research in Louisville (R!L) poster judge
- 2019 – 2020 East Carolina University Graduate Student Communications Liaison
- 2019 Eastern Carolina Chapter Society for Neuroscience (ECCSFN) graduate student representative
- 2016 & 2019 Research and Creative Awareness Week (RCAW) Moderator
- 2016 Poster Judge Eastern Carolina Chapter Society for Neuroscience (ECCSFN)
- 2015-16 Treasurer: Kinesiology Graduate Student Organization (KGSO)

PROFESSIONAL ORGANIZATION SERVICE

- 2022 American Society for Stereotactic and Functional Neurosurgery
- 2019-2020 International Neuropsychological Society (INS) Scientific Program Committee
- 2015 American College of Sports Medicine (ACSM) Theatrical Poster Session Co-Moderator

PROFESSIONAL MEMBERSHIPS

- North American Society for the Psychology of Sport and Physical Activity (NASPSPA)
- Society for Neuroscience (SFN); Easter Carolina Chapter (ECCSFN)
- American Society Biomechanics (ASB)
- American College of Sports Medicine (ACSM)
- National Athletic Trainers Association (NATA)

EDUCATIONAL OUTREACH/ MEDIA COVERAGE (PRINT, VIDEO, ELECTRONIC)

- Reuters News: “Skipping may be easier on the knees than running and burn more calories” By: Lisa Rapaport Apr 30, 2019
- Sports Bulletin: “Why Athletes With Patellofemoral Pain Should Skip Their Workout” By: Alicia Filly 2019
- Continued participant in National Biomechanics Day (event for high school students with the intent of introducing all students to the joys and opportunities of research and biomechanics)

WORKSHOP ATTENDANCES

- Adaptative Neuromodulation: BIC/BCI2000 closed-loop neuromodulation (Aug 2024) - Mayo Clinic Rochester. Part of an NIH-funded U01 initiative titled “*An Ecosystem of Technology and Protocols for Adaptive Neuromodulation Research in Humans*”
- Computational Neuroscience (python) – Neuromatch Academy (July 2021)
- Virtual Reality Conference & Collaboration (University of Greensboro, 2018)
- Nonlinear Dynamics Workshop (University of Nebraska, 2016)
- Kinesio Tape: Theory and Application (San Diego, 2012)

Professional References

If are looking for a reference for a particular skill please do not hesitate to ask me for guidance or additional references. While these are professional references they can also speak to my person.

- **Dr. Kiisa Nishikawa, PhD**; Regents Professor
  The Nishikawa Biomechanics Laboratory
  Northern Arizona University; (928) 523.9497
  e-mail: Kiisa.Nishikawa@nau.edu

- **Dr. Nelleke van Wouwe, PhD**; Associate Professor
  Neurocognitive Research Group
  University of Louisville; (502) 852.9331
  e-mail: nelleke.vanwouwe@uoflhealth.org
  **current employer please be mindful when contacting*

- **Dr. Nick Murray, PhD**; Professor
  Visual Motor Lab (VML)
  East Carolina University; (252) 737.2977
  e-mail: murrayni@ecu.edu

- **Dr. Joseph Neimat, MD**; Neurosurgery Department Chair
  Neurocognitive Research Group
  University of Louisville; (502) 588.0904
  e-mail: joseph.neimat@uoflhealth.org

- **Dr. J.C Mizelle**; Assistant Professor
  Sensory-Motor Integration Lab (SMILe)
  East Carolina University; (336) 689.1830
  e-mail: mizellej15@ecu.edu

- **Dr. Paul DeVita**; Professor
  Biomechanics Lab
  East Carolina University (252) 737.4563
  e-mail: devitap@ecu.edu

CURRICULUM VITAE

HAIJIANG CAI, PH.D.

Associate Professor, Department of Neuroscience

BIO5 Fellow, BIO5 Institute

Department of Neurology (joint appointment)

Department of Translational Neurosciences at UA COMP (joint appointment)

Neuroscience Graduate Interdisciplinary Program (GIDP), Physiological Sciences GIDP

University of Arizona, Tucson, AZ

E-mail:	haijiangcai@arizona.edu
Telephone:	520-621-6654 (Lab)
Web page:	https://neurosci.arizona.edu/person/haijiang-cai-phd
Mailing Address:	University of Arizona, Department of Neuroscience, Gould-Simpson 611 1040 E. 4th Street, PO Box 210077, Tucson, AZ 85721-0077

Chronology of Education

1996 – 2001	**B.S.** Biology, University of Science & Technology of China (USTC), Hefei, P. R. China. **Thesis:** delta-Opioid Receptor Mediated Neuropeptide Release (Thesis work was performed at the Institute of Neuroscience, Chinese Academy of Sciences, Shanghai, P. R. China) **Advisor:** Xu Zhang, Ph.D.
2001 – 2007	**Ph.D.** Physiology and Biophysics, Zilkha Neurogenetic Institute, University of Southern California (USC), Los Angeles, CA. **Thesis:** Role of Complexin in Regulated Exocytosis **Advisor:** Robert H Chow, M.D., Ph.D.

Chronology of Employment

1999 – 2000	Undergraduate Research Assistant, Biophysics Lab. Advisor: Zhuan Zhou, Ph.D. University of Science & Technology of China (USTC), Hefei, P. R. China.
2000 – 2001	Undergraduate Research Assistant, Sensory System Lab. Advisor: Xu Zhang, M.D., Ph.D. Institute of Neuroscience, Chinese Academy of Sciences, Shanghai, P. R. China.
2001 – 2007	Graduate Research Assistant. Advisor: Robert H. Chow, M.D., Ph.D. Department of Physiology & Biophysics, Zilkha Neurogenetic Institute, University of Southern California, Los Angeles, CA.
2008 – 2015	Postdoctoral fellow. Advisor: David J. Anderson, Ph.D. Division of Biology & Biological Engineering, Howard Hughes Medical Institute, California Institute of Technology, Pasadena, CA.
2015 – 2021	Assistant Professor, Department of Neuroscience, & BIO5 Fellow, BIO5 Institute, University of Arizona, Tucson, AZ.
2018 – present	Assistant Professor (joint appointment), Department of Neurology, University of Arizona College of Medicine, Tucson, AZ.

2021 – present	Associate Professor, Department of Neuroscience, & BIO5 Fellow, BIO5 Institute, University of Arizona, Tucson, AZ.
2023 – present	Associate Professor (joint appointment), Department of Translational Neurosciences, University of Arizona College of Medicine at Phoenix, Phoenix, AZ.

Honors and Awards

2010 – 2013	The Hilda and Preston Davis Foundation Postdoctoral Fellowship Award
2011 – 2014	NARSAD Young Investigator Award, The Brain & Behavior Research Foundation
2016	Selected as the University of Arizona institutional nominee for the Blavatnik National Awards for Young Scientists
2016	Selected as the University of Arizona institutional nominee for the Brain Research Foundation Fay/Frank Seed Grant Application
2017 – 2020	NARSAD Young Investigator Award, The Brain & Behavior Research Foundation
2019	Selected as the University of Arizona institutional nominee for the Mallinckrodt Grants
2019	Selected as the University of Arizona institutional nominee for Sloan Research Fellowships
2019	Invited to serve on the Editorial Board as a Review Editor, Frontiers in Neural Circuits
2020	Invited to serve on the Editorial Board as a Review Editor, Frontiers in Systems Neuroscience
2022	Invited to serve as a Standing member on the Behavioral Neuroendocrinology, Neuroimmunology, Rhythms, and Sleep Study Section (BNRS), NIH.
2024	Selected as the University of Arizona institutional nominee for the application of the G. Harold & Leila Y. Mathers Foundation: 2024 Basic & Translational Research Grants

Membership

2003 – present	Member, American Association for the Advancement of Science (AAAS)
2007 – present	Member, Society for Neuroscience
2010 – present	Elected Full member, Sigma Xi, The Scientific Research Society
2017 – present	Elected Member, Nu Rho Psi, The National Honor Society in Neuroscience.
2019 – present	Member, Chinese American Diabetes Association (CADA)

Service/Outreach (after 2015)

Local/State service & outreach

2015, Oct.	Interview with UA News "Why Do We Delight in Fright?" (Link: https://uanews.arizona.edu/videos/why-do-we-delight-fright)
2019, Jul.	Interview with Veronika Vernachio from KGUN9 TV News. (Link: https://www.kgun9.com/news/local-news/ua-research-looks-at-neurons-in-the-brain-that-makes-us-hungry). The news was also reported by KNXV-PHX (ABC) - ABC15 News.
2019, Aug.	Spoke with Dr. Leslie Tolbert at the NPR Arizona Science, “Researching eating disorders with lab mice”. (Link: https://radio.azpm.org/p/radio-azscience/2019/8/9/156321-episode-194-researching-eating-disorders-with-lab-mice/)
2019. Aug.	Interview with Anthony Perkins at AZPM NPR News. (Link: https://www.azpm.org/p/home-articles-news/2019/8/5/156021-looking-for-links-between-eating-and-emotion/)

2022. Feb Interview with Anthony Perkins at AZPM NPR News. (Link: https://news.azpm.org/s/92589-ua-backed-research-is-finding-the-source-for-feelings-of-hunger/)

2022. Feb Interview with Arizona PBS (Link: https://azpbs.org/horizon/2022/02/research-locates-brain-region-responsible-feeling-full/)

2022. Mar. Interview with Destiny Quinn from KVOA News 4 Tucson (Link: https://www.kvoa.com/news/uarizona-research-aims-to-help-those-who-are-anorexic-or-obese/article_19e4b6ce-9a2b-11ec-a4e5-5be669615323.html)

2022. Apr Interview with Natalie Temple from **Daily Wildcat** (Link: https://wildcat.arizona.edu/125975/science/researchers-pinpoint-a-neural-pathway-involved-in-eating-behaviors/)

National/International service & outreach

Outreach and invited as an expert in the field to comment on research

2016, Jun. Invited by Sharaq Zia from *The Scientist* as an expert in the field to comment on a recent research discovery. (link: https://www.the-scientist.com/the-smell-of-food-affects-metabolism-in-fasting-mice-70776)

2023. Nov Invited by Cathrine Offord from ***Science*** as an expert in the field to comment on a recent research discovery. (link: https://www.science.org/content/article/feeling-full-researchers-pinpoint-neurons-prevent-eating-too-much-too)

2024. Apr Invited by Gillian Dohrn from ***Nature*** as an expert in the field to comment on a recent research discovery. (link: https://www.nature.com/articles/d41586-024-01037-0)

Peer review service for scientific journals

2015 – present *Advanced Science (2024),*
Biological Psychiatry (2024),
Brain Research (2016),
Cell Reports (2021),
Cell & Bioscience (2022, 2023),
Claustrum (2016),
eLife (2021),
Frontiers in Neural Circuits (2019, 2021, 2024),
Frontiers in Physiology (2022),
Frontiers in Psychology (2021),
Frontiers in Systems Neuroscience (2020),
Journal of Neurochemistry (2015),
Molecular Psychiatry (2022, 2023),
Molecular Metabolism (2024),
Nature Communications (2022, 2023a, 2023b),
Neurobiology of Stress (2022),
Neurochemical Research (2020a, 2020b),
Neuroscience Letters (2016),
Physiology & Behavior (2022)
Plos One (2021),
Progress in Neuropsychopharmacology & Biological Psychiatry (2024)

Science Advances (2018, 2023, 2024),
Science Bulletin (2019, 2020),
Scientific Report (2021).

Grant review service

2019	Ad hoc grant reviewer, The Foundation for Prader-Willi Research (FPWR)
2020	Ad hoc grant reviewer, The Foundation for Prader-Willi Research (FPWR)
2021	Ad hoc grant reviewer, National Science Foundation (NSF)
2021	Ad hoc grant reviewer, Medical Research Council (MRC), UK
2021	Ad hoc grant reviewer, Behavioral Neuroendocrinology, Neuroimmunology, Rhythms, and Sleep (BNRS) Study Section, National Institute of Health (NIH)
2021	Ad hoc grant reviewer, Swiss National Science Foundation (SNSF)
2022	Ad hoc grant reviewer, The Foundation for Prader-Willi Research (FPWR)
2022	Ad hoc grant reviewer, Swiss National Science Foundation (SNSF)
2022	Ad hoc grant reviewer, National Science Centre Poland
2022-2026	Standing member, Behavioral Neuroendocrinology, Neuroimmunology, Rhythms, and Sleep Study Section (BNRS), National Institute of Health (NIH)
2023	Ad hoc grant reviewer, Swiss National Science Foundation (SNSF)

<u>Departmental & GIDP Program Committee (s)</u>

2015 – 2019	Member, Faculty Search Committee, Department of Neuroscience, University of Arizona
2017 – 2022	Member, Graduate Student Admissions and Recruitment Committee, Neuroscience Graduate Interdisciplinary Program (GIDP), University of Arizona
2019 – 2022	Co-Chair, Graduate Student Admissions and Recruitment Committee, Neuroscience GIDP, University of Arizona
2021 – 2022	Member, Department Head Search Committee, Department of Neuroscience, University of Arizona
2021	Junior faculty 3rd Year Review Committee, Department of Neuroscience, University of Arizona
2021 – 2022	Member, Faculty Search Committee, Department of Pharmacology, College of Medicine Tucson, University of Arizona
2021 – present	Executive Committee member, Neuroscience GIDP, University of Arizona
2022	Member, P&T Committees for two junior faculty members, Department of Neuroscience, University of Arizona
2022	Member, Title Change Review Committee, Department of Neuroscience, University of Arizona
2022 - 2024	Co-Chair, Faculty Search Committee, Department of Neuroscience, University of Arizona We have successfully recruited Dr. Megan Corty in 2023, and Dr. Lindsay Halladay in 2024.
2023	Member, Curriculum Committee for the new neuroscience BS program proposal, Department of Neuroscience, University of Arizona

2024	Member, Curriculum Committee for the BS Neuroscience Undergraduate Program, Department of Neuroscience, University of Arizona
2024	Member, Junior faculty 3rd Year Retention Review Committee, Department of Neuroscience, University of Arizona
2024	Member, Neuroscience Department Self Study Committee for Academic Performance Review, Department of Neuroscience, University of Arizona

College Committee (s)

2017	Served as a reviewer for the Outstanding Senior Award and Excellence in Undergraduate Research Award, Neuroscience and Cognitive Science, School of Mind, Brain and Behavior, College of Science, University of Arizona
2019 – 2020	Member, Department Head 5-year Review Committee, College of Science, University of Arizona
2022	Committee member, College of Science Research Strategic Planning committee, College of Science, University of Arizona
2022 - 2025	Department Representative, College of Science Faculty Council, College of Science, University of Arizona

University Committee (s) & Service

2017	Served as a reviewer for the University of Arizona Research, Discovery & Innovation (RDI) - Accelerate for Success grants, and RDI - Industry Engagement and Interdisciplinary Link Student Team Grants, Faculty Seed Award
2018	Served as a reviewer for the University of Arizona Research, Discovery & Innovation (RDI) - Accelerate for Success grants, and RDI - Industry Engagement and Interdisciplinary Link Student Team Grants, Faculty Seed Award
2019	Served as a reviewer for the University of Arizona Research, Innovation & Impact (RII) - Fay/Frank Seed Grant Program
2020	Served as a reviewer for the University of Arizona Research, Innovation & Impact (RII) - Fay/Frank Seed Grant Program
2022	Served as a reviewer for CNRS-UArizona Joint Research Proposal
2022 - 2023	Member, Undergraduate Biology Research Program (UBRP) selection committee
2022 - 2024	COS Representative in Faculty Senate, University of Arizona

Other service & outreach

2015 – present	Faculty member, Neuroscience GIDP, University of Arizona
2016 – present	Interview Graduate Student Candidates for Neuroscience GIDP, University of Arizona
2016 – present	Faculty member, Physiological Sciences GIDP, University of Arizona
2017 – present	Interview Graduate Student Candidates for Physiological Sciences GIDP, University of Arizona
2017 – present	Interview Graduate Student Candidates for The Arizona Biological and Biomedical Sciences (ABBS) Program, University of Arizona.

2017 – 2020 Served as a neuroscience consultant for a startup company StimAire, Tucson, AZ.

2020 – present Help interview or meet with faculty candidates in the Department of Physiology, Department of Biomedical Engineering, Department of Translational Neuroscience (Phoenix), University of Arizona.

Service on dissertation and graduate committees

2016 – 2020 Ph.D. thesis Committee Member for Rebekah Keating (Advisor, Wulfila Gronenberg Ph.D.), Neuroscience GIDP, University of Arizona. Rebekah Keating successfully defended her thesis in April 2020.

2017 – 2019 Ph.D. thesis Committee Member for Jeremiah Morrow (Advisor, Katalin Gothard, M.D. & Ph.D.), Neuroscience GIDP, University of Arizona. Jeremiah Morrow successfully defended his thesis in July 2019.

2017 Ph.D. Comprehensive Exam Committee Member for Blaine Harper (Advisor, Jean-Marc Fellous, Ph.D.), Psychology, University of Arizona.

2017 – 2018 Master thesis Committee Member for Monica Houser (Advisor, Jennifer Teske, Ph.D.), Physiological Sciences GIPD and Nutrition Sciences, University of Arizona. Monica Houser successfully defended her thesis in July 2018.

2017 – 2018 Ph.D. thesis Committee Member for Philip Putnam (Advisor, Katalin Gothard, M.D. & Ph.D.), Neuroscience GIDP, University of Arizona. Philip Putnam Successfully defended his thesis in September 2018.

2019 – present Ph.D. thesis Committee Member for Sahana Srivathsa (Advisor, Carol Barnes, Ph.D.), Neuroscience GIDP, University of Arizona.

2021 – 2022 Master thesis Committee Member for Thomas Whitmore (Advisor, Jennifer Teske, Ph.D.), Physiological Sciences GIDP and Nutrition Sciences, University of Arizona. Thomas Whitmore successfully defended his thesis in July 2022.

2021 – 2022 Master thesis Committee Member for William Powell (Advisor, Frank Duca, Ph.D.), Physiological Sciences GIDP, University of Arizona. William Powell successfully defended his thesis in Aug 2022.

2021 – present Ph.D. thesis Committee Member for Hallie Wachsmuth (Advisor, Frank Duca, Ph.D.), Physiological Sciences GIDP, University of Arizona.

2022 - present Ph.D. thesis Committee Member for Gowri Somasekhar (Advisor, Mel Wolhgemuth, Ph.D.), Neuroscience GIDP, University of Arizona.

2023 - present Ph.D. thesis Committee Chair for Reed Bjork (Advisor, Julie Miller, Ph.D.), Neuroscience GIDP, University of Arizona.

2023 M.S. Committee Member for Emily MacDonald (Advisor, Art Riegel, Ph.D.), Neuroscience GIDP, University of Arizona. Emily MacDonald successfully defended her thesis in May 2023.

2023 - present Ph.D. thesis Committee Member for Savanna Weninger (Advisor, Frank Duca, Ph.D.), Physiological Sciences GIDP, University of Arizona.

2023 - present Ph.D. thesis Committee Member for Devanshi Shukla (Advisor, Xinglong Wang, Ph.D.), Neuroscience GIDP, University of Arizona.

Publications/Creative Activity (Published or Accepted in Chronological Order)

Refereed journal articles, published or accepted in final form

1. Bao L, Wang HF, **Cai HJ**, Tong YG, Jin SX, Lu YJ, Grant G, Hökfelt T, Zhang X. Peripheral axotomy induces only very limited sprouting of coarse myelinated afferents into inner lamina II of rat spinal cord. ***Eur J Neurosci***. **2002** Jul;16(2):175-85. doi: 10.1046/j.1460-9568.2002.02080.x. PubMed PMID: 12169100.
2. Bao L, Jin SX, Zhang C, Wang LH, Xu ZZ, Zhang FX, Wang LC, Ning FS, **Cai HJ**, Guan JS, Xiao HS, Xu ZQ, He C, Hökfelt T, Zhou Z, Zhang X. Activation of delta opioid receptors induces receptor insertion and neuropeptide secretion. ***Neuron***. **2003** Jan 9;37(1):121-33. doi: 10.1016/s0896-6273(02)01103-0. PubMed PMID: 12526778.
3. Michael DJ, **Cai H**, Xiong W, Ouyang J, Chow RH. Mechanisms of peptide hormone secretion. ***Trends Endocrinol Metab***. **2006** Dec;17(10):408-15. doi: 10.1016/j.tem.2006.10.011. Epub 2006 Nov 3. Review. PubMed PMID: 17084640.
4. Kolski-Andreaco A, **Cai H**, Currle DS, Chandy KG, Chow RH. Mouse adrenal chromaffin cell isolation. ***J Vis Exp***. **2007** Jan 5;(2):129. doi: 10.3791/129. PubMed PMID: 18830430; PubMed Central PMCID: PMC2532942.
5. **Cai H**, Reim K, Varoqueaux F, Tapechum S, Hill K, Sørensen JB, Brose N, Chow RH. Complexin II plays a positive role in Ca2+-triggered exocytosis by facilitating vesicle priming. ***Proc Natl Acad Sci U S A***. **2008** Dec 9;105(49):19538-43. doi: 10.1073/pnas.0810232105. Epub 2008 Nov 25. PubMed PMID: 19033464; PubMed Central PMCID: PMC2614796.
6. Xiao C, Nashmi R, McKinney S, **Cai H**, McIntosh JM, Lester HA. Chronic nicotine selectively enhances alpha4beta2* nicotinic acetylcholine receptors in the nigrostriatal dopamine pathway. ***J Neurosci***. **2009** Oct 7;29(40):12428-39. doi: 10.1523/JNEUROSCI.2939-09.2009. PubMed PMID: 19812319; PubMed Central PMCID: PMC2787412.
7. Haubensak W, Kunwar PS[#], **Cai H**[#], Ciocchi S[#], Wall NR, Ponnusamy R, Biag J, Dong HW, Deisseroth K, Callaway EM, Fanselow MS, Lüthi A, Anderson DJ. Genetic dissection of an amygdala microcircuit that gates conditioned fear. ***Nature***. **2010** Nov 11;468(7321):270-6. doi: 10.1038/nature09553. PubMed PMID: 21068836; PubMed Central PMCID: PMC3597095. [#] equal contribution.
   - This work has been highlighted in ***Nature Review Neuroscience*** (2011, 12:2), ***Faculty of 1000***, ***The Scientist***, ***Science Daily***, and numerous other journals or media.
8. Lin MY, Rohan JG, **Cai H**, Reim K, Ko CP, Chow RH. Complexin facilitates exocytosis and synchronizes vesicle release in two secretory model systems. ***J Physiol***. **2013** May 15;591(10):2463-73. doi: 10.1113/jphysiol.2012.244517. Epub 2013 Feb 11. PubMed PMID: 23401610; PubMed Central PMCID: PMC3678037.
9. **Cai H**, Haubensak W, Anthony TE, Anderson DJ. Central amygdala PKC-δ(+) neurons mediate the influence of multiple anorexigenic signals. ***Nat Neurosci***. **2014** Sep;17(9):1240-8. doi: 10.1038/nn.3767. Epub 2014 Jul 27. PubMed PMID: 25064852; PubMed Central PMCID: PMC4146747.
   - This work has been highlighted in ***Nature Review Neuroscience*** (2014, 15:564), ***The New York Times***, ***BBC News***, ***Los Angeles Times***, ***CBS TV News***, ***Science Update Radio News***, and numerous other journals or media.
10. Kunwar PS, Zelikowsky M, Remedios R, **Cai H**, Yilmaz M, Meister M, Anderson DJ. Ventromedial hypothalamic neurons control a defensive emotion state. ***Elife***. **2015** Mar 6;4. doi: 10.7554/eLife.06633. PubMed PMID: 25748136; PubMed Central PMCID: PMC4379496.
11. Tian X, Tu X, Della Croce K, Yao G, **Cai H**, Brock N, Pau S, Liang R. Multi-wavelength quantitative polarization and phase microscope. ***Biomed Opt Express***. **2019** Apr 1;10(4):1638-1648. doi:

10.1364/BOE.10.001638. eCollection 2019 Apr 1. PubMed PMID: 31061760; PubMed Central PMCID: PMC6484989.

12. Wang Y, Kim J, Schmit MB, Cho TS, Fang C, **Cai H**. A bed nucleus of stria terminalis microcircuit regulating inflammation-associated modulation of feeding. ***Nat Commun***. **2019** Jun 24;10(1):2769. doi: 10.1038/s41467-019-10715-x. PubMed PMID: 31235690; PubMed Central PMCID: PMC6591327.
    - This work has been highlighted in ***UA News, Daily Wildcat, KGUN 9 TV News, ABC15 News, Arizona Public Media (AZPM, NPR)***, ***Science Daily***, ***EurekAlert***, ***Neuroscience News, Genetic Engineering & Biotechnology News***, ***Daily Mail (UK),*** and numerous other journals or media.
13. Burton A, Obaid SN, Vázquez-Guardado A, Schmit MB, Stuart T, Cai L, Chen Z, Kandela I, Haney CR, Waters EA, **Cai H**, Rogers JA, Lu L, Gutruf P. Wireless, battery-free subdermally implantable photometry systems for chronic recording of neural dynamics. ***Proc Natl Acad Sci U S A***. **2020** Feb 11;117(6):2835-2845. doi: 10.1073/pnas.1920073117. Epub 2020 Jan 23. PubMed PMID: 31974306; PubMed Central PMCID: PMC7022161.
    - This work has been highlighted in ***UA News, Technology Networks, Futurity,*** and many other journals or media.
14. Zhang-Molina C, Schmit MB, **Cai H**. Neural Circuit Mechanism Underlying the Feeding Controlled by Insula-Central Amygdala Pathway. ***iScience***. **2020** Apr 5;23(4):101033. doi: 10.1016/j.isci.2020.101033. [Epub ahead of print] PubMed PMID: 32311583; PubMed Central PMCID: PMC7168768.
15. Wu H, Yan X, Tang D, Gu W, Luan Y, **Cai H**, Zhou C, Xiao C. Internal States Influence the Representation and Modulation of Food Intake by Subthalamic Neurons. ***Neurosci Bull***. 2020 Nov;36(11):1355-1368. doi: 10.1007/s12264-020-00533-3. Epub 2020 Jun 21. PubMed PMID: 32567027; PubMed Central PMCID: PMC7674539.
16. Sanchez MR, Wang Y, Cho TS, Schnapp WI, Schmit MB, Fang C, **Cai H**. Dissecting a disynaptic central amygdala-parasubthalamic nucleus neural circuit that mediates cholecystokinin-induced eating suppression. ***Mol Metab***. 2022 Jan 20;58:101443. doi: 10.1016/j.molmet.2022.101443. [Epub ahead of print] PubMed PMID: 35066159; PubMed Central PMCID: PMC8844644.
    - This work has been highlighted in ***UA News, Arizona Public Media (AZPM), Arizona PBS, KVOA News 4 Tucson, ScienceDaily, EurekAlert!, Neuroscience News, Brainerd Dispatch, Times Now,*** and numerous other journals or media.
17. Peterson T, Mann S, Sun BL, Peng L, **Cai H**, Liang R. Motionless volumetric structured light sheet microscopy. ***Biomed Opt Express***. 2023 May 1;14(5):2209-2224. doi: 10.1364/BOE.489280. eCollection 2023 May 1. PubMed PMID: 37206125; PubMed Central PMCID: PMC10191636.
18. Weninger SN, Herman C, Meyer RK, Beauchemin ET, Kangath A, Lane AI, Martinez TM, Hasneen T, Jaramillo SA, Lindsey J, Vedantam G, **Cai H**, Cope EK, Caporaso JG, Duca FA. Oligofructose improves small intestinal lipid-sensing mechanisms via alterations to the small intestinal microbiota. **Microbiome**. 2023 Aug 2;11(1):169. doi: 10.1186/s40168-023-01590-2. PubMed PMID: 37533066; PubMed Central PMCID: PMC10394784.
19. Schnapp WI, Kim J, Wang Y, Timilsena S, Fang C, **Cai H**. Development of activity-based anorexia requires PKC-δ neurons in two central extended amygdala nuclei. ***Cell Rep***. 2024 Mar 26;43(3):113933. doi: 10.1016/j.celrep.2024.113933. Epub 2024 Mar 8. PubMed PMID: 38460131; PubMed Central PMCID: PMC11003439.
    - This work has been highlighted in ***UA News, Medical Xpress, AZBio, Medicine, Futrity, EDreferral,*** and numerous other journals or media.

20. **Cai H**, Schnapp WI, Mann S, Miscevic M, Schmit MB, Conteras M, Fang C. Neural circuits regulation of satiation. ***Appetite*****.** 2024 May 25;200:107512. doi: 10.1016/j.appet.2024.107512. [Epub ahead of print] Review. PubMed PMID: 38801994.

Other Scholarship

Patents

1. Liang R and **Cai H**. Multi-field miniaturized micro-endoscope. US20190209015A1.
2. **Cai H** and Schnapp WI. Treating or preventing anorexia nervosa via precision targeting of neuronal circuit. WO2024097857A1.

Work in progress (Include all publications/creative activity that is under review, in progress or not yet submitted)

1. Schmit MB, Johnson C, Vu H, Nigam A, Schnapp W, Rivera M, Ozturk G, Vo K, Misevic M and **Cai H**. Dynamic and ensemble encoding of eating behaviors by central amygdala PKC-δ neurons. (Manuscript submitted)

Conferences/Scholarly Presentations (after 2015)

Colloquia/Seminars

Invited colloquia presentations at UArizona

Cai H. (Sept. 2015) Dissecting the neural circuits for feeding and emotion. Invited seminar presentation at the Neuroscience GIDP Colloquium, University of Arizona, Tucson, AZ

Cai H. (Jan. 2016) Dissecting the neural circuits for feeding and emotion. Invited presentation at the student recruiting colloquia of the Neuroscience GIDP Data Blitz, University of Arizona, Tucson, AZ

Cai H. (Apr. 2016) Invited conversation at the Nu Rho Psi, University of Arizona Neuroscience Honor Club, Tucson, AZ

Cai H. (Sept. 2016) "To eat or not to eat" – the central amygdala neural circuits for appetite control. Invited seminar presentation at The University of Arizona College of Medicine, Phoenix, AZ

Cai H. (Dec. 2016) Neural circuits of feeding and anxiety. Invited seminar presentation at the Student Forum of the Physiological Sciences GIDP, University of Arizona, Tucson, AZ

Cai H. (Jan. 2017) Neural circuits of feeding and anxiety. Invited presentation at the student recruiting colloquia of the Neuroscience GIDP Data Blitz, University of Arizona, Tucson, AZ

Cai H. (Feb. 2017) Comorbidity. Invited presentation at the Neuroscience GIDP retreat, Tucson, AZ

Cai H. (Feb. 2017). Neural circuits of feeding and anxiety. Invited seminar presentation at the BIO5 Institute, University of Arizona, Tucson, AZ

Cai H. (Feb. 2017) Neural circuits of feeding and anxiety. Invited presentation at the student recruiting colloquia of the Physiological Sciences GIDP, University of Arizona, Tucson, AZ

Cai H. (Mar. 2017) Neural circuits of feeding and anxiety. Invited seminar presentation at the Department of Nutritional Sciences, University of Arizona College of Agriculture & Life Sciences, Tucson, AZ

Cai H. (Mar. 2017) Neural circuits of feeding and anxiety. Invited seminar presentation at the Department of Pharmacology, University of Arizona College of Medicine, Tucson, AZ

Cai H. (Aug. 2017) Neural circuits of feeding and anxiety. Invited seminar presentation at the University Animal Care, University of Arizona College of Medicine, Tucson, AZ

Cai H. (Nov. 2017) Amygdala neural circuits of feeding. Invited seminar presentation at the NSCS Undergraduate Seminar. University of Arizona, Tucson, AZ.

Cai H. (Jan. 2018) Neural circuits for feeding and anxiety. Invited presentation at the student recruiting colloquia of the Neuroscience GIDP Data Blitz, University of Arizona, Tucson, AZ

Cai H. (Mar. 2018) Neural circuits of feeding and emotion. Invited Data Blitz presentation at the Department of Neurology, University of Arizona College of Medicine, Tucson, AZ

Cai H. (Jan. 2019) Dissecting the neural circuits for feeding and emotion. Invited presentation at the student recruiting colloquia of the Neuroscience GIDP Data Blitz, University of Arizona, Tucson, AZ

Cai H. (Aug. 2019) Neural circuits of feeding and emotion. Invited presentation at the ABBS/Physiological Sciences GIDP Orientation Data Blitz, University of Arizona, Tucson, AZ.

Cai H. (Nov. 2019) Central extended amygdala neural circuits for feeding regulation. Invited presentation at the Department of Neuroscience Lunch Science Series. University of Arizona, Tucson, AZ.

Cai H. (Jan. 2020) Dissecting the neural circuits for feeding and emotion. Invited presentation at the student recruiting colloquia of the Neuroscience GIDP Data Blitz, University of Arizona, Tucson, AZ

Cai H. (Oct. 13. 2020) Neural circuits for feeding regulation, the return of the amygdala. Invited presentation at the Neuroscience GIDP Data Blitz, University of Arizona, Tucson, AZ

Cai H. (Jan. 29. 2021) Neural circuits for feeding regulation, the return of the amygdala. Invited presentation at the student recruiting colloquia of the Neuroscience GIDP Data Blitz, University of Arizona, Tucson, AZ

Cai H. (Aug. 20. 2021) Neural circuits of feeding control -- from basic to disease. Invited presentation at the student orientation colloquia of the Physiological Sciences GIDP & ABBS, University of Arizona, Tucson, AZ

Cai H. (Jan. 24. 2022) Neural circuits of feeding control -- from basic to disease. Invited presentation at the student recruiting colloquia of the Neuroscience GIDP Data Blitz, University of Arizona, Tucson, AZ.

Cai H. (Oct. 3. 2022) Neural mechanism of anorexia nervosa. BIO5 Faculty Data Blitz. University of Arizona, Tucson, AZ.

Cai H. (Jan. 23. 2024) Neural circuits of feeding control -- from basic to disease. Invited presentation at the student recruiting colloquia of the Neuroscience GIDP Data Blitz, University of Arizona, Tucson, AZ

Invited seminar presentation at other institutions

Cai H. (Sept. 25. 2020) Feeding regulation by neural circuits of brain regions for emotion. Invited Zoom presentation at the Chinese-American Diabetes Association (CADA) Happy Hour Online Seminar Series.

Cai H. (Oct. 15. 2020) Neural circuits for feeding regulation, the return of the amygdala. Invited Zoom Seminar Talk at the Department of Biology, University of Wyoming.

Cai H. (Oct. 28. 2020) Neural circuits for feeding regulation, the return of the amygdala. Invited Zoom Seminar Talk at the Zilkha Neurogenetic Institute, University of Southern California.

Cai H. (Jun. 1. 2021) Neural circuits for feeding regulation, the return of the amygdala. Invited Zoom Seminar Talk at the Center for Neural Circuit Mapping, University of California, Irvine.

Cai H. (Apr. 4. 2023) Eating and eating disorders: the role of amygdala neural circuits. Invited Seminar Talk at the Center for Hypothalamic Research, University of Texas Southwestern Medical Center, Dallas.

Symposium/Conferences

*Submitted poster presentations. * Indicate the presenter*

Itoga CA*, Fateri C, Echeverry PA, Delgado J, Lai JM, Badhon S, **Cai H**, Xu X. (Nov. 2018) Genetically targeted circuit mapping of the oval nucleus of the bed nucleus of the stria terminalis. Submitted poster presentation at the 49th Annual Meeting of Society for Neuroscience (SfN), San Diego, CA.

Cai H*. (Feb. 2019). A BNST microcircuit for feeding. Submitted poster presentation at the Keystone Symposia-Functional Neurocircuitry of Feeding and Feeding Disorders. Banff, Alberta, Canada.

Burton A*, Obaid SN, Vázquez-Guardado A, Schmit MB, Stuart T, Cai L, Chen Z, Kandela I, Haney CR, Waters EA, **Cai H**, Rogers JA, Lu L, Gutruf P. (Oct. 2020). Wireless, Battery-Free Subdermally Implantable Photometry Systems for Dynamic Neural Recordings. Submitted abstract at the Biomedical Engineering Society 2020 Annual Meeting, San Diego, CA.

Schmit MB*, Rivera M, Hasneen T, Ozturk G, **Cai H.** (Nov. 2021) Internal state and behavior dependent responses of Central Amygdala PKC-δ+ neurons to food related stimuli. Submitted poster presentation at the 52nd Annual Meeting of Society for Neuroscience (SfN), Chicago, IL.

Schnapp WI*, Kim JM, **Cai H**. (Mar. 2022) A subpopulation of extended central amygdala neurons regulates the development of activity-based anorexia (ABA). Submitted poster presentation at the Neuronal Control of Appetite, Keystone Symposia. Banff, Alberta, Canada.

Schmit MB*, Vu H, Johnson C, Rivera M, Ozturk G, **Cai H.** (Nov. 2022) Central Amygdala PKCδ+ neurons respond to food approach in a CCK-modulated manner. Submitted poster presentation at the 53rd Annual Meeting of Society for Neuroscience (SfN), San Diego, CA.

Schnapp WI*, Kim JM, Timilsena S, Wang Y, **Cai H**. (Nov. 2022) A subpopulation of central extended amygdala neurons regulates the development of activity-based anorexia (ABA). Submitted poster presentation at the 53rd Annual Meeting of Society for Neuroscience (SfN), San Diego, CA.

Schnapp WI*, Kim JM, **Cai H**. (Jul. 2023) Investigating how central extended amygdala PKC-δ neurons regulate circadian-based eating behavior disruption in activity-based anorexia. Submitted poster presentation at the 30th Annual Meeting of the Society for the Study of Ingestive Behavior (SSIB), Portland, OR.

Schnapp WI*, Johnson C, Schmit MB, **Cai H**. (Nov. 2023) PKC-delta neurons in the central extended amygdala regulate energy expenditure behaviors. Submitted poster presentation at the 54th Annual Meeting of Society for Neuroscience (SfN), DC.

Invited oral presentations

Cai H. (Apr. 2018). Dissecting extended amygdala neural circuits for feeding. Invited short talk at the Cold Spring Harbor Laboratory Neural Circuits Conference. Cold Spring Harbor, NY.

Cai H. (Nov. 2018). A novel micro extended amygdala neural circuits for feeding. Invited NanoSymposium talk at the 49th Annual Meeting of Society for Neuroscience (SfN), San Diego, CA.

Cai H. (Jun. 21. 2023) Role of central extended amygdala in eating and eating disorders. Invited Talk at the 14th Annual Meeting of the Chinese-American Diabetes Association (CADA), San Diego.

Cai H. (Jul. 13. 2023) Central amygdala - parasubthalamic nucleus neural circuit for eating regulation. Invited Talk at the 30th Annual Meeting of the Society for the Study of Ingestive Behavior (SSIB), Portland, OR.

<u>Submitted University of Arizona undergraduate student poster presentations</u>

Cho T, Wang Y, Cai H. (2018). Mapping CCK-induced neural activity mediated by the CEA PKC-δ neurons. Undergraduate Biology Research Program Conference, Tucson.

Vo K, Schmit MB, Rivera M, Cai H. (2020). The effect of PKC-δ+ neurons on the latency to approach food and termination of feeding. Undergraduate Biology Research Program Conference, Tucson

Hasneen T, Schmit MB, Cai H. (2020). Rewarding properties of PKC-δ+ neuron stimulation in different hunger states. Undergraduate Biology Research Program Conference, Tucson

Rivera M, Schmit M, Cai H. (2021). Undergraduate Biology Research Program Conference, Tucson

Ozturk G, Schmit M, Cai H. (2021). The Effect of a Novel Environment on PKC-δ+ Neuron Activity at Baseline and During Food Approach. Undergraduate Biology Research Program Conference, Tucson

Timilsena S, Schnapp W, Cai H. (2023). Activity of the Central Extended Amygdala in Mice Developing Anorexia. Undergraduate Biology Research Program Conference, Tucson

Pederson V*, Schnapp W, **Cai H**. (2024). Role of amygdala neuron activity on estrous cycle and energy expenditure. NSCS Honors Thesis Poster.

Bouchal E*, **Cai H**. (2024). The Role of CeL Bitter Response Neurons in Feeding Patterns of Mice. NSCS Honors Thesis Poster.

Pederson V*, Schnapp W, **Cai H**. (2024). Role of amygdala neuron activity on estrous cycle and energy expenditure. UCLA McNair Conference. Los Angeles, 2024

Awarded Grants and Contracts (after 2015)

Awarded grants from private foundations.

1. NARSAD Young Investigator Grant Award. 1/15/2017 – 1/14/2020 (including one year no cost extension)
   Title: Dissecting central amygdala neural circuitry for emotion and eating disorders
   Percent effort: 5%.
   Role: PI.
   Source: Brain & Behavior Research Foundation.
   Amount: $70,000 (direct cost).
2. The Foundation for Prader-Willi Research Grant. 9/1/2019 - 8/31/2021 (including one year no cost extension)
   Title: Role of central amygdala anorexia neural circuits in Prader-Willi Syndrome
   Percent effort: 5%
   Role: PI
   Source: The Foundation for Prader-Willi Research
   Amount: $60,000 (direct cost), $4,800 (indirect cost)
3. The Klarman Family Foundation Eating Disorders Research. 11/1/2019 - 10/31/2023 (including one year no cost extension)
   Title: Simultaneous targeting of specific neurons for anorexia nervosa in two extended amygdala regions
   Percent effort: 20%
   Role: PI
   Source: The Klarman Family Foundation
   Amount: $750,000 (total)

Awarded Federal Grants

1. R01 DK124501, NIH/NIDDK 4/1/2021 - 2/28/2026
   Title: Dissecting a central amygdala-parasubthalamic nucleus circuitry underlying appetite control
   Percent effort: 30%

Role: PI
Amount: $1,881,280, direct cost $1,250,000

2. UA CEAS Pilot Grant, subcontract from NIDAContreras (PI) Mar 2023 – May 2024
Title: Dissecting Central Amygdala Subcircuit Contribution to Drug Craving
Role: co-PI
Amount: $35,000 (direct cost)

3. R21 NS123512, NIH/NINDS Miller (PI) 7/1/2021 – 6/30/2023
Title: Alpha-synuclein driven cellular changes and vocal dysfunction in Parkinson's Disease
Percent effort: 2%
Role: collaborator
Amount: $415,483, direct cost $275,000.

4. R21 1R21HD116113-01, NIH/NICHD CAI (PI) 9/1/2024 – 8/31/2026
Title: Neural Mechanism of Impaired Satiation After Magel2 Mutation
Percent effort: 5%
Role: PI
Amount: $407,973, direct cost $275,000.

Classroom Teaching (after 2015)

Course Name	Course Code	Semester	Enrollment
Cellular Neurophysiology Role: Guest Lecturer	NROS 307	2016 Fall 2017 Fall 2018 Fall	129 134 130
Cellular Neurophysiology – Honors Section Role: Instructor	NROS 307H	2016 Fall 2017 Fall	32 41 (A+B)
Fundamental Principles of Systems Neuroscience Role: Instructor (co-teach with Lynne Oland in 2018 and 2019, co-teach with Marina Cholanian in 2021, sole instructor in other years)	NROS 418	2018 Spring 2019 Spring 2020 Spring 2021 Spring 2022 Spring 2023 Spring 2024 Spring	71 97 83 102 94 107 54
Fundamental Principles of Systems Neuroscience Online Role: Instructor	NROS 418 Online	2022 Fall 2023 Fall	1 2
Systems Neuroscience Role: Instructor (Course Coordinator: Andrew Fuglevand)	NRSC 560	2017 Spring 2018 Spring 2019 Spring 2020 Spring 2021 Spring 2022 Spring 2023 Spring 2024 Spring	9 11 10 15 15 6 9 5
Engaging Topics in Neuroscience and Cognitive Science Role: Guest Lecturer	NSCS 195B	2021 Fall 2024 Fall	58 (A+B)

Principles of Cellular and Molecular Neurobiology Role: Instructor (Course Coordinator: Patrick Ronaldson)	NRSC 588	2024 Fall	24
Complex Behavioral, Cognitive and Emotional Disorders	NSCI 435	TBD	

Laboratory Trainees (after 2015)

Postdoctoral Fellow

Name	Dates	Research project
Yong Wang, Ph.D.	2016 - 2018	Feeding control by ovBNST PKC-δ neurons
Marina Roderiguez Sanchez, Ph.D.	2021 - 2021	CeA-PSTH neural pathway in CCK-mediated feeding suppression
Shivani Mann, Ph.D.	2021 - 2024	Appetite control by sweet-activated CeA neuron

Research Scientist

Name	Dates	Research project
Caohui Fang, M.D., M.S.	2015 - present	Neural mechanism of eating and emotion
Marco Contreras, Ph.D.	2022 - Present	Dissecting Central Amygdala Subcircuit Contribution to Drug Craving

Graduate students

Name	Dates	Major	Research project
Andrew Tubbs	2016 Summer	MD/PhD & Neuroscience GIDP rotation	Whole-brain mapping of the neurons activated by CeA PKC-δ neurons.
Hannah Dollish	2017 Spring	Neuroscience GIDP rotation	Role of the projection from piriform cortex to central amygdala in feeding regulation.
Gowri Somasekhar	2020 Spring	Neuroscience GIDP rotation	Computational modeling of the CeA neural circuits during feeding and emotion behaviors.
Matthew Schmit	2017 -present	Neuroscience GIDP	Dynamic response of central amygdala PKC-δ+ neurons to eating and hunger. Awarded with the 2020, 2021 Galileo Circle Scholarships, the 2020-2021 Andrew C. Comrie Graduate Interdisciplinary Programs Doctoral Fellowship, the 2021 Herbert E. Carter Travel Award
Wesley Schnapp	2020 -2024	Neuroscience GIDP	Role of the extended amygdala neurons in anorexia nervosa. Awarded with the Herbert E. Carter Travel Award (2021), GPSC Travel Award (2022), Keystone Symposium Travel Scholarship (2022), Galileo Circle Scholarship (2022), and the Christine Mirzayan Science and Technology Policy Graduate Fellowship with the National Academies of Sciences, Engineering, and

			Medicine (2024). She successfully defended her Ph.D. thesis on June 3, 2024.
Masa Miscevic	2021 -present	Physiological Sciences GIDP rotation	Appetite control in Magel2 mutant mice
Emily McDonald	2022 Spring	Neuroscience GIDP rotation	Neural mechanism of food addiction and homeostasis
Israel Ispuro	2022 Fall	Neuroscience GIDP rotation	Transsynaptic anterograde tracing
Jean Dill	2024 Spring	Neuroscience GIDP rotation	Trapping nausea-activated neurons in central amygdala and parabrachial nucleus.
Justin Carter	2024 Fall	Neuroscience GIDP rotation	Role of the neural pathway from entorhinal cortex and hippocampus to central amygdala in eating

Research Technicians

Name	Dates	Research project
JungMin Kim	2016 - 2018	Role of extended amygdala neurons in activity-based anorexia
Ross Mansouri-Rad	2017 - 2018	Behavioral control by VTA-CeA neural circuits
Mauricio Serna	2021	Electrophysiological properties of extended amygdala modified by behaviors

Undergraduate Students

Name	Dates	Major	Research project
John Kim	2016 Summer	NSCS	Making low-cost ferrule fiber systems for in vivo optogenetics
Allison Kath	2016 Fall	NSCS	Characterization of mouse feeding behaviors
Tiffany Cho	2017 - 2019	NSCS	Mapping CCK-induced neural activity mediated by the CEA PKC-δ neurons. Presented a poster at the 2018 Undergraduate Biology Research Program Conference, Tucson. Honors thesis.
Tabassuma Hasneen	2018 - 2021	MCB	Rewarding properties of PKC-δ+ neuron stimulation in different hunger states. Presented a poster at the 2020 Undergraduate Biology Research Program Conference, Tucson
Kevin Vo	2018 - 2021	MCB	The effect of PKC-δ+ neurons on the latency to approach food and termination of feeding. Presented a poster at the 2020 Undergraduate Biology Research Program Conference, Tucson
Mayra Rivera	2019-2021	Physiology	Feeding analysis after optogenetic manipulation of CeA neurons.

			Presented a poster at the 2021 Undergraduate Biology Research Program Conference, Tucson
Gizem Ozturk	2020 - 2021	Chemistry	Imaging analysis of the dynamics of CeA neuron during feeding. Awarded with the 2020 John G Hildebrand Scholarship. Presented a poster at the 2021 Undergraduate Biology Research Program Conference, Tucson
Freya Abraham	2020	NSCS	Online analysis of calcium imaging and behavior.
Elise Bouchal	2020 - 2024	NSCS	Neural circuits of eating after taste sensation Honors thesis
Veena Raghuraman	2021	Physiology	Imaging analysis
Hannah Vu	2021-2023	Physiology	Imaging analysis and behavior annotation.
Ananya Nigam	2021 - 2023	BME	Imaging analysis and behavior annotation.
Cassidy Johnson	2022 - 2023	Physiology	Neural dynamics and eating behaviors in anorexia-based anorexia mice
Sayujya Timilsena	2022 - 2023	NSCS	Histology analysis in mice after anorexia development. Presented a poster at the 2023 Undergraduate Biology Research Program Conference, Tucson Literature review Honors thesis
Paige Emily Nye	2022 - 2023	NSCS	Literature review Honors thesis
Nada M Elnady	2023	Physiology	Histology analysis of animals in anorexia-based anorexia
Vivianna Pederson	2023 - present	NSCS	Behavioral analysis of animals in anorexia-based anorexia Honors thesis
Iva Marinkovic	2023 - 2024	NSCS	Literature review Honors thesis
Emma Stewart-Nava	2024 - present	NSCS	Anorexia caused by addiction.
Alice Miranda	2024 - present	NSCS	Eating regulation by insular-CeA pathway

High School Students

Name	Dates	Research project
Makenna Anderson	2017 - 2018	Video annotation of feeding behaviors
Braydon Kim	2024	Involvement of central amygdala neurons in addiction

CURRICULUM VITAE

MARINA CHOLANIAN, PHD

CHRONOLOGY OF EDUCATION

2005 Quincy College, A.A. *Magna cum laude*
Major field: Humanities

2007 University of Massachusetts, Boston, B.A. *Summa cum laude*
Major field: Psychology

2013 University of Arizona, Ph.D.
Major field: Neuroscience; Minors: Medical Pharmacology and Molecular and Cellular Biology
Doctoral Dissertation: "Effects of estrogen on morphological and electrophysiological properties of arcuate NKB neurons." Advisor: Naomi E. Rance, M.D., Ph.D.

CHRONOLOGY OF EMPLOYMENT

2006-2008 Department Associate, Rosenstiel Center for Basic Medical Research, Brandeis University, Waltham, MA

2007-2008 Behavioral Neuroscience Teaching Assistant and Tutor, University of Massachusetts, Boston, MA

2008 Research assistant, Department of Psychology, University of Massachusetts, Boston, MA
Research: sex differences in addiction to amphetamines
Advisor: Tiffany Donaldson, Ph.D.

2008-2013 Research associate, Department of Pathology, University of Arizona College of Medicine, Tucson, AZ
Research: role of estrogens in modulating properties of GnRH pulse generator
Advisor: Naomi E. Rance, M.D., Ph.D.

2014-2016 Postdoctoral Research Associate II, Department of Physiology, University of Arizona College of Medicine, Tucson, AZ
Research: effects of prenatal nicotine exposure on medullary networks that control respiration in neonates
Advisor: Ralph F. Fregosi, Ph.D.

2016-2017 Postdoctoral Fellow, Massachusetts General Hospital/Harvard Medical School, Boston, MA
Research: role of mutations in RNF216 in neuroendocrine axis and cerebellum using mouse knock out models
Advisor: Stephanie B. Seminara, M.D., Ph.D.

2017-2018 Application Scientist, Neurotar Ltd, Helsinki, Finland

2018-2020 Adjunct Faculty, Department of Biology, Pima Community College, Tucson, AZ

2021-2022 Lecturer, Department of Neuroscience, University of Arizona, Tucson, AZ

2023-present Assistant Professor of Practice, Department of Neuroscience, University of Arizona, Tucson, AZ

HONORS AND AWARDS

2008-2010	Arizona Science Foundation (SFAz) Fellowship ($30,000/year graduate stipend)
2011-2012	The Achievement Rewards for College Scientists (ARCS) Foundation Award
2011-2012	The Evelyn F. McKnight Brain Institute Fellowship
2011	The ARCS Foundation travel award to attend Society for Neuroscience Annual meeting
2011	GIDP in Neuroscience award to attend Society for Neuroscience Annual meeting
2012	The ARCS Foundation travel award to attend Society for Neuroscience Annual meeting
2012	H.E. Carter Travel Award to attend Society for Neuroscience Annual meeting
2012-2013	The Achievement Rewards for College Scientists (ARCS) Foundation Award, Steele Scholar
2015	Postdoctoral Fellow Poster Prize from the Respiration Section of the American Physiological Society

SERVICE/OUTREACH

Local/State Outreach

2009	Volunteer, Frandrau Science Center, Brain Awareness Week, Tucson, AZ
2011	Volunteer, BrainWorks station, Tucson Festival of Books, Tucson, AZ
2011	Instructor, Private Eye Teaching session for 5th grade students, Flagstaff Public School, Flagstaff, AZ
2013	Volunteer, BrainWorks station, Tucson Festival of Books, Tucson, AZ

Departmental Committees

2024-present	Chair, NSCI Curriculum Committee, Department of Neuroscience
2022-2024	Member, NSCS Curriculum Committee, Neuroscience and Cognitive Science Program
2022-2023	Member, Neuroscience BS Curriculum Committee, Department of Neuroscience
2022-2023	Member, Adjunct Faculty Search Committee, Department of Neuroscience
2022-present	Member, Undergraduate Scholarship Committee, Department of Neuroscience
2021-2022	Member, Strategic Plan in Neuroscience Teaching Committee, Department of Neuroscience
2015	Member, Undergraduate Poster Judging Committee at the Arizona Physiological Society Annual Meeting, Tucson, AZ

Graduate Program Committees

2011-2012 Elected Student Representative, Neuroscience Graduate Interdisciplinary Program (GIDP) Executive Committee

2012 GIDP in Neuroscience Admissions Committee Student Representative

2013 GIDP in Neuroscience Admissions Committee Student Representative

PROFESSIONAL AFFILIATIONS

2008-Present Member, Society for Neuroscience

2014-Present Member, American Physiological Society

2016-2017 Member, Endocrine Society

PUBLICATIONS/CREATIVE ACTIVITY

Arizona Online Course Development:

2022 AZ Online NROS 330: Principles of Neuroanatomy: Cells to Systems

2021 AZ Online NROS 307: Neurophysiology

2021 AZ Online NROS 308: Methods in Neuroscience

Publications:

N.E. Rance, S.J. Krajewski, M.A. Smith, **M. Cholanian**, P.A. Dacks (2010) Neurokinin B and the hypothalamic regulation of reproduction, *Brain Research*, Dec. 10; 1364:116-28.

M. Cholanian, S.J. Krajewski-Hall, R.B. Levine, N.T. McMullen, N.E. Rance (2014) Electrophysiology of Arcuate Neurokinin B neurons in female *Tac2*-EGFP transgenic mice, *Endocrinology*, Jul; 155 (7): 2555-65.

M. Cholanian, A. Lobzova, B. Das, C. Yelleswarapu, S.T. Donaldson (2014) Digital holographic microscopy discriminates sex differences in medial prefrontal cortex GABA neurons following amphetamine sensitization, *Pharmacology, Biochemistry, and Behavior*, Sep; 124: 326-32

M. Cholanian, S.J. Krajewski-Hall, N.T. McMullen, N.E. Rance (2015) Chronic oestradiol reduces the dendritic spine density of KNDy neurones in the arcuate nucleus of ovariectomized *Tac2*-EGFP transgenic mice, *Journal of Neuroendocrinology*, Apr; 27(4): 253-63

M. Cholanian, J. Wealing, R.B. Levine, R.F. Fregosi (2017) Developmental nicotine exposure alters potassium currents in hypoglossal motoneurons in neonatal rat, *Journal of Neurophysiology*, Apr. 1: 117 (4):1544-1552.

M. Cholanian, P.L. Powell, R.B. Levine, R.F. Fregosi (2017) Influence of developmental nicotine exposure on glutamatergic neurotransmission in rhythmically active hypoglossal motoneurons, *Experimental Neurology*, Jan. 28(7): 254-260.

J.Wealing**, M. Cholanian,** E.G. Flanigan, R.B. Levine, R.F. Fregosi (2019) Diverse physiological properties of hypoglossal motoneurons innervating intrinsic and extrinsic tongue muscles, *Journal of Neurophysiology*, Nov. 1: 122(5):2054-2060.

CONFERENCES/SCHOLARLY PRESENTATIONS

National/International Conferences
Submitted Abstracts & Poster Presentations
KEY: *maiden name

T. Nixon, D. Bolen, **M. Perebeyeva*** and S.T. Donaldson (2007) Subchronic amphetamine pretreatment increases locomotor activity and stereotypy response to environmental and low dose amphetamine challenges. Poster presentation at the Annual Biomedical Research Conference for Minority Students (ABRCMS) Austin, TX

A. Lobzova, **M. Perebeyeva*** and S.T. Donaldson (2008) Evidence for increased amphetamine neurobehavioral sensitization in ovariectomized rats. Poster presentation at the 22nd Annual Conference on Undergraduate Research (NCUR) Salisbury, MD.

M. Cholanian, S.J. Krajewski, N.T. McMullen, and N.E. Rance (2011) Characterization of a Tac2-EGFP mouse for the study of arcuate NKB neurons. Poster presentation at the Society for Neuroscience Annual Meeting, Washington, DC.

M. Cholanian, S.J. Krajewski, and N.E. Rance (2011) A novel Tac2-EGFP transgenic mouse model to study arcuate NKB neurons: characterization of reproductive function and hypothalamic neuropeptide expression. Poster presentation at the Science Foundation Arizona Grand Challenges Summit, Flagstaff, AZ.

M. Cholanian, S. J. Krajewski-Hall, R. B. Levine, N. T. McMullen, N. E. Rance (2012) Long-term estradiol treatment reduces firing rate of arcuate neurokinin B (NKB) neurons in ovariectomized Tac2-EGFP mice. Poster presentation at the Society for Neuroscience Annual Meeting, New Orleans, LA.

M. Cholanian, S.J. Krajewski-Hall, N.T. McMullen, N.E. Rance (2014) 17β-Estradiol reduces the dendritic spine density of KNDy neurons in the arcuate nucleus of ovariectomized *Tac2*-EGFP transgenic mice. Poster presentation at the Society for Neuroscience Annual Meeting, Washington, DC.

M.Cholanian, R.B.Levine, R.F. Fregosi (2015) Developmental Nicotine Exposure Results in Exaggerated Response to AMPA Receptor Activation in Hypoglossal Motoneurons in Neonatal Rats. Poster presentation at the Experimental Biology Annual Meeting, Boston, MA.

J.Wealing, **M.Cholanian**, R.F. Fregosi (2016) Hypoglossal Motoneuron Differentiation through Fluorescence Mapping and Patch Clamp Electrophysiology. Poster presentation at the Undergraduate Biology Research Program Annual Conference, Tucson, AZ.

AWARDED GRANTS (Postdoctoral Training and Research)

2016-2017	Ruth L. Kirschstein Institutional National Research Service Award (NRSA), 5 T32 HD007396-23
	Applicant was chosen as a trainee for a 3-year T32-funded project at Reproductive Endocrine Unit at Harvard Medical School/Massachusetts General Hospital.
2016	National Ataxia Foundation Postdoctoral Research Awards ($35,000)
	Applicant received but declined the award due to the change in employment. The decision to switch the employer was made due to the toxic and incompatible environment.

MEGAN M. CORTY

corty@arizona.edu

Assistant Professor January 2024-Present
University of Arizona
Department of Neuroscience

EDUCATION & TRAINING

Vollum Institute, OHSU October 2016-December 2023
University of Massachusetts Medical School September 2012-October 2016
Postdoctoral Fellow
Advisor: Marc R. Freeman, PhD
Development & function of glial ensheathment in *Drosophila* peripheral nerves

Columbia University September 2005-October 2011
PhD, Neurobiology & Behavior
Thesis Advisor: Wesley B. Grueber, PhD
"*Transcriptional control of somatosensory neuron diversification in Drosophila"*

Cold Spring Harbor Laboratory July 2008
Advanced Techniques in Molecular Neuroscience

Stanford University June 2003
BA in Human Biology with Honors and University Distinction
Thesis Advisor: Russell D. Fernald, PhD

PUBLICATIONS

Kang Y, Jefferson A, Sheehan A, De La Torre R, Jay T, Chiao L, Hulegaard AL, **Corty MM**, Baconguis I, Zhou Z, Freeman MR (2023) "Tweek-dependent formation of ER-PM contact sites enables astrocyte phagocytic function & remodeling of neurons" *bioRxiv* doi:10.1101/2023.11.06.565932

Corty MM & Coutinho-Budd J (2023) "*Drosophila* glia take shape to sculpt the nervous system" *Current Opinion in Neurobiology* 79: 102689. Review.

Lassetter AP, **Corty MM**, Barria R, Sheehan AE, Hill JQ, Aicher SA, Fox AN, Freeman MR (2023) "Glial TGFβ activity promotes axon survival in peripheral nerves." *Journal of Cell Biology* 222(1): e202111053

Corty MM, Hulegaard AL, Hill JQ, Sheehan AE, Aicher SA, Freeman MR (2022) "*Discoidin domain receptor* regulates ensheathment, survival, and caliber of peripheral axons." *Development* DOI: 10.1242/dev.200636

Hsu JM, Kang Y, **Corty MM**, Mathieson D, Peters OM, Freeman MR (2021) "Injury-induced inhibition of bystander neurons requires *dSarm* and signaling from glia." *Neuron* 109(3):473-487.

Corty MM, Tam J and Grueber WB (2016*)* "Dendritic diversification through transcription factor-mediated suppression of alternative morphologies." *Development* 143:1351-1362.

Corty MM and Freeman MR (2013) Cell biology in neuroscience: Architects in neural circuit design: glia control neuron numbers and connectivity." *J. Cell Biology* 203(3):395-405. Review

Corty MM*, Matthews BJ*, Grueber WB (2009). “Molecules and mechanisms of dendrite development in *Drosophila*.” *Development* 136(7):1049-61. Review.

Matthews BJ, **Corty MM**, Grueber WB (2008). “Of cartridges and columns: new roles for cadherins in visual system development.” *Neuron* 58(1):1-3. Review.

SELECTED INVITED ORAL PRESENTATIONS

“Virtual Glia” Symposium, 2021
Myelin Gordon Research Conference, 2018
Brown University Fly Club, 2016
Neural Development Gordon Research Seminar and Conference, 2016
Glia in Health and Disease, CSHL, 2016
American Society of Neurochemistry Annual Meeting Denver, CO, 2016
Dendrites: Molecules, Structure, and Function Gordon Research Seminar, 2011
Dendrites: Molecules, Structure, and Function Gordon Research Seminar, 2009

AWARDS & HONORS

UMass Medical School Dean’s Award for Outstanding Contribution for Curricular Development, 2016
National Science Foundation Graduate Research Fellowship, 2007-2010
Stanford University Centennial Teaching Assistant Award, 2004
Phi Beta Kappa, inducted 2003
Joshua Lederberg Award for Academic Excellence in Human Biology (Top 3 HumBio graduates), 2003
Bernard and Estelle Shuer Award for Outstanding Neuroscience Research, 2003
Undergraduate Research Major Grant funded by the Howard Hughes Medical Institute, 2002
Henry Tien Memorial Award for Outstanding Head Peer Academic Coordinator of the Year, 2002
American Psychological Association Summer Science Institute Fellow, 2001
Stanford University President’s Award for Academic Excellence in the Freshmen Year, 2000
Robert C. Byrd Scholar, 1999-2003

TEACHING EXPERIENCE

Lecturer September 2023
Rigor and Reproducibility in Neuroscience Research, OHSU
“Using Model Organisms (*correctly*): Best Practices & Potential Pitfalls”

Lecturer 2017- 2022
Neuroscience Graduate Program Bootcamp, OHSU
Module on “Model Organisms in Neuroscience Research” for incoming NGP students.

Guest Lecturer March 2021
Experimental approaches in glia cell development & function, OHSU
“Neural crest derived glia, nerve formation, & nerve regeneration”

Course Creator & Instructor September 2015-January 2016
Communicating Neuroscience: Learning by Doing, UMass Medical School
With another postdoc, proposed, designed, and taught a new practical course on effective scientific communication skills to Neuroscience graduate students. The course is now a standard part of the Neuroscience Graduate Program curriculum, and we received a curriculum development award for its creation.

Course Creator & Instructor December 2011-April 2012
The Promise of Stem Cells, American Museum of Natural History, NYC
Independently designed and taught a 6-week enrichment course on stem cell biology & ethics for high school students. Developed new lectures and teaching materials on stem cell biology, applications, and ethics. Taught students how to read and critique original research literature. Designed in-class experiments and group activities to facilitate understanding. This course was sponsored by an NIH-Science Education Partnership Award to AMNH.

Teaching Assistant January 2009-May 2009
Neurobiology II: Development & Systems, Columbia University
Led weekly student discussion seminars focused on dissecting primary literature related to lecture topics. Worked with other TAs to select relevant primary literature for course, conduct exam review sessions, and write and grade exams

Laboratory Course Assistant June 2004-August 2004
Neural Systems & Behavior, Marine Biological Laboratory, Woods Hole, MA
Provided lab support for an advanced electrophysiology methods course including daily lab set-up and maintenance of course equipment and animals.

Head Course Associate September 2003-June 2004
Program in Human Biology, Stanford University
Full-time head teaching assistant for the year-long Human Biology "Core" course sequence. Managed team of three other course associates. Wrote weekly problem sets and exams. Developed lesson plans to lead four discussion sections per week in addition to office hours. Coordinated course logistics including creating course syllabi, maintaining course website, preparing readings, grading, and coordinating guest lecturers. Served as primary contact for 200+ enrolled students. Received a Stanford University Centennial Teaching Assistant Award for my work.

Teaching Assistant September 2002
Understanding the Brain, Stanford University
Teaching and tutoring support for an intensive and immersive 2-week Sophomore College seminar held just prior to the academic year.

Writing Tutor September 2000-June 2003
Stanford Writing Center, Stanford University
Assisted undergraduate & graduate students at every stage of writing process.

LAB MENTORING

Graduate Students
- Alexandria Lassetter Hulegaard (OHSU)
- Danielle Mathieson (OHSU)

Undergraduates
- Kirbi Austin (U. Arizona)
- Alex Larson (Oregon State)
- Rehana Bhuiyan (Hunter College)
- Carolyn Diaz (Hunter College)
- Sara Stream (Columbia)
- Michael Newman (Columbia)

UNIVERSITY & COMMUNITY SERVICE

Member, Department of Neuroscience Undergraduate Degree Marketing Committee, 2024
Undergraduate Biology Research Program Mentor, Summer 2024

STEM Faculty Panelist, Undergraduate Research Opportunities Consortium Summer Research Institute, June 2024
Member, UA College of Science Undergraduate Awards Committee, 2024
Coordinator, OHSU Glia Journal Club, 2017-2023
Ad hoc reviewer: *Nature Communications*, *Genetics*
Chair, Gordon Research Seminar on Neural Development, 2014
Neuroscience Outreach Coordinator & Volunteer, Columbia University, 2006-2011
Mott Hall Science Mentoring, 2007-2009
Neurobiology & Behavior Program Retreat Committee, Columbia University, 2007 & 2009
Stanford Peer Academic Advisor, 2000-2003
Stanford University Judicial Panel, 2000-2003

CURRICULUM VITAE

Wulfila Gronenberg

Department of Neuroscience
College of Science; School of Mind, Brain & Behavior
University of Arizona
PO Box 210077
Tucson AZ 85721-0077

Telephone: (520) 626-5422
Fax: (520) 621-8282
Email: wulfilag@email.arizona.edu
Website: http://neurosci.arizona.edu/wulfilag

Education

1972 - 74	Technical University Berlin, Germany: Chemistry
1974 - 77	Free University Berlin, Germany: Biology
1977 - 79	Free University Berlin, Germany: Zoology (Master's Program)
1980 - 84	Free University Berlin, Germany: Zoology (Ph.D. Program)

Chronology of Employment

1977 - 1984	Animal Physiology, Free University of West Berlin: Graduate Research Assistant
1984	Department of Biology, Technical University of West Berlin: Postdoctoral Research Assistant
1985 - 1988	Department of Zoology, University of Frankfurt, Germany: Postdoctoral Research Associate
1988 - 1990	Arizona Research Labs (ARL) Division of Neurobiology, University of Arizona: Postdoctoral Research Associate
1991	ARL Division of Neurobiology, University of Arizona: Assistant Research Scientist
1991-1995	Dept. of Behavioral Physiology and Sociobiology, University of Würzburg, Germany: Assistant Professor
1995 - 1999	Dept. of Behavioral Physiology and Sociobiology, University of Würzburg: Associate Professor without tenure
1999 - 2008	ARL Division of Neurobiology (now Dept. of Neuroscience), U of A: Associate Professor
2009 - 2016	Dept. of Neuroscience, U of A: Associate Professor
2016 - current	Dept. of Neuroscience, U of A: Full Professor

Major fields:
Neuroscience; neuroethology; animal behavior; zoology

Joint appointments
Dept. Ecology and Evolutionary Biology, U of A
Dept. Entomology, U of A

Experiences and Professional Memberships

1981	Participant, Summer school 'Neural Systems and Behavior', Marine Biological Laboratory, Woods Hole, MA
1982 - 1999	Member, German Society for Neurobiology
1988 -	Member, Society for Neuroscience
1995 –	Member, International Society for Neuroethology
2000 – 2002	Member, Santa Fe Institute, working group "Social Insects: Genes, Neurons and Societies"
2001 -	Member, International Union for the Study of Social Insects
2004 – 2007	Instructor, Summer school 'Neural Systems and Behavior', Marine Biological Laboratory, Woods Hole, MA

Editorial activities:
Arthropod Structure and Development (editorial board 1999 - 2014);
Academic editor, PLOS one (2016 – 2023)
Reviewer (ca.5-10 manuscripts per year for the last 10 years):
Behavioural Brain Research; Bioinspiration and Biomimetics; Brain, Behavior and Evolution; Brain Research; Cell Tissue Research; Development, Genes and Evolution; Entomologia Experim. et Applicata; J. Arachnol.; J. Neurobiology; J. Comparative Neurology; J. Comparative Physiology A, B; J. Experimental Biology; J. Neuroscience; Microscopy Research and Technique; Nature; Naturwissenschaften; PLOS one, Proceedings Royal Society; Proc. National Academy of Sciences; Science; Nature Comm.; Current Biology

Outreach activities:
Tucson Festival of books 'Brainworks' booth organizer or co-organizer 2005- 2022
Desert Museum 'Insect Insanity', insect neuroscience demonstration; 7/2019
Annual Science Night, Desert Shadows Middle School, Nogales, Arizona (2018 – 2020)
Science Night, Senita Valley Elementary School (10/2010)
Paulo Freire School (Tucson), lab demonstrations for middle school students (3/2017)
Flandreau Science Center, Insect brain exhibition (8/2021)
Organizer, Center for Insect Science 'Hexapodium'(2-4 events per year) 2001 - 2018

PUBLICATIONS

Original papers

(2023) Aksamit IC, Dorigão- Guimarães F, **Gronenberg W**, Keating Godfrey R: Brain size scaling through development in the whitelined sphinx moth (*Hyles lineata*) shows mass and cell number comparable to flies, bees, and wasps. ASD_101329; https://doi.org/10.1016/j.asd.2023.101329

(2022) Riveros AJ ,**Gronenberg W** (2022). The flavonoid rutin protects against cognitive impairments by imidacloprid and fipronil. J. Exp. Biol. 225, jeb244526. doi:10.1242/jeb.244526

(2021) Godfrey RK, Oberski JT, Allmark T,Givens C, Hernandez-Rivera J and **Gronenberg W**: Olfactory System Morphology Suggests Colony Size Drives Trait Evolution in Odorous Ants (Formicidae: Dolichoderinae). Front. Ecol. Evol. 9:733023. doi: 10.3389/fevo.2021.733023

(2021) Godfrey RK, Swartzlander M, **Gronenberg W**: Allometric analysis of brain cell number in Hymenoptera suggests ant brains diverge from general trends. Proc. R. Soc. B 288: 20210199. doi.org/10.1098/rspb.2021.0199

(2020) Sinakevitch I, Long SM, **Gronenberg W**. The central nervous system of whip spiders (Amblypygi): Large mushroom bodies receive olfactory and visual input. J Comp Neurol. 529:1642–1658 https://doi.org/10.1002/cne.25045

(2020) Riveros AJ, Leonard AS, **Gronenberg W**, Papaj DR: Learning of bimodal versus unimodal signals in restrained bumble bees. J Exp Biol 223: jeb220103 doi: 10.1242/jeb.220103

(2019) Godfrey RK, **Gronenberg W**: Linking Colony Size with Foraging Behavior and Brain Investment in Odorous Ants (Formicidae: Dolichoderinae). Brain Behav Evol DOI: 10.1159/000504643

(2019) Gowda V, **Gronenberg W**: Brain composition and scaling in social bee species differing in body size. Apidologie DOI: 10.1007/s13592-019-00685-w

(2019) Godfrey RK, **Gronenberg W**: Brain evolution in social insects: advocating for the comparative approach. J. Comp. Physiol. A; https://doi.org/10.1007/s00359-019-01315-7

(2018) Leitner N, Charbonneau D, Gronenberg W, Dornhaus A: Peripheral sensory organs vary among ant workers but variation does not predict division of labor. Behav. Processes. 158:137-143. doi: 10.1016/j.beproc.2018.10.016

(2017) Larabee FJ, **Gronenberg W**, Suarez A: Performance, Morphology, and Control of Power-amplified Mandibles in the Trap-jaw Ant, *Myrmoteras* (Hymenoptera: Formicidae). J. Exp. Biol.220(Pt 17): 3062-3071. doi: 10.1242/jeb.156513.

(2016) Wiegmann DD, Hebets EA, **Gronenberg W**, Graving JM, Bingman VP: Amblypygids: Model Organisms for the Study of Arthropod Navigation Mechanisms in Complex Environments? Front. Behav. Neurosci. 10:47.doi: 10.3389/fnbeh.2016.00047

(2016) Kamhi JF, **Gronenberg W**, Robson SKA, Traniello JFA: Social complexity influences brain investment and neural operation costs in ants. Proc. R. Soc. B 283: 20161949. http://dx.doi.org/10.1098/rspb.2016.1949

(2015) Amador-Vargas S, **Gronenberg W**, Wcislo W, Mueller U: Specialization and group size: brain and behavioral correlates of colony size in ants lacking morphological castes. Proc R Soc B 282: 20142502

(2014) Terrapon N, Li C, Robertson H, Ji L, Meng X, et al. "Molecular traces of alternative social organization in a termite genome. Nat. Commun. 5:3636 DOI 10.1038/ncomms4636

(2014) Muscedere ML, **Gronenberg W**, Moreau CS, Traniello JFA: Investment in higher-order central processing regions is not constrained by brain size in social insects. Proc. R. Soc. B 281: 20140217. http://dx.doi.org/10.1098/rspb.2014.0217

(2014) **Gronenberg W**, Raikhelkar A, Abshire E, Stevens J, Epstein E, Loyola K, Rauscher M, Buchmann S: Honey bees (*Apis mellifera*) learn to discriminate the smell of organic compounds from their respective deuterated isotopomers. Proc. R. Soc. B 20133089. http://dx.doi.org/10.1098/rspb.2013.3089

(2013) Jones MB, Leonard AS, Papaj DR, **Gronenberg W**: Plasticity of the worker bumblebee brain in relation to age and rearing environment. Brain Behav. Evol. 82:250-261 (DOI: 10.1159/000355845)

(2013) Milton Giraldo Y, Patel E, **Gronenberg W**, Traniello JFA: Division of labor and structural plasticity in a serotonergic extrinsic mushroom body neuron in the ant *Pheidole dentate*. Neurosci Letters 534: 107– 111

(2013) Mota T, **Gronenberg W**, Giurfa M, Sandoz JC: Chromatic Processing in the Anterior Optic Tubercle of the Honey Bee Brain. J Neurosci. 33:4-16

(2012) Riveros AJ, **Gronenberg W**: Decision-making and associative color learning in harnessed bumblebees (Bombus impatiens). Anim. Cogn. 15: DOI: 10.1007/s10071-012-0542-6

(2011) Muscedere ML, Traniello JFA, **Gronenberg W**: Coming of age in an ant colony: cephalic muscle maturation accompanies behavioral development in *Pheidole dentata*. Naturwiss. 98:783–793

(2011) Mota T, Yamagata N, Giurfa M, **Gronenberg W**, Jean-Christophe Sandoz J-C: Neural Organization and Visual Processing in the Anterior Optic Tubercle of the Honeybee Brain. J. Neurosci. 31: 11443-11456

(2011) Smith CR, Smith CD, Robertson HM et al.: The draft genome of the red harvester ant, *Pogonomyrmex barbatus*: a model for reproductive division of labor and social complexity. Proc Natl Acad Sci 108:5667-73

(2010) Riveros AJ, **Gronenberg W**: Brain Allometry and Neural Plasticity in the Bumblebee *Bombus occidentalis*. Brain Behav Evol 75:138-148

(2010) Gronenberg **W**, Couvillon MJ Brain composition and olfactory learning in honey bees. Neurobiol Learn Memory 93:435-443

(2010) Riveros AJ, **Gronenberg W**: Body Size, Foraging Specialization and Resource Exploitation in Honeybees. Behav Ecol Sociobiol 64:955–966

(2010) Couvillon MJ, Gloria DeGrandi-Hoffman, **Gronenberg W**: Africanized honey bees are slower learners than their European counterparts. Naturwiss. 97:153–160

(2009) Riveros AJ, **Gronenberg W** (2009) Learning from learning and memory in bumblebees. Communic. Integr. Biol 2: 1-4

(2009) Riveros AJ, **Gronenberg W**: Olfactory learning and memory in the bumblebee Bombus occidentalis. Naturwiss. 96:851–856

(2009) Paulk A, Dacks A**, Gronenberg W**: Color processing in the medulla of the bumblebee (Apidae: *Bombus impatiens*). J Comp Neurol 513:441–456

(2009) Snell-Rood EC, Papaj DR, **Gronenberg W**: Brain Size: A Global or Induced Cost of Learning? Brain, Behavior, Evolution 73:111-128

(2009) Paulk AC, Dacks AM, Phillips-Portillo J, Fellous J-M, **Gronenberg** W: "Visual processing in the central bee brain" J. Neurosci. 29:9987–9999

(2008) **Gronenberg W**: Structure and function of ant (Hymenoptera: Formicidae) brains: Strength in numbers. Myrmecol. News 11:25-36

(2008) Paulk AC, Phillips-Portillo J,. Dacks AM, Fellous J-M, **Gronenberg W**: The processing of color, motion, and stimulus timing are anatomically segregated in the bumblebee brain. J. Neurosci. 28:6319-6332;

(2008) Paulk AC, **Gronenberg W**: Higher order visual input to the mushroom bodies in the bee, Bombus impatiens. Arthrop Struct Dev 37: 443–458

(2008) DeGrandi-Hoffman G, Lucas T, **Gronenberg W**, Caseman D: Brains and brain components in African and European Honey Bees (Hymenoptera: Apidae) - a volumetric comparison. J Apicult Res 40:141-146

(2007) **Gronenberg W**,. Ash LE, Tibbetts EA Correlation between facial pattern recognition and brain composition in paper wasps. Brain Beh Evol. 71:1-14

(2005) Mares S, Ash L, **Gronenberg W**: Brain allometry in bumblebee and honey bee workers. Brain Behav Evol 66:50-61

(2005) Ramón F, **Gronenberg W**: Electrical potentials indicate stimulus expectancy in the brains of ants and bees. J. Cell. Molec. Neurobiol. 25:313-327

(2004) **Gronenberg W**, López-Riquelme GO: Multisensory convergence in the mushroom bodies of ants and bees. Acta Biologica Hungarica 55:31-37

(2004) Ehmer B, **Gronenberg W:** Mushroom body volumes and visual interneurons in ants: comparison between sexes and castes. **J Comp Neurol** 469:198-213

(2002) Julian GE, **Gronenberg W**: Smaller brains in queen ants. **Brain Behav Evol.** 60:152-164

(2002) Ehmer B, **Gronenberg W**: Segregation of visual input to the mushroom bodies in the honey bee (*Apis mellifera*). **J. Comp. Neurol.** 451: 362-373

(2002) Paul J, **Gronenberg** W: Control of fast and slow muscle fibers in ant mandible muscles**. J Insect Physiol** 48: 255-267

(2001) **Gronenberg W**: Subdivisions of hymenopteran mushroom body calyces by their afferent supply. **J Comp Neurol** 436:474-489

(1999) Paul J, **Gronenberg W**: Optimizing force and velocity: mandible muscle fiber attachments in ants. **J Exp Biol** 202:797-808

(1999) Just S, **Gronenberg W**: The control of mandible movements in the ant *Odontomachus*. **J Insect Physiol** 45: 231-240

(1999) **Gronenberg W**, Schmitz H: Afferent projections of infrared sensitive sensilla in the beetle *Melanophila acuminata* (Coleoptera: Buprestidae). **Cell Tissue Res** 297:311-318

(1999) **Gronenberg W**: Modality-specific segregation of input to ant mushroom bodies. **Brain Behav Evol** 54:85-95

(1999) **Gronenberg W**, Liebig J: Smaller brains and optic lobes in reproductive workers of the ant *Harpegnathos*. **Naturwiss** 86:343-345

(1999) **Gronenberg W**, Hölldobler B: Morphologic representation of visual and antennal information in the ant brain. **J Comp Neurol** 412:229-240

(1998) **Gronenberg W**, Hölldobler B, Alpert GD: Jaws that snap: the mandible mechanism of the ant *Mystrium*. **J Insect Physiol** 44:241-253

(1998) **Gronenberg W**, Hölldobler B: Ants - living in a world of odor and tactile stimuli. **Neuroforum** 98:242-251

(1998) **Gronenberg W**, Brandao CRF, Dietz BH, Just S: Trap-jaws revisited: the mandible mechanism of the ant *Acanthognathus*. **Physiol Entomol** 23: 227-240

(1997) Ehmer B, **Gronenberg W**: Antennal muscles and fast antennal movements in ants. **J Comp Physiol B** 167:287-296

(1997) **Gronenberg W**, Paul J, Just S, Hölldobler B: Mandible muscle fibers in ants: fast or powerful? **Cell Tissue Res** 289:347-361

(1997) Ehmer B, **Gronenberg W**: Proprioceptors and fast antennal reflexes in the ant Odontomachus (Formicidae, Ponerinae). **Cell Tissue Res** 290:153-165

(1996) **Gronenberg W**, Heeren S, Hölldobler B: Age-dependent and task-related morphological changes in the brain and the mushroom bodies of the ant, *Camponotus floridanus*. **J Exp Biol** 119:2011-2019

(1996) **Gronenberg W**: The trap-jaw mechanism in the dacetine ants *Daceton armigerum* and *Strumigenys* sp.. **J Exp Biol** 119:2012-2033

(1996) **Gronenberg W**, Ehmer B: The mandible mechanism of the ant genus *Anochetus* (Hymenoptera, Formicidae) and the possible evolution of trap-jaws. **Zoology** 99:183-192

(1996) **Gronenberg W**: Fast Actions in Small Animals: Springs and Click Mechanisms. **J Comp Physiol** A 178:727-734

(1996) **Gronenberg W**: Neuroethology of Ants. **Naturwiss** 86:15-27

(1995) Gilbert C, **Gronenberg W**, Strausfeld NJ: Oculomotor control in calliphorid flies: head movements during activation and inhibition of neck motor neurons corroborate neuroanatomical predictions. **J Comp Neurol** 361:285-297

(1995) **Gronenberg W**, Milde JJ, Strausfeld NJ: Oculomotor control in calliphorid flies: organization of descending neurons to neck motor neurons responding to visual stimuli. **J Comp Neurol** 361:267-284

(1995) **Gronenberg W**, Ehmer B: Tubular muscle fibers in ants and other insects. **Zoology** 99, 68-80

(1995) **Gronenberg W**: The fast mandible strike in the trap-jaw ant *Odontomachus*: motor control. **J Comp Physiol** A 176:399-408

(1995) **Gronenberg W**: The fast mandible strike in the trap-jaw ant *Odontomachus*: temporal properties and morphological characteristics. **J Comp Physiol** A 176:391-398

(1994) Hölldobler B, Braun U, **Gronenberg W**, Kirchner WH, Peeters C: Trail communication in the ant *Megaponera foetens* (Fabr.) (Formicidae, Ponerinae). **J Insect Physiol** 40:585-593

(1994) **Gronenberg W**, Tautz J: The sensory basis for the trap-jaw mechanism in the ant *Odontomachus bauri*. **J Comp Physiol** 174:49-60

(1993) **Gronenberg W**, Peeters C: Central projections of the sensory hairs on the gemma of the ant *Diacamma*: substrate for behavioral modulation? **Cell and Tissue Res** 273:401-415

(1993) **Gronenberg W**, Tautz J, Hölldobler B: Fast trap jaws and giant neurons in the ant *Odontomachus*. **Science** 262:561-563

(1992) **Gronenberg W**, Strausfeld NJ: Premotor descending neurons responding selectively to local visual stimuli in flies. **J Comp Neurol** 316:87-103

(1991) **Gronenberg W**, Strausfeld NJ: Descending pathways connecting the male-specific visual system of flies to the neck and flight motor. **J Comp Physiol** A 169:413-426

(1990) Strausfeld NJ, **Gronenberg W**: Descending neurons supplying the neck and flight motor of Diptera: organization and neuroanatomical relationships with visual pathways. **J Comp Neurol** 302:954-972

(1990) **Gronenberg W**, Strausfeld NJ: Descending neurons supplying the neck and flight motor of Diptera: Physiological and anatomical characteristics. **J Comp Neurol** 302:973-991

(1990) **Gronenberg W**: The organization of plurisegmental mechanosensitive interneurons in the central nervous system of the wandering spider *Cupiennius salei*. **Cell and Tissue Res** 260:49-61

(1989) **Gronenberg W**: Anatomical and physiological observations on the organization of mechanoreceptors and local interneurons in the central nervous system of the wandering spider *Cupiennius salei*. **Cell and Tissue Res** 258:163-175

(1987) **Gronenberg W**: Anatomical and physiological properties of feedback neurons of the mushroom bodies in the bee brain. **Exp Biol** 46:115-125

(1986) **Gronenberg W**: Physiological and anatomical properties of optical input fibers to the mushroom body in the bee brain. **J Insect Physiol** 32:695-704

Chapters in scholarly books

(2008) **Gronenberg W**, Riveros AJ: Social brains and behavior - past and present. In: J. Gadau, J. Fewell (eds.) Organization of Insect Societies - From genomes to socio-complexity; Harvard University Press pp. 377-401

(1992) Milde JJ, **Gronenberg W**, Strausfeld NJ: The head-neck system of the blowfly *Calliphora*: 2. Functional organization and comparison with the spinx moth *Manduca sexta*. In: A. Berthoz, W. Graf and P.P. Vidal (eds.) **The Head-Neck Motor System**. New York: Oxford Press, pp. 65-

(1987) Erber J, Homberg U, **Gronenberg W** : Functional role of the mushroom bodies in insects. In: A.P.Gupta (ed.), **Arthropod brain**. Wiley, N.Y, pp 485-513

Relevant activities for APR (2018 – 2024)

Service in Neuroscience

NSCS Undergraduate Progress Committee (2017-2022)
NSCSAS (student association) (2015 – 2021) Faculty advisor
Tucson Book Festival: Neuroscience booth (every year)

Service in joint-appointed department(s)

EIS Admissions Committee (2013– 2024)
EIS Executive Committee (2018 2024)

Insect Festival: brain booth (every year)

University service outside Neuroscience (*committees, etc.)*

UBRP: selection committee(2017-2019)

Extramural (*editing)* PLoS ONE Academic editor (2016 – 2024)

Reviewer:

Proc Roy Soc B (6)
J. Comp. Physiol (3)
J. Comp. Neurol. (7)
J. Neurosci (2) PNAS (8)
Arthropod Structure & Development (4)
Naturwissenschaften (3)
J Insect Physiol (2)
Frontiers Neurosci (2)
J Experim Biol (5)
Cell & Tissue Res (2)
Devel. Biol (3)
Current Biol (5)
PLOS (1)
PLOS One (2)
Ann. Entom. Soc. (1)
Brain Behav Evol (1)
Acta Zool. (1)
Nature Comm. (1)

Invited Seminar

Gronenberg W (Nov. 2019) "The 'Social brain Hypothesis' – does it apply to insects?"
Okinawa Institute of Science and Technology Graduate University, Japan

UofA Patent GB2603069 (2024):

"Compositions and methods for cognitive protection of pollinators against pesticides"
together with Andre Riveros (Universidad del Rosario, Bogota, Colombia)

Visiting scientists hosted in your lab

Andre Riveros, Assoc. Prof. in Bogota, Colombia; 5/26 –
8/18/18
Carlos Morantes (grad student from Bogota, Colombia) 12/2/18 – 1/27/19
Marcel Uhrig (grad student internship from U. Konstanz, Germany) 8/29 – 12/15/2018
Irina Sinakevitch (Research Scientist) Fall 2020
Meghan Barrett, postdoc at Drexel University, June 2021, May/June 2022

CHARLES M. HIGGINS

Department of Neuroscience
The University of Arizona
1040 E. 4th Street
Tucson, AZ 85721 USA

higgins@neurobio.arizona.edu
http://thehigginslab.com

Ofc: (520) 621-6604
Lab: (520) 626-4385

EDUCATION

Postdoctoral Research Fellow Mar 1996-Jul 1999
Division of Biology, California Institute of Technology (Caltech) - Pasadena, CA

PhD, Electrical/Computer Engineering Jun 1993
California Institute of Technology - Pasadena, CA

MS (Summa Cum Laude), Electrical/Computer Engineering Jun 1989
Georgia Institute of Technology (Georgia Tech) - Atlanta, GA

BS (with honors), Electrical/Computer Engineering Jun 1987
Louisiana State University - Baton Rouge, LA

Queen Mary College, University of London, England Jan-Jul 1986
LSU Study Abroad Program

ACADEMIC EXPERIENCE

Associate Professor (tenured), Neuroscience *and* Electrical/Computer Engineering Dec 2009-Present
Associate Professor (with tenure), Electrical/Comp. Engineering *and* Neurobiology May 2005-Dec 2009
Assistant Professor, Electrical/Computer Engineering *and* Neurobiology May 2001-May 2005
Assistant Professor, Electrical/Computer Engineering, *University of Arizona*, Tucson Jul 1999-May 2005
Member, Neuroscience Graduate Program
Member, Biomedical Engineering Program
Member, Center for Insect Science

My laboratory has long focused on research in the area of biologically-inspired vision and robotic systems: applying a knowledge of neurobiology to the creation of inexpensive, agile, highly capable robotic sensory and motor control systems. This research extends from modeling and simulation of neural systems through the design of analog and mixed-signal VLSI hardware implementations and intelligent autonomous robots, including those which incorporate both electronic components and living insect brains. Insect vision, and in particular visual motion, has provided a source of inspiration for this research for many years.

Visiting Faculty Member, *University of Adelaide,* Australia. Aug-Sep 2006
Discipline of Physiology, School of Molecular and Biomedical Sciences (O'Carroll laboratory).

During this sabbatical trip, I trained in insect visual electrophysiology, which enabled the course NROS 415 that I currently teach.

Visiting Fellow, Centre for Visual Sciences, *Australian National University* Jun-Jul 2001
Research School of Biological Sciences, Institute of Advanced Studies (Srinivasan laboratory).

I spent this 'mini-sabbatical' in a renowned center for insect visual neuroscience learning about behavioral studies on bees and studying computational methods.

Postdoctoral Research Fellow, Division of Biology, *Caltech* Mar 1996-Jul 1999
Postdoctoral Advisor: Christof Koch

The dual goals of this research were developing biologically-inspired solutions to vision problems of engineering interest, and using VLSI as a high-speed biological modeling substrate. Designed analog VLSI chips for visual motion processing based on models of primate visual cortex.

Research Assistant, Department of Electrical Engineering, *Caltech* Sep 1989-Sep 1993
Doctoral Dissertation: ***Classification and Approximation with Rule-Based Networks***
Advisor: Rodney M. F. Goodman

This research integrated a rule-based knowledge representation with the parallelism and layered structure of artificial neural networks to achieve a learning system which operated with the speed and simplicity of a neural network, but the conclusions of which could be explained in terms of conjunctive rules.

Research Assistant, Department of Electrical Engineering, *Georgia Tech* Sep 1987-Sep 1989
Master's Thesis: ***A Load-Adaptive Scheduler for Hard Real-Time Multiprocessor Op. Systems***
Advisor: Karsten Schwan

This research extended a existing operating system scheduler for hard real-time multiprocessor systems to obtain improved high-load performance by allowing the scheduler to choose between several code modules (with varying runtimes) for each periodic task.

INDUSTRIAL EXPERIENCE

Consultant, *Areté Associates*, Tucson, AZ 2009-2011

Provided expertise on insect-inspired visual navigation, including theoretical analyses and detailed simulations of obstacle avoidance and target interception scenarios.

Consultant, *Physical Sciences, Inc.*, Andover, MA 2002-2003

Performed simulations of biologically-inspired low-level motion detection.

Consultant, *Computational Sensors Corporation*, Santa Barbara, CA 2000-2002

Provided technical advice, theoretical analysis, simulations, and expertise in the area of spatiotemporal frequency based visual motion algorithms for application to missile defense.

Staff Member, *MIT Lincoln Laboratory*, Lexington, MA Sep 1993-Mar 1996

Analyzed radar data collected with the Airborne Seeker Testbed (ASTB), a highly instrumented airborne radar platform which takes the part of a missile in simulated combat encounters. Specialized in super-resolution algorithms. Designed, coded, developed, and flight-tested a real-time ECCM processor for the testbed. *Held a top secret clearance and worked on special programs.*

Programming Consultant, Pasadena, CA (with partner R.M. Goodman) Jan 1992-Jun 1993

Designed, coded, developed and maintained rule-based software to provide a trader with real-time buy/sell suggestions for the S&P 500 index. Trading autonomously via a satellite link, the system made a consistent (but small) profit.

Technical Staff Member, *IBM Cambridge Scientific Center*, Cambridge, MA Summers 1987-1990

Developed simulation code for a message-passing parallel computer system including a low-level hardware simulation and a high-level operational simulation. Designed digital hardware for VLSI implementation of a message-passing parallel computer routing algorithm. Participated in the design of a new highly adaptive and fault-tolerant routing system for a message-passing parallel computer. A U.S. patent was awarded for this work. Designed digital hardware for a high-speed interface card to link the new IBM PS/2 with an IBM 370 architecture mainframe.

HONORS

Innovation in Teaching Award, UA College of Science 2014

Invited "Nifty Fifty" speaker Yearly 2013-2017
USA Science and Engineering Festival, Washington DC

Invited Speaker, TEDxTucson 2013

Award for Excellence at the Student Interface 2000, 2002, 2003, 2009
University of Arizona College of Engineering

Leading Edge Researcher Award, UA Innovation Day March 2008

da Vinci Circle Fellow, UA College of Engineering October 2005

Senior Member, Institute of Electrical and Electronic Engineers May 2004

Outstanding Faculty Member Award 2001
University of Arizona Disability Resource Center

SELECTED SERVICE ACTIVITIES

- **Creator and Chair**, Faculty Senate *Committee on Information Technology*, 2012-2015
- **Chair**, Faculty Senate *Research Policy Committee*, 2010-2015 (member since 2007)
- **Member**, Faculty Senate Executive Committee, 2010-2015
- **Member**, Center for Insect Science Executive Committee, 2010-2013
- **Chair**, Electrical/Computer Eng. Peer Review Committee, 2008-2010
- **Faculty Senator** (elected), U. Arizona, April 2009-2015
- **Chair**, U. Arizona ECE Graduate Recruiting and Awards Committee, 2005-2008
- **Invited tutorial lecturer**, Telluride Workshop on Neuromorphic Engineering 1997-2010

SELECTED MEDIA COVERAGE

1. "Engaging With the Sci-Tech of Self/Lesss Sci-Fi" by By Susan Karlin, *IEEE Spectrum*, July 23, 2015.
2. "'Self/less' returns to movie immortality" by Brian Truitt, *USA TODAY*, July 7, 2015.
3. "Will mind transfer ever happen?", by Erik Sofge, *Popular Science*, July 2015.
4. "RoboCop Tech: Science Fact and Fiction," by Nic Halverson, *Discovery Channel News*, Feb. 11, 2014.
5. "We're About 100 Years Away From a Real RoboCop," by Angela Watercutter, *Wired News*, Feb. 12, 2014.
6. "You Have Already Complied: RoboCop And The All-Too-Feasible Horror Of Brain Hacking," by Erik Sofge, *Popular Science News*, February 12, 2014.
7. "When Do I Get My RoboCop? Power before Superpowers," by Patrick Tucker, *The Futurist Magazine*, volume 48, number 2, February 2014.
8. "RoboCop: When Will Cyborgs Walk Among Humans?" by Denise Chow, *LiveScience News*, February 11, 2014.
9. Guest on Michio Kaku's radio show "Science Fantastic," February 2014.
10. "TED Talk analyzes sleep patterns," by Zane Johnson, *The Daily Wildcat*, September 26, 2013.
11. "The science of Sony's 'Elysium': This is your brain on robotics," by John R. Quain, Fox News, August 9, 2013.
12. "How Long until We Have the Superhuman Exoskeletons from Elysium? A roboticist-neuroscientist explains," by David Biello, *Scientific American Magazine*, Aug 7, 2013.
13. "Researchers study bee brains to develop flying robots," by Sharon Gaudin, *Computer World*, October 2, 2012.
14. "The Neuroscience of 'Source Code': Mind Your Brain, Soldier," by Valerie Ross, *Discover Magazine*, April 6, 2011.
15. " 'Limitless' and 'Source Code' science not as outlandish as you'd think," by Patrick Kevin Day, *Los Angeles Times*, April 1, 2011.
16. "Living insects become 'eyes' for robots," by Charles M. Higgins, *Arizona Daily Star* (special supplement), November 14, 2010.
17. "The fly who bugged me," by Jessica Marshall, *New Scientist*, March 8, 2008.
18. Radio Interview on *'Fair Game' from Public Radio International* with Faith Salie, December 3, 2007.
19. "Scientists put moth on wheels and let the robotic times roll", by Denise Gellene, *Los Angeles Times*, November 7, 2007.
20. "Moth-based robot may lead to 'hybrid' computers," by Sharon Gaudin, *Computer World*, December 10, 2007.
21. "Flight of the Insecti-Blimp," Daily Planet television show, *The Discovery Channel*, December 15, 2004.

PATENTS

1. C. Higgins (for the University of Arizona), *Systems and Methods for Monitoring Brain Activity, Providing Neurofeedback, and Determining Sleep Quality*, U.S. patent application 61/900213, filed November 5, 2014.
2. A. Frey, J. Gould, and C. Higgins (for IBM Corporation), *Adaptive Routing in a Parallel Computing System*, U.S. patent number 5181017, January 1990.

PUBLICATIONS

JOURNAL ARTICLES

1. C. Higgins, S.H. Vishwanath, F. McCarthy, M. Gordon, B. Peter, and J. Miller, "Normative Aging Results in Degradation of Gene Networks in a Basal Ganglia Nucleus Dedicated to Vocal Behavior," *In press*, Neurobiology of Aging, 2024.
2. B. Northcutt, J. Dyhr, and C. Higgins, "An insect-inspired model for visual binding I: learning objects and their characteristics," Biological Cybernetics 111(2) 185-206, 2017.
3. B. Northcutt and C. Higgins, "An insect-inspired model for visual binding II: functional analysis and visual attention," Biological Cybernetics 111(2) 207-227, 2017.
4. V. Pant and C. Higgins, "Tracking improves performance of biological collision avoidance models," Biological Cybernetics 106(4): 307-322, 2012.
5. Z. Rivera-Alvidrez, I. Lin, and C. Higgins, "A Neuronally-Based Model of Contrast Gain Adaptation in Fly Motion Vision," Visual Neuroscience 28(5): 419-431, 2011.
6. J. Dyhr and C. Higgins, "Non-directional motion detectors can be used to mimic optic flow dependent behaviors," Biological Cybernetics 103: 433-446, 2010.
7. J. Dyhr and C. Higgins, "The spatial frequency tuning of optic flow dependent behaviors in the bumblebee *Bombus impatiens*," Journal of Experimental Biology 213 (10): 1643-50, May 2010.
8. E. Ozalevli, P. Hasler, and C. Higgins, "Winner-Take-All based Visual Motion Sensors," IEEE Transactions on Circuits and Systems II, vol. 53, no. 8, pp. 717–721, 2006.
9. T. Melano and C. Higgins, "The neuronal basis of direction selectivity in lobula plate tangential cells," Neurocomputing 65-66, pp 153-159, 2005.
10. Z. Rivera-Alvidrez and C. Higgins, "Contrast saturation in a neuronally-based model of elementary motion detection," Neurocomputing 65-66, pp. 173-179, 2005.
11. C. Higgins, V. Pant, and R. Deutschmann, "Analog VLSI implementation of spatio-temporal frequency tuned visual motion algorithms," IEEE Transactions on Circuits and Systems I, vol 52, no. 3, pp. 489-502, March 2005.
12. E. Ozalevli and C. Higgins, "Reconfigurable Biologically-Inspired Visual Motion Systems using Modular Neuromorphic VLSI chips," IEEE Transactions on Circuits and Systems I, vol. 52, no. 1, pp 79-92, January 2005.
13. C. Higgins and V. Pant, "A biomimetic VLSI sensor for visual tracking of small moving targets," IEEE Transactions on Circuits and Systems I, Vol. 51, No. 12, pp. 2384-2394, December 2004.
14. C. Higgins and V. Pant, "An elaborated model of fly small target tracking," Biological Cybernetics, vol. 91, no. 5, pp. 326-332, November 2004.
15. C. Higgins, "Non-directional motion may underlie insect behavioural use of image speed," Biological Cybernetics, vol. 91, no. 5, pp. 326-332, November 2004.
16. C. Higgins, J. Douglass, and N. Strausfeld, "The computational basis of an identified neuronal circuit for elementary motion detection in dipterous insects," Visual Neuroscience, vol. 21, no. 4, pp. 567-586, July 2004.
17. C. Higgins, and S. Shams, "A Biologically-Inspired Modular VLSI System for Visual Measurement of Self-Motion," *IEEE Sensors Journal* special issue on Integrated Multi-Sensor Systems and Signal Processing, 2(6), pp. 508–528, December 2002.
18. C. Higgins, "Sensory architectures for biologically-inspired autonomous robotics," *The Biological Bulletin*, pp. 235–242, April 2001.
19. C. Higgins and C. Koch, "A Modular Multi-Chip Neuromorphic Architecture for Real-Time Visual Motion Processing," *Analog Integrated Circuits and Signal Processing*, 24(3), pp. 195–211, September 2000.
20. C. Higgins, R. Deutschmann, and C. Koch, "Pulse-Based 2D Motion Sensors," *IEEE Transactions on Circuits and Systems II*, 46(6), 677-687, June 1999.
21. C. Higgins and R. Goodman, "Fuzzy Rule-Based Networks for Control," *IEEE Transactions on Fuzzy Systems,* vol. 2, no. 1, February 1994.
22. R. Goodman, C. Higgins, J. Miller, and P. Smyth, "Rule-Based Networks for Classification and Probability Estimation," *Neural Computation*, vol. 4, no. 6, November 1992.

BOOK CHAPTERS

1. N. J. Strausfeld, J. K. Douglass, H. Campbell, and C. Higgins, "Parallel Processing in the Optic Lobes of Flies and the occurrence of motion computing circuits," pages 349-398 in *Invertebrate Vision*, Eric Warrant and Dan-Eric Nilsson, Editors, Cambridge University Press, 2006.

CONFERENCE PUBLICATIONS

1. C. Higgins and J.E. Miller, "Altered Basal Ganglia Gene Networks for Vocal Function in Normative Aging and Parkinsons Disease", Poster presentation for the Arizona Alzheimers Consortium Conference, Tempe, AZ, September 2023.
2. T. Pham, and C. Higgins, "A visual motion detecting module for dragonfly-controlled robots," Proceedings of the Annual International Conference of the Engineering in Medicine and Biology Society (EMBC) 2014, pp.1666-1669, Aug. 2014.
3. V. Pant and C. Higgins, "A Biomimetic Focal Plane Speed Computation Architecture," in Proceedings of the Computational Optical Sensing and Imaging (COSI) conference, Vancouver, BC, Canada, June 18-20, 2007.
4. L. Johnson and C. Higgins, "A Navigation Aid for the Blind Using Tactile-Visual Sensory Substitution," in Proceedings the 28th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC '06), pp 6298-6292, New York, NY, USA, 2006.
5. V. Pant and C. Higgins, "A Biomimetic VLSI Architecture for Small Target Tracking," in Proceedings of the International Symposium on Circuits and Systems (ISCAS '04), Vancouver, BC, Canada, 2004.
6. E. Ozalevli and C. Higgins,"Multi-Chip Implementation of a Biomimetic VLSI Vision Sensor Based on the Adelson-Bergen Algorithm," International Conference on Artificial Neural Networks, Istanbul, TURKEY, June 26-29, 2003.
7. C. Higgins, "Information Fusion in the Dipteran Flight Navigation System," Proceedings of the NASA/ONR conference *Combating Uncertainty with Fusion*, the Marine Biological Laboratory, Woods Hole, MA, April 2002.
8. C. Higgins, T. Vaneck, P. Joshi, and N. J. Strausfeld, "A Model for Directional Selectivity in an Insect based on Non-directional Motion Cells and Appropriate to Cross Phyla Comparisons," Society for Neuroscience annual meeting 2001.
9. Charles M. Higgins, "A Computational Model of Dipteran Elementary Motion Detection," (abstract) in Proceedings of the International Conference on Invertebrate Vision, Bäckaskog Castle, Sweden, August 7-12, 2001.
10. C. Higgins and S. A. Shams, "A Neuromorphic Vision Processor for Spatial Integration of Optical Flow," the *Fifth International Conference on Cognitive and Neural Systems*, Boston, MA, June 2001.
11. C. Higgins and S. Korrapati, "An Analog VLSI Motion Energy Sensor Based on the Adelson-Bergen Algorithm," in Proceedings of the *International ICSC Symposium on Biologically-Inspired Systems*, Wollongong, Australia, December 12-15, 2000.
12. C. Higgins, "Sensory Architectures for Biologically-Inspired Autonomous Robotics," Proceedings of the NASA/ONR conference *Invertebrate Sensory Information Processing: Implications for Biologically-Inspired Autonomous Systems*, the Marine Biological Laboratory, Woods Hole, MA, April 2000.
13. C. Higgins and C. Koch, "Multi-Chip Neuromorphic Motion Processing," *the 1999 Conference on Advanced Research in VLSI*, Atlanta, GA.
14. C. Higgins and C. Koch, "An integrated vision sensor for the computation of optical flow singular points," *Advances in Neural Information Processing Systems 11*, MIT Press, Denver, CO, 1999.
15. R. Deutschmann, C. Higgins, and C. Koch, "Real-Time Analog VLSI Sensors for 2-D Direction of Motion," *Proceedings of ICANN'97*, Lausanne, Switzerland, October 1997.
16. R. Deutschmann, C. Higgins, and C. Koch, "Neuromorphic Analog VLSI Sensors for 2-D Direction of Motion," *Proc. of the 4th Joint Symposium on Neural Computation*, University of Southern California, Los Angeles, CA, 1997.
17. C. Higgins and C. Koch, "Analog CMOS Velocity Sensors," *Proceedings of Electronic Imaging '97* (SPIE volume 3019), San Jose, CA, February 1997.
18. R. Goodman and C. Higgins, "Learning Fuzzy Rule-Based Neural Networks for Control," *Advances in Neural Information Processing Systems 5*, Morgan Kaufmann: San Mateo, CA, 1993.
19. C. Higgins and R. Goodman, "Incremental Learning with Rule-Based Neural Networks," *Proceedings of the International Joint Conference on Neural Networks*, Seattle, WA, vol. 1, 875-80, July 1991.

20. R. Goodman and C. Higgins, "Incremental Rule–Based Learning," *Proceedings of 1991 IEEE International Symposium on Information Theory*, Budapest, Hungary, June 23-28, 1991.
21. R. Goodman, C. Higgins, J. Miller and P. Smyth, "A Rule-Based Approach to Neural Network Classifiers," *Proceedings of INNC 90 Paris*, Palais Des Congres, Paris, France, July 9-13, 1990.
22. R. Goodman, C. Higgins and P. Smyth, "A Hybrid Rule-Based/Bayesian Classifier," *Proceedings of the European Conference on Artificial Intelligence*, December 14, 1989.

DISSERTATIONS / THESES

1. J. Green, "Evaluation of an automatic sleep scoring algorithm in Matlab," Senior thesis, Program in Neuroscience and Cognitive Science, The University of Arizona, December 2019.
2. B. Northcutt, "Biologically Inspired Algorithms for Visual Navigation and Object Perception in Mobile Robotics," PhD dissertation, Department of Electrical and Computer Engineering, The University of Arizona, December 2015.
3. T. Pham, "A real-time neural signal processing system for dragonflies", MS thesis, Department of Electrical Engineering, The University of Arizona, December 2011.
4. T. Melano,"Insect-Machine Interfacing", PhD dissertation, Program in Biomedical Engineering, The University of Arizona, January 2011.
5. I. Lin, "A Biologically Realistic Model of Fly Elementary Motion Detection," MS thesis, Department of Electrical and Computer Engineering, The University of Arizona, June 2010.
6. J. Dyhr, "Behavioral and theoretical evidence that non-directional motion detectors underlie the visual estimation of speed in insects," PhD dissertation, Program in Neuroscience, The University of Arizona, December 2009.
7. V. Pant, "Biomimetic Visual Navigation Architectures for Autonomous Intelligent Systems," PhD Dissertation, Department of Electrical and Computer Engineering, *The University of Arizona*, November 2007.
8. L. Ortiz, "A Mobile Electrophysiology Board for Autonomous Biorobotics," MS thesis, Department of Electrical and Computer Engineering, *The University of Arizona*, December 2006.
9. A. Muthu-Natarajan, "Adaptive Spatio-Temporal Filters for Infrared Target Detection," MS thesis, Department of Electrical and Computer Engineering, *The University of Arizona*, November 2005.
10. Z. Rivera-Alvidrez, "Computational modeling of neurons involved in fly motion detection," MS thesis, Department of Electrical and Computer Engineering, *The University of Arizona*, August 2005.
11. C. V. Anderson, "Estimation of muscle activity using probability density functions and Bayes' theorem," MS thesis, Department of Electrical and Computer Engineering, *The University of Arizona*, April 2004.
12. V. Pant, "Modular Neuromorphic VLSI Architectures for Visual Motion and Target Tracking," MS thesis, Department of Electrical and Computer Engineering, *The University of Arizona*, June 2003.
13. E. Ozalevli, "Analog VLSI Implementations of Visual Motion Sensors and a Neuromorphic Obstacle Avoidance System," MS thesis, Department of Electrical and Computer Engineering, *The University of Arizona*, May 2003.
14. S. Korrapati, "An Analog VLSI Motion Energy Sensor and its Applications in System Level Robotic Design," MS thesis, Department of Electrical and Computer Engineering, *The University of Arizona*, August 2001.

SELECTED INVITED TALKS

1. "Accidental Image Understanding," *MARC Seminar Talk*, October 2018.
2. "The fly that drove a robot," at the *Telluride Neuromorphic Cognition Workshop*, June 2016.
3. "Insect-inspired visual navigation and object-level processing," at the *Bio-inspired Unmanned Aerial Systems/State of the Art (BioUAS SOAR5) meeting*, May 2014.
4. "Chronic Monitoring of Human Sleep," *TEDxTucson talk*, September 2013.
5. "A computational architecture for cognition," U. Arizona *Center for Insect Science Hexapodium*, November 2011.
6. "Visual speed estimation in bees", Air Force Research Laboratory *Topical Meeting on Biologically-Inspired Guidance, Navigation and Control*, Eglin AFB, May 2011.
7. "Interfacing insect brains to mobile robots," *International Conference on Invertebrate Vision*, Backaskög Castle, Sweden, August 2008.

8. "Reverse-Engineering the Fly," *Neuromorphic Cognition Engineering Workshop*, Telluride, CO, July 2008.
9. "Interfacing Living Sensory Systems to Mobile Robots," *Caltech Department of Electrical Engineering Seminar Series*, May 2008.
10. "From bio-inspired to bio-electronic neuromorphic systems," US intelligence community *Workshop on Neuromorphic Computing*, Washington, DC, April 2008.
11. "Interfacing Living Neuronal Systems to Robotic Devices," *Joint Workshop on Computational Neuroscience*, Adelaide, SA, Australia, December 2007.
12. "Reverse-Engineering the Fly: An Engineer's Approach to the Fly Visual System," *Telluride Neuromorphic Engineering Workshop*, July 2007.
13. "A Neuronal Model of Insect Visual Motion Processing," HHMI Janelia Farms Research Campus *Visual Processing Workshop*, Washington, DC, May 2007.
14. "Simpler Nervous Systems," National Geophysical Intelligence Agency (NGA) *Neuroscience-Enabled Computer Vision Workshop*, Washington, DC, February 2007.
15. "Insect Visual Navigation: From Computational Models to Biorobotics," *Australian National University, Center for Visual Sciences*, Canberra, ACT, Australia, September 2006.
16. "Insect-Inspired Visual Navigation Algorithms and Robotic Implementations," *Gordon Research Conference on Neuroethology,* Magdalen College, Oxford University, Oxford, England, August 2005.
17. "Visual tracking of small targets by the fly: modeling and applications", *Insect Sensors and Robotics Workshop* (invitation only), Brisbane, Australia, 23-26 August 2004.
18. "Visual target tracking based on fly FD cells," invited tutorial at the *Telluride Workshop on Neuromorphic Engineering*, Telluride, CO, July 2004.
19. "Biomimetic Visual Navigation," *Robotics Institute, Carnegie Mellon University*, May 2003.
20. "Information Fusion in the Dipteran Flight Navigation System," NASA/ONR conference entitled *Combating Uncertainty with Fusion*, the Marine Biological Laboratory, Woods Hole, MA, April 2002.
21. "Analysis of Insect Visual Motion Processing and its Application to a Biomimetic Navigation and Tracking System," *Naval Air Warfare Center – Weapons Division*, China Lake, CA, December 2001.
22. "Biomimetic VLSI Architectures for Real-time Visual Motion Processing," *Research School of Biological Sciences, Australian National University*, Canberra, Australia, December 2000.
23. "Vision Architectures for Biomimetic Autonomous Robotics," *Telluride Workshop on Neuromorphic Engineering*, Telluride, CO, July 2000.
24. "Sensory Architectures for Biologically-Inspired Autonomous Robotics," NASA/ONR conference entitled *Invertebrate Sensory Information Processing: Implications for Biologically-Inspired Autonomous Systems*, the Marine Biological Laboratory, Woods Hole, MA, April 2000.
25. "Neuromorphic Vision Systems: Inspiration for VLSI from Neurobiology," *Physical Sciences Incorporated*, Andover, MA, March 2000.
26. "Neuromorphic Vision Systems," *IEEE Northern California LEOS Society* meeting, Santa Clara, CA, January 1999.

PERSONAL INTERESTS

Tang Soo Do (second degree black belt), Kenpo karate, guitar, mountain biking, swing dancing, sailing.

CURRICULUM VITAE 4/2023

John G. Hildebrand

Department of Neuroscience
College of Science
University of Arizona
PO Box 210077
Tucson AZ 85721-0077

Telephone: (520) 621-6626
Fax: (520) 621-8282
Email: jhildebr@email.arizona.edu
Website: https://neurosci.arizona.edu/person/john-hildebrand-phd
Spouse: Gail D. Burd, Ph.D.

Education

1964 A.B. Harvard University (Biology – mentors: John Law & Konrad Bloch)
1966 Harvard Medical School, summer training program in general pathology
1969 Ph.D. Rockefeller University (Biochemistry – mentors: Leonard Spector & Fritz Lipmann)
1969-71 Postdoctoral Fellow, Harvard Medical School, Department of Neurobiology (mentor: Edward Kravitz)
1977 Cold Spring Harbor Laboratory course, Methods in Cellular Neurophysiology
1993 DNA Methods Course, University of Arizona Division of Biotechnology

Employment

Present Positions

2022-now Regents Professor Emeritus of Neuroscience
2014-now International Secretary, U.S. National Academy of Sciences
2010-now Honors Professor, University of Arizona

Previous Positions

1989-2022 Regents Professor, University of Arizona
1985-2022 Professor of Neuroscience, Chemistry & Biochemistry, Ecology & Evolutionary Biology, Entomology, and Molecular & Cellular Biology, University of Arizona
2009-13 founding Head, Dept. of Neuroscience (formerly Division of Neurobiology), Univ. of Arizona
2010-12 Chairman, Executive Committee, UA School of Mind, Brain and Behavior
1986-97 Chairman, UA Committee on Neuroscience, University of Arizona
1985-2009 founding Director, Arizona Research Laboratories Division of Neurobiology, Univ. of Arizona
1981-86 Adjunct Professor, Rockefeller University
1980-85 Professor of Biological Sciences, Columbia University
1980-81 Visiting Professor of Neurobiology, Harvard Medical School
1980-97 Associate in Behavioral Biology, Museum of Comparative Zoology, Harvard University
1977-80 Associate Professor of Neurobiology, Harvard Medical School
1972-77 Assistant Professor of Neurobiology, Harvard Medical School
1970-80 Tutor in Biochemical Sciences, Department of Biochemistry and Molecular Biology and Eliot House, Harvard University
1970-71 Instructor in Neurobiology, Harvard Medical School

Honors

Academies and Learned Societies

2022 Elected Fellow, The World Academy of Sciences
2019 Elected Corresponding Member, Brazilian Academy of Sciences
2014 Elected Member, American Philosophical Society
2011 Elected Foreign Member, Royal Norwegian Society of Sciences and Letters (Trondheim)
2007 Elected Member, U.S. National Academy of Sciences
2001 Elected Fellow, American Academy of Arts and Sciences
1999 Elected Foreign Member, Norwegian Academy of Science and Letters (Oslo)
1998 Elected Member, German National Academy of Sciences ‘Leopoldina’

Honorary Degree

2000 *Laurea honoris causa*, Universitá degli Studi di Cagliari, Italy

Other Awards, Prizes, and Other Honors

2022 Elected Fellow, International Science Council
2016 Wigglesworth Memorial Award & Lectureship, Royal Entomological Society, London
2015 Nu Rho Psi, the National Honor Society in Neuroscience (elected faculty member)
2014 Galileo Circle Fellow, University of Arizona College of Science
2013 University of Arizona Graduate Interdisciplinary Programs Honored Faculty Award
2012 Fellow, International Society for Neuroethology
2012 Honorary Fellow, Royal Entomological Society of London
2012 AChemS Max Mozell Award for Outstanding Achievement in the Chemical Senses
2011 Westlake Friendship Award ("the highest award given to foreign experts by the government of Zhejiang Province," P.R. China)
2009 Honorary Professor, Wenzhou Medical College, Wenzhou, Zhejiang, P.R. China
2008 Fellow, Entomological Society of America
2008 Einstein Professorship, Chinese Academy of Sciences, P.R. China
2006 Lifetime Achievement Award, Am. Psychol. Assoc., Diversity Program in Neuroscience
2006 Outstanding Service Award for Contributions to the Biological Sciences, AIBS
2006 Henry and Phyllis Koffler Prize for Research/Scholarship/Creative Activity, Univ. of Arizona
2006 Silver Medal, International Society of Chemical Ecology (ISCE's highest award)
2005 Kerry-Manheimer Award, Monell Chemical Senses Center, Philadelphia, PA
2000 University of Arizona Mortar Board National Senior Honor Society Faculty Award
1997 Humboldt Research Award, Alexander von Humboldt-Stiftung, Germany
1997 IFF Award for Innovative Research in the Chemoreception Sciences
1997 Founders Memorial Award, Entomological Society of America
1991 Wellcome Visiting Professorship, Meharry Medical College, Nashville, TN
1990 Max Planck Research Award of the Max-Planck-Gesellschaft & A. von Humboldt-Stiftung
1990 R.H. Wright Award in Olfactory Research
1989 Awarded Regents Professorship, University of Arizona
1986 Elected Fellow, American Association for the Advancement of Science (AAAS)
1986 MERIT Award, NIAID, NIH
1986 Javits Neuroscience Award, NINCDS, NIH (later changed to Pepper Award, NIDCD)
1984 Elected Fellow, Royal Entomological Society (London)
1973-77 Alfred P. Sloan Foundation Postdoctoral Research Fellowship
1972-77 Established Investigatorship of the American Heart Association
1969-72 Helen Hay Whitney Foundation Postdoctoral Research Fellowship
1967 Elected to Sigma Xi, Rockefeller University
1964 Elected to Phi Beta Kappa, Harvard College
1964 A.B. *Magna cum laude*, Harvard College

Honorific Lectureships

2017 James C. Smith Lecturer, Florida State University, Tallahassee, FL
2014-16 Sigma Xi Distinguished Lecturer
2012 Distinguished Lecturer, Max-Planck-Institut für Neurobiologie, Munich (Martinsried), Germany
2012 Lawrence Gilbert Distinguished Lecturer, Univ. of North Carolina
2012 2012 Walter F. Heiligenberg Lecturer, Univ. California-San Diego
2011 First Hector Maldonado Memorial Lecturer, Argentinian Society for Neuroscience (SAN)
2011 Siemens Stiftung Lecturer, Munich, Germany
2009-10 Phi Beta Kappa Visiting Scholar
2009 Martinez-Townsel Lecturer, Marine Biological Laboratory, Woods Hole, MA
2008 Charles Doane Lecturer, University of Wisconsin, Madison, Dept. of Entomology
2008 Grass Foundation Lecturer, South East Nerve Net annual meeting, Atlanta
2007 Ernst Florey Lecture, International Society for Invertebrate Neurobiology, Hungary

2007 Neuroscience Distinguished Lecturer, Colby College, Waterville, ME
2007 Edward A. Kravitz Lecturer, Marine Biological Laboratory, Woods Hole, MA
2006 Silver Medal Lecture, International Society of Chemical Ecology
2005 Mastertaste-Manheimer Lecturer, Monell Chemical Senses Center, Philadelphia
2004 Cajal Lecturer, Cajal Institute, Madrid, Spain
2003 Bobby Pass Student Choice Speaker, Dept. of Entomology, University of Kentucky
2003 Padykula Lecturer, Wellesley College, Wellesley, MA
2003 Class of 1960 Neuroscience Scholar Lecturer, Williams College, Williamstown, MA
2002 Grandpierre Memorial Lecturer, Dept. of Chemistry, Columbia University
2001 Alfred M. Boyce Lecturer, University of California - Riverside
1999 Grass Foundation Lecturer, Eastern Nerve Net annual meeting, Woods Hole, MA
1998 Grass Foundation Lecturer, Halifax, NS, Chapter, Society for Neuroscience
1995 Felix Santschi Lecturer, Universität Zürich, Switzerland
1995 Kenneth D. Roeder Memorial Lecturer, Tufts University
1995 King Solomon Lecturer, Hebrew University, Jerusalem
1992 Jan de Wilde Memorial Lecturer, University of Wageningen, Netherlands
1992 Distinguished Lecturer, Boyce Thompson Institute, Cornell University
1991 D.T. Rolf Lecturer, Meharry Medical College, Nashville, TN
1990 Spencer Memorial Lecturer, University of British Columbia
1988 Grass Foundation Lecturer, Central Illinois Chapter, Society for Neuroscience
1986 Ralph W. Gerard Lecturer in Neurosciences, University of California – Irvine
1985 Givaudan Lecturer, Association for Chemoreception Sciences
1985 Lang Lecturer, Marine Biological Laboratory, Woods Hole, MA

Memberships in Professional Scientific Societies

American Association for the Advancement of Science (AAAS, Fellow)
American Chemical Society (recognized for more than 50 years of membership)
American Institute of Biological Sciences (AIBS)
American Physiological Society
American Society for Biochemistry and Molecular Biology
Animal Behavior Society
Association for Chemoreception Sciences (AChemS; past President)
Entomological Society of America (Fellow)
Faculty for Undergraduate Neuroscience (FUN)
International Society of Chemical Ecology (past President)
International Society for Neuroethology (Fellow; past President)
Royal Entomological Society (UK, Fellow; awarded Honorary Fellowship in 2012)
Society for Integrative and Comparative Biology (SICB)
Society for Neuroscience (past Treasurer)

Other Professional Positions and Service

Academies and Learned Societies *[NOTE: "NAS" is National Academy of Sciences; "NASEM" is the National Academies of Sciences, Engineering and Medicine, formerly NRC]*

2022-now member, Advisory Committee, InterAcademy Partnership (IAP)
2021-now member, Oversight Committee, NASEM New Voices in Sciences, Engineering and Medicine
2021-now member, Oversight Committee for the NASEM US-Africa Frontiers in Science, Engineering, and Medicine
2020-now member, NASEM Roundtable on Global Science Diplomacy
2019-now ex-officio member, NASEM Board on Research Data and Information (BRDI)
2018-now NAS Council Development Committee
2018-now member, Steering Committee, American Academy of Arts & Sciences project "Challenges for International Scientific Partnerships"
2017-19 member, NAS Campaign Planning Group

2017-now member, Patrick Suppes Prize Selection Committee in Psychology, American Philosophical Society
2015-now chair, Oversight Committee for the NASEM Arab-American Frontiers in Science, Engineering, and Medicine
2014-20 member, Class II Committee, American Philosophical Society
2014-now member, Lashley Prize Committee, American Philosophical Society
2014-now member, Board of the NASEM Committee on Human Rights
2014-now member, NASEM Committee for Division on Earth and Life Studies
2014-now member, NASEM Committee for Division of Policy and Global Affairs
2014-now member, NAS Committee on International Security and Arms Control (CISAC)
2014-now member, NASEM Committee on International Programs
2014-now chair, NAS Council Committee on International Affairs
2014-now member, NASEM Board on International Scientific Organizations
2014-now elected International (previously Foreign) Secretary, National Academy of Sciences
2014-now member, NAS Council Executive Committee
2013-now member, NASEM Committee on Science, Engineering, Medicine & Public Policy (COSEMPUP)
2013-15 member, NASEM Board on Life Sciences
2013-now American Academy of Arts & Sciences Affiliate representative to the AAAS
2013-now member, NAS Committee on Publications
2012-now NAS Council Committee on Scientific Programs
2012-14 NAS Council Committee on Membership Affairs
2012-14 elected member, NAS Council
2011-14 member, NAS Temporary Nominating Group (Class VI)
2009-now NAS representative to IBRO Governing Council
2008 member, NAS Nominating Committee
2004-10 co-chair, Committee on Science in the Liberal Arts Curriculum, Am. Acad. Arts & Sciences
2003-22 member, Committee on Studies & Publications, American Academy of Arts & Sciences
1991 member, NAS Advisory Panel for *The Infinite Voyage*
1984-85 invited workshop participant, NAS Committee on Models in Biomedical Research

Scientific Societies, Agencies, etc.

2022-now member, Committee for Outreach and Engagement, International Science Council (ISC)
2020-22 elected member, AAAS Committee on Nominations
2019-22 member, Committee for Science Planning (CSP), International Science Council (ISC)
2018-22 member, Scholarships to Enhance and Empower Diversity (SEED) Neuroscience Committee, American Psychological Association
2016 Co-Organizer and Co-Chair, Vector Biology Session, 2016 World Life Science Conference of the China Association of Science & Technology (CAST), Beijing
2014-20 Chair, Nominating Committee, IBRO
2013-14 member, Annual Meeting Program Committee, International Society of Chemical Ecology
2013-14 Co-Chair, Academic Committee, Tenth Conference of the Chinese Assoc. of Chem. Ecology
2013-18 member, Society for Neuroscience Finance Committee
2010-14 Soc. for Neuroscience representative to the FENS-IBRO Neuroscience Schools Committee
2008-19 member, US/Canada Regional Committee of IBRO
2007-12 Councilor, International Society for Neuroethology
2005-10 Chairman, Membership Committee, International Society for Neuroethology
2004-06 member, Education Committee, International Society for Neuroethology
2004-05 Chairman, Section on Neuroscience, AAAS (Chairman-Elect, 2003-04)
2002-09 member, International Affairs Committee, Society for Neuroscience (also the US/Canada Regional Committee of IBRO)
2002-03 President, Association for Chemoreception Sciences (AChemS)
2001-10 Chairman, Board of Schools, International Brain Research Organization (IBRO)
1999-2002 member, Council of the Gordon Research Conferences
1998-99 Chairman, Electorate Nominating Committee, AAAS Section on Neuroscience

1998-2001 member, Social Issues Committee, Society for Neuroscience
1998-99 President, International Society of Chemical Ecology (Vice President, 1997-98)
1998 member, Gerard Prize Selection Committee, Society for Neuroscience
1997-99 Founding Chairman, Gordon Research Conference on Neuroethology (Oxford, 1999)
1995-98 President, International Society for Neuroethology (Past-President, 1998-2001)
1995-98 Member-at-Large, Neuroscience Section Steering Group, AAAS
1995 Organizer and Chairman, Ciba Foundation/WHO Symposium on Mosquito Olfaction
1993-97 member, Publications Committee, Society for Neuroscience
1993-2022 member, Dana Alliance for Brain Initiatives, Dana Foundation
1993-95 Councilor, Association for Chemoreception Sciences
1993-98 Chair, Committee on Developing Countries, Assoc. of Neurosci. Depts. & Programs
1992-94 Treasurer-Elect (1992-93) and Treasurer (1993-94), Society for Neuroscience
1992-93 Chair, International Brain Research Organization Committee on Developing Countries
1991-99 Councilor, International Society for Invertebrate Neurobiology
1990-92 Chair, International Program Committee, 3rd International Congress of Neuroethology
1990-93 member, Government and Public Affairs Committee, Society for Neuroscience
1990-2009 member, Advisory Committee, APA/ANDP/NIMH Diversity Program in Neuroscience
1989-90 member, Selection Committee, Young Investigator Award, Society for Neuroscience
1989 member, Prize Committee, International Society for Neuroethology
1989-92 member, Steering Committee, Complex Systems Summer School, Santa Fe Institute
1988-89 President, Association of Neuroscience Departments and Programs (ANDP)
1988-89 member, International Program Committee, 2nd International Congress of Neuroethology
1987-90 Chairman, Membership Committee, Society for Neuroscience
1986-87 member, Program Committee, Association for Chemoreception Sciences
1986-88 member, Program Committee, American Society for Neurochemistry
1982-83 Chairman, Program Committee, Society for Neuroscience
1979-80 member, Nominating Committee, Society for Neuroscience
1978-81 member, Program Committee, Society for Neuroscience

Editorial Boards

2006-10 *TheScientificWorld Journal*
2003-05 *Neuroscience Letters*
2001-16 *Journal of Chemical Ecology*
2000-14 *Journal of Insect Science*
1997-2013 *Chemoecology*
1994-2020 *Invertebrate Neuroscience*
1990-2021 *Journal of Comparative Physiology A*
1989-95 *Journal of Comparative Neurology*
1989-92, '96-03 *Journal of Neurophysiology*
1988-89 *Journal of Experimental Biology*
1986-93 *Journal of Insect Behavior*
1983-94 *International Journal of Insect Morphology and Embryology*
1983-90 *Archives of Insect Biochemistry and Physiology*
1983-2013 *Quarterly Review of Biology*
1981-89 *Journal of Neurochemistry*
1981-91 *Trends in Neurosciences*
1981-91 *Annual Review of Neuroscience*
1981-84 *Neuroscience Commentaries* (Editor)
1980-88 *Journal of Neuroscience* (Section Editor, Developmental Neuroscience, 1983-88)
1977-90 *Insect Biochemistry*

Federal Government Agencies

2009-12 member, Alan T. Waterman Award Selection Committee, NSF
2007 member, Workshop on Neuroscience and the Physical Sciences, NSF

1995-96 Co-Chairman, Special Committee to Review Training Programs, NINDS-NIH
1994 Chairman, Program Project Site Visit Team, Morehouse Medical School, NINDS
1992 member, Invertebrate Zoology Task Group, NSF
1989-91 Chairman, Advisory Committee for Biological, Behavioral & Social Sciences, NSF
1989 member, Oversight Review Committee, Div. of Behavioral & Neural Sciences, NSF
1986-88 member, Committee on Recommendations for U.S. Army Basic Scientific Research
1983 member, Neuroscience Workshop, Office of Technology Assessment, U.S. Congress
1983 member, Neurobiology Program Review Committee, NSF
1974-77 member, Advisory Panel for Neurobiology, NSF

Foundations

2005-06 member, Presidential Advisory Panel for Research, The Research Corporation
2001-07 Trustee, Grass Foundation
1992-10 member, Prize Selection Committee, Capranica Foundation (Chair every third year)
1985 Overseer for Grass Fellows Program, Grass Foundation
1984-2016 Consultant, Sherman Fairchild Foundation

Industry

1989, 1993 Consultant, Merck Research Laboratories
1984-91 Consultant, Monsanto Company
1982 Consultant, DuPont Corporation

Institutional Service and Administration

University of Arizona

2020 member, Search Committee for Lecturer, Dept. of Neuroscience
2020-21 CoPI, NSF Ethical and Responsible Research (ER2) project "*An Indigenous data governance approach for enhancing ethical research policies and practices*."
2019-22 member, Executive Committee, Center of Excellence in Data for Society (CEDS)
2019 member, Search Committee for viola instructor, School of Music
2018-19 member, Search Committee for Senior Vice President for Academic Affairs and Provost
2018-now member, Science, Health, and Engineering Policy and Diplomacy Initiative (SPDI)
2018-22 member, Honors College Faculty Advisory Committee
2018 member, Search Committee for bassoon instructor, School of Music
2018 member, Search Committee for horn instructor, School of Music
2015 member, Search Committee for low-brass instructor, School of Music
2015-now Affiliated Faculty, Center for Latin American Studies
2013-15 member, Advisory Board of the School of Mind, Brain and Behavior
2012-19 member, Graduate and Professional Student Council Advisory Council
2011-12 member, Advisory Council for the UofA Presidential search
2011-13 member, Dean's Board of Advisors, UofA College of Science
2010-11 member, Search Committee for Dean, College of Agriculture and Life Sciences
2010-14 member, Research Policy Committee
2009-11 member, Executive Committee, Grad. Interdisc. Prog. in Entomology & Insect Science
2009-13 member, Executive Committee, School of Mind, Brain, and Behavior (Chair, 2010-12)
2008-09 member, planning team for School of Mind, Brain, and Behavior
2008 member, Academic Program Review Committee for Department of Neurology
2008-11 member, University of Arizona Strategic Advancement Committee
2007-09 member, University of Arizona Science Center Task Force
2007-13 member, B2 Institute Steering Committee, College of Science
2005 member, search committee for Director of Development, UAPresents
2004-05 member, General Education Review Committee
2004 member, Academic Program Review Self-Study Team, GIDP in Insect Science
2004 member, Faculty Senate committee to review School of Planning
2002-06 co-founder and member, Regents Professors' Focused Excellence Task Force

2001-02	Co-Chair, Organizing Committee, 4th Internat. Symposium on Molecular Insect Science
2000-19	elected member, Committee of Eleven (University faculty governance committee)
1998-99	member, Team on Research for University of Arizona NCA Re-Accreditation
1998-2012	member, Coordinating Committee, Program for Academic Leadership
1998-99, '01-03	elected member, Graduate Interdisciplinary Programs Advisory Council
1997-2003	member, Graduate Student Admission & Recruitment Committee, Graduate Interdisciplinary Program in Neuroscience (chairman 1997-2000)
1997-98	Co-Chair, Organizing Committee, 3rd Internat. Symposium on Molecular Insect Science
1997-2002	member, Sponsored Projects Services Users Group
1997-2001	member, Executive Committee, Interdisciplinary Research Training Group on Plant-Insect Interactions
1996-now	UA Faculty Representative to the Federal Demonstration Partnership
1996-2022	Regents Professorship Advisory Committee (chairman 1999-present)
1994	member, Provost's Planning Group for Undergraduate Core Curriculum Development
1994-09	member, faculty of the Graduate Interdisciplinary Program (GIDP) in Insect Science
1993	member, Selection Committee, Dept. Awards for Outstanding Achievement in Undergraduate Education
1993-94	member, Search Committee for Head, Department of Physics
1991-92	member, Task Force on Undergraduate Education
1991-93	member, faculty of the Graduate Interdisciplinary Program in Physiological Sciences
1991-92	member, University Relations Advisory Board
1991-96	member, Advisory Board, Institute for Neurogenic Communication Disorders
1990-91	member, Search Committee for President
1990-94 & 2000-21	elected member, Faculty Senate
1990-92	member, Laboratory Safety Committee
1990	member, Special Committee on Faculty Participation in University Governance
1989-92	member, International Programs Advisory Committee
1989	Chairman, Search Committee for Director, Center for Insect Science
1989	Vice Chairman, Search Advisory Committee for Provost
1989-2006	member, Advisory Committee for Vice President for Research
1989-92	member, University Research Collections and Systematics Committees
1988	member, Search Advisory Committee for Vice President for Research
1988	member, Internal Review Committee, Department of Speech & Hearing Sciences
1987	member, Committee to Review Graduate Programs in the Biological Sciences
1986-87	Chairman, Search Committee for Head for Dept. of Microbiology & Immunology
1986-91	member, Executive Committee, Center for Complex Systems
1986-2020	member, Executive Committee, & Co-Founder, Center for Insect Science
1986-2000	member, Committee of Biological Sciences Department Heads (Chairman, 1987-88)
1986-2003	member, Executive Committee, Committee on Neuroscience
1986-97	Founding Chairman, University Committee on Neuroscience

Marine Biological Laboratory, Woods Hole

2013-now	member, MBL Society (formerly MBL Corporation)
2012	Chairman, Review Committee for the Whitman Center
2004	Scholar-in-Residence, Neural Systems & Behavior Course
1996-now	Instructor in Summer Program in Neuroscience, Excellence and Success (SPINES)
1989	member, Committee to Review Gray Museum
1986-87	member, Search Committee for Director
1986-87	member, Committee on Laboratory Goals
1984-89	member, Instruction Committee
1984-85	member, Ad Hoc Housing Committee
1984	member, Decennial Review Committee
1983-88	member, Research Services Committee

1981-89, 1993 elected member, Board of Trustees (Executive Committee, 1981-88)
1980-2013 member of the Corporation (since 2013, the MBL Society)
1978-84 faculty member (Co-Director 1980-84), Summer Neurobiology Course

Columbia University

1983-85 Chairman, Graduate Studies Committee, Dept. of Biological Sciences
1983-84 member, Provost's Task Force on Scientific Research
1982-83 member, Executive Committee, Graduate School of Arts and Sciences
1982-83 member, Psychiatry Chair Search Committee
1981-85 member, Horwitz Prize Committee
1980-85 member, Biology Appointments and Promotions Committee
1980-85 Chairman, Biology Library Committee
1980-83 Chairman, Neurobiology Search Committee, Dept. of Biological Sciences

Harvard University

2005-06 Advisory Committee, Center for Brain Science
1992-95 Advisory Comm., NINDS Program Project Grant (E. Kravitz, PI), Dept. of Neurobiology
1977-80 member, Committee on Cell and Developmental Biology
1972-80 Chairman, Library Committee, Department of Neurobiology

Rockefeller University

1996 Chairman, Committee on the Future of the Field Research Center
1983-84 Co-Chairman, Graduate Program 25th Anniversary Committee
1970-73 member, Board of Trustees (Alumnus Trustee)

Other Institutions (including State and Foreign Governments)

2020-24 member, International Scientific Advisory Board, Chinese Academy of Sciences Center for Excellence in Biotic Interactions
2018-now member, International Scientific Council, NEURON Fund for Support of Science, Czech Republic
2014 member, Program Review team, Keck Center, North Carolina State University
2014 member, Site Visit Team, UCLA Dept. of Integrative Biology & Physiology
2012 member, Academic Program Review Panel, Dept. of Biology, U. Maryland
2010-14 member, External Advisory Committee, Institute of Neurobiology, U. Puerto Rico
2009 member, Selection Committee for 25th International Prize for Biology, JSPS, Japan
2006 member, Review Committee for the Biological Intelligence Main Research Theme of the Beckman Institute, University of Illinois at Champaign/Urbana
2006 member, Academic Program Review Panel, Dept. of Biology, Georgia State Univ.
2004-14 member, External Advisory Committee, State of Maine NIH IDeA Network of Biomedical Research Excellence
2001 consultant on interdisciplinary programs, East Carolina University, NC
2000-08 member, External Advisory Committee, Meharry Medical College, Center for Molecular and Behavioral Neuroscience and NINDS-sponsored Specialized Neuroscience Research Program
2000-08 member, External Advisory Committee, NIMH R25 Grant, Meharry Medical College
2000-04 member, External Advisory Committee, University of Puerto Rico's NIH-supported Center of Biomedical Research Excellence
2000 Chairman, External Review Committee, RIKEN Brain Science Institute, Japan
1999 Chairman, External Review Committee, Sec. of Neurobiol & Behavior, Cornell Univ.
1998 member, External Review Committee, Dept. of Biology, Univ. of Virginia
1997 member, External Review Committee, Ph.D. Program in Neurosciences, UCSD
1997 member, External Advisory Committee, School of Integrative Biology, Univ. of Illinois
1996-2007 member, Consiglio Scientifico, Stazione Zoologica, Naples, Italy
1996-99 member, External Advisory Committee, MBRS Program, Meharry Medical College
1996 External Reviewer for Life Sciences Consortium, Pennsylvania State University
1995-98 member, Fachbeirat, Max-Planck-Institut für Verhaltensphysiologie, Seewiesen

1995 member, Organizing Committee, 1995 Workshop, Krasnow Institute for Advanced Study, George Mason University
1994 reviewer, graduate programs, School of Biol. Sci., Univ. of California-Irvine
1993-94 SERC Invertebrate Neuroscience Initiative Review Panel, UK
1993 external reviewer for Doctoral Program in Neuroscience, SUNY-Syracuse
1993-95 RCMI External Advisory Committee, Meharry Medical College, Nashville, TN
1992-99 member, Steering Committee, Sussex Centre for Neuroscience, Univ. of Sussex, UK
1992 reviewer for Doctoral Program in Neuroscience, University of Miami
1990-95, 2007-12 member, Scientific Advisory Board, Whitney Marine Laboratory, Univ. of Florida
1989 Chairman, Biological Sciences Panel, Texas Advanced Technology/Advanced Research Program, Texas Higher Education Coordinating Board
1981-86 member, Yale University Council Committee on Sciences – Biological

Activities Outside Academe and Science (Community Service, etc.)

2021-now member, Board of Trustees, Tucson Symphony Orchestra
2013-now member, Community Advisory Board, Arizona Public Media
2012-14 volunteer science teacher, J.B. Wright Elementary School, Tucson Unified School District
2012-14 member, Ambassadors of the Arizona Friends of Chamber Music
2005-20 member, Program Committee, UAPresents (performing arts presenting organization)
2003-05, 2014-15 member, search committee for Director, UAPresents
2003-10, 2012-14, 2016-18 member, Advisory Board, UAPresents
1990-now occasional speaker at local alumni clubs, retirement communities, school groups, etc.

Activities in Education

Extramural

2012 faculty member, FENS-SfN-IBRO Bertinoro School on Chemical Senses, Bertinoro, Italy
2011 Co-Director, Second IBRO-Kemali Neuroscience School, Stazione Zoologica, Naples
2009 faculty member, IBRO Neuroscience School, Instituto Estable, Montevideo, Uruguay
2007 faculty member, IBRO Latino American School of Neuroethology, Buenos Aires
2003 faculty member, IBRO Neuroscience School, Instituto Estable, Montevideo, Uruguay
2002 faculty member, School and Conference on Chemical Senses: Molecules to Perception, Abdus Salam International Centre for Theoretical Physics, Trieste, Italy
2002 faculty member, International Course on Experimental Approaches in Neuroethology, University of Chile, Santiago and Valparaiso
1978-84 faculty member (co-Director 1980-84), Summer Neurobiology Course, MBL, Woods Hole

University of Arizona

2019-now co-instructor (1 of several), ENGR 495A/595A, 'Science, Health and Engineering Diplomacy'
2012-14 co-instructor (1 of several), NRSC 560, 'Systems Neuroscience'
2012-14 co-instructor (1 of 2), Neuroscience (NROS) 307, 'Cellular Neurophysiology'
2011-now co-instructor (1 of 2), HNRS 195I, 'Biomedical Ethics, Health Policy and Society'
2011-16 occasional lecturer on chemical senses for Neurosurgery Residents
2010 co-instructor (1 of 2), HNRS 195I-004, 'The Brain–the Organ that Makes Us Human'
2008-10 co-instructor (1 of 4), Integrated Science 195A
1998-2000 & 2004-11 co-instructor, Neuroscience (NRSC) 589, 'Principles of Systems Neurobiology'
1992-97 course instructor, Neuroscience (NRSC) 195H, Honors First-Year Colloquium, 'The Brain'
1992-2011 instructor (1 of 2), MCB (also BIOC and NRSC) 407 (formerly 461), 'Neurobiology'
1988-90 instructor (1 of 3), NRSC (also BIOC, MCB, and PSIO) 588, 'Principles of Cellular and Molecular Neurobiology'

1989-91 instructor (1 of 3), NRSC 701, 'Communication in Neuroscience'
1986-97 Chairman, Committee on Neuroscience & Founding Director, Graduate Interdisciplinary Program in Neuroscience

Postdoctoral Research Associates

Rella Abernathy, Ph.D. (1995-96) [co-advisor: Dr. Elizabeth Bernays], UA Plant-Insect Group Postdoctoral Fellowship, *Integrated Pest Management Coordinator, City of Boulder CO*

Rachel Bober, Ph.D. (2011-12), Vaadia-BARD Postdoctoral Fellow (Israel), *research associate at the Haifa University*

Thomas A. Christensen, Ph.D. (1983-87), *retired*

Cécile Faucher, Ph.D. (2011-13), *working at EPAGE de la Bourbe, France*

Ann Fraser, Ph.D. (1998-2001), fellow, UA/NSF Plant-Insect Group Training Program, *currently Professor, Kalamazoo College, Michigan*

Nicholas J. Gibson, Ph.D. (1995-2006) [co-advisor: Dr. L.P. Tolbert], *retired*

Corinna (Thom) Gilley, Ph.D. (2002-05) Deutsche Akademische Austauschdienst Fellow & Feodor Lynen Fellow of the A. von Humboldt Stiftung, *science writer and editor, New Jersey*

John R. (Jack) Gray, Ph.D. (1999-2001) [co-advisor: Dr. M.A. Willis], *Prof. of Biology and Vice-Dean Research, Scholarly and ArtisticWork, University of Saskatchewan*

Pablo G. Guerenstein, Ph.D. (1999-2008), *Senior Researcher, National Research Council (CONICET, CICyTTP), Diamante, Entre Rios, Argentina*

Susannah Hannaford, Ph.D. (1993-94) [co-advisor: Dr. T.A. Christensen], *Professor of Biology, University of Puget Sound, Washington*

Eric Hanneman, Ph.D. (1988-90), American Cancer Society Postdoctoral Fellow, *last known: East Meets West Stem Cells, Portland OR*

Bill S. Hansson, Ph.D. (1989-90), Swedish government fellowship, *Director, Max-Planck-Institut für Chemische Oekologie, Jena, Germany, and Past Vice President of the Max-Planck Gesellschaft*

Jon H. Hayashi, Ph.D. (1986-90), NIH Postdoctoral Fellow, *faculty member, Paradise Valley Community College, Phoenix AZ; formerly Research Scientist, FMC, New Jersey*

Akira Hishinuma, M.D., Ph.D. (1986-87), *Professor, Dept. of Infection Control and Clinical Laboratory Medicine, Dokkyo University School of Medicine, Japan*

Uwe Homberg, Ph.D. (1984-88), Deutsche Forschungsgemeinschaft fellow, *Professor Emeritus of Zoology, Universität Marburg, Germany*

Haruhiko Itagaki, Ph.D. (1986-90), NIH Postdoctoral Fellow 1987-90, *Professor of Biology, Kenyon College, Ohio*

Nicole Kalberer, Ph.D. (2000-01), holder of a Swiss postdoctoral fellowship, *last known: Research Associate, Zool. Institute, Univ. of Basel, Switzerland*

Ryohei Kanzaki, Ph.D. (1987-90) [co-adviser: Dr. E.A. Arbas], *Professor, Graduate School of Information Science & Technology, University of Tokyo, Japan*

Jane Roche King, Ph.D. (1996-2001), *independent science writer & editor*

Peter Kloppenburg, Ph.D. (1991-96), Deutsche Forschungsgemeinschaft fellow, *Professor of Animal Physiology, Zoologisches Institut, Universität zu Köln, Germany*

Herman K. Lehman, Ph.D. (1988-93), *Professor of Biology, Hamilton College, Clinton, NY*

Hong Lei, Ph.D. (1999-2004), *Associate Research Professor, School of Life Sciences, Arizona State University, Tempe*

Wendy L. Mechaber, Ph.D. (1995-2003), *independently employed, Sherborn, MA*

Robert F. Mitchell, Ph.D. (2012-15) Univ. of AZ Center for Insect Science PERT Fellow, *Associate Professor of Biology, Univ. of Wisconsin-Oshkosh*

Alan Nighorn, Ph.D. (1993-98), [co-advisor until 1997: Dr. David B. Morton], NIH Training Grant Postdoctoral Fellow, *Distinguished Professor & former Head, Dept. of Neuroscience, University of Arizona*

Mark G. Novak, Ph.D. (1992-94) [co-advisor: Dr. J. Ribeiro], UA Center for Insect Science Postdoctoral Fellow, *Supervising Public Health Biologist, Vector-Borne Disease Section (Northern Region), California Dept. of Health Services, Elk Grove, CA*

Robert A. Raguso, Ph.D. (1995-97) [co-advisor: Dr. Mark A. Willis], trainee on the Center for Insect Science NIH Training Grant, *Professor, Dept. of Neurobiology & Behavior, Cornell University*

Carolina E. Reisenman, Ph.D. (2001-07) Pew Latin American Scholar, *Associate Researcher, Dept. of MCB, Univ. of California, Berkeley*

Jeffrey A. Riffell, Ph.D. (2004-10) Univ. of AZ Center for Insect Science PERT Fellow, *Professor of Biology, Univ. of Washington*

Wolfgang Rössler, Dr. rer. nat. (1995-99) [co-advisor: Dr. L.P. Tolbert], Deutsche Forschungsgemeinschaft fellow, *Professor, Biocenter, Universität Würzburg, Germany*

Vonnie D.C. Shields, Ph.D. (1995-2000), *Professor of Biological Sciences, Towson University, Maryland*

Sakiko Shiga, Ph.D. (1998-99) [co-advisor: Dr. N.T. Davis], *Professor of Biological Sciences, Osaka University, Japan*

Brian H. Smith, Ph.D. (1988-90), NIMH Postdoctoral Fellow, *Professor, School of Life Sciences, Arizona State University, Tempe AZ*

Jordanna Sprayberry, Ph.D. (2006-08) Univ. of Arizona Center for Insect Science PERT Fellow, *Associate Professor of Biology & Neuroscience, Muhlenberg College, Allentown, PA*

Xue Jun Sun, Ph.D. (1991-94) [co-advisor: Dr. L.P. Tolbert], Center for Insect Science Postdoctoral Fellow, *Staff Scientist, University of Alberta, Edmonton, Canada*

Neil J. Vickers, Ph.D. (1995-98) [co-advisor: Dr. T.A. Christensen], *Professor of Biology & Co-Director, School of Biological Sciences, Universiy of Utah*

Brian R. Waldrop, Ph.D. (1984-87), *last known: Director, College of Arts & Sciences Administration, University of Buffalo, NY*

Mark A. Willis, Ph.D. (1998-2001), *Professor and Chair of Biology, Case Western Reserve University, Cleveland, OH*

Fumio Yokohari, Ph.D. (1988-89) [co-advisor: Dr. L.P. Tolbert], *last known: Professor, University of Fukuoka, Japan*

Graduate Students

Aaron Beyerlein, M.S. in Entomology and Insect Science (M.S. conferred 2011), *R&D Specialist at Bayer CropScience, Carrboro, North Carolina*

Andrew Dacks, Ph.D. in Insect Science (Ph.D. conferred 2007) [co-advisor with Dr. T.A. Christensen], *Associate Prof. of Biology, West Virginia U.*

Thomas Heinbockel, Ph.D. in Neuroscience (Ph.D. conferred 1997), *Professor and Director of Graduate Studies, Dept. of Anatomy, Howard Univ. Coll. of Medicine, Washington, DC*

Joshua P. Martin, Ph.D. Neuroscience (Ph.D. conferred 2012), *Assistant Professor of Biology, Colby College, Maine*

Katja Selchow, Ph.D. in Neuroscience (Ph.D. conferred 1998), *airline pilot*

Kenneth A. Sorensen, Ph.D. in Molecular &. Cellular Biology (Ph.D. conferred 1993), *Co-Founder & Director, American Stem Cell Corporation, Los Angeles, CA*

Monika Stengl, Ph.D. in Molecular & Cellular Biology (Ph.D. conferred 1990), *Professor of Zoology, Universität Kassel, Germany*

Visiting Students
Martin Brill (2009), Universität Würzburg, Germany
Davide Dulcis (1999-2000) [co-advisor with Dr. N.T. Davis], Univ. of Cagliari, Italy
Alex Eaton-Mordas (2005), Dept. of Ecology & Evolutionary Biol, Univ. of Arizona
Edwin van der Jagt (1994-95) [co-advisor with Dr. N.T. Davis], University of Utrecht, The Netherlands (Dutch Gov. fellowship)
Elisabeth Pasch (2008), Universität Würzburg, Germany
Marco Rosales (2004-05), Pima Community College, Tucson, AZ
Nadia Scascighini (2000), Swiss Federal Institute of Technology (ETH) Zürich
Paolo Solari (1998), University of Cagliari, Italy
Erich Staudacher (1991), Max-Planck-Institut für Verhaltensphysiologie, Germany
Michiel van Wijk (1999), Agricultural University, Wageningen, The Netherlands
Ning Zhang (2014), China Agricultural University, Beijing

Undergraduate Research Assistants *[co-advisors: ¶Dr. T. Christensen, §Dr. N. Davis,* °Dr. H. Lehman, †*Dr. H. Lei, ‡Dr. W. Mechaber, ♦Dr. R. Mitchell, ♯Dr. A. Nighorn, ∆Dr. C. Reisenman, ◊Dr. J. Riffell]*
♦Arthur Abougou, Allison Agajanian, †Angelica Alvarez, †Arshed Al-Obeidi, ♦Lauren Amos, ♦Tiffany Bledsoe, †Nyssa Burdick, ‡Christopher Capaldo, †Hong-Yan (Vicki) Chiu, Dawn Clark, ◊Eleni Constantopoulos, ¶Christine Cuzzocrea, Engracia Dang, ∆Bianca Demara, Charleston Dick, Erik Dillingham, ¶Sarah Dixon, ¶Dan Doty, Kristin Duffy, †Petimat Dudurkaeva, ‡Damian Elias, †Jessica Fletcher, ◊∆Andrew Flores, °Zoe Forester, Robyn Forkos, Kim Frank, ¶Sabrina Geoffrion, ¶Nicole Giedinghagen, §Marianne Go, ◊∆Breena Goodwin, §Tushara Gunatilaka, ‡Darien Hall, ‡Jennifer Hill, †JungMin Kim, ♯Eric Kennedy, Clint Kleppe, ‡Gina Kraft, †Laura Kulas, §George Lai, Emily Landeen, ¶Jason Lashbrook, ∆Yan Mei Lee, ♯Dominique Leitner, Sara Lewis, Chris Ludwig, Jeff Ludwig, †Yessenia Magana; ‡Kristen McCoy, ◊∆David Mikles, Cristina Murgiuc, Kayla Peck, ◊∆Adrian Pesque, Anastasia Peterson, ♯David Rivers, †Aracely Romero, †Naghmeh Saghafi, Hetal Shah, †Bradley Shane, Stephen Shipman, †Yeeck Sim, Katie Skinner, ‡Tracey Smart, ♯Matt Stoker, ♯Sylvia Thompson, Andrew Tseng, ◊∆Meredith Tuinstra, ♯Maggie Villamana, Andrew Waters, †Angela Wu, †Weijie Xiang, †Jinglei Zhang

High-School Research Assistant *[co-advisor: ☼Dr. C. Faucher]* ☼Monica Seng

Visiting Scientists
Rafael Cantera (1989-90), University of Stockholm, Sweden
William Conner (2004), Wake Forest University, North Carolina
Blanka Kalinova (1993), Czech Academy of Sciences, Prague
Le Kang (2010), Chinese Academy of Sciences, Institute of Zoology, Beijing
Alison Mercer (several periods during 1992-96), University of Otago, New Zealand
B.K. Mitchell (1990, 1996), University of Alberta, Edmonton, Canada
R. Alexander Steinbrecht (1994), Max-Planck-Institut f. Verhaltensphysiologie, Seewiesen
Chenzhu Wang (2010), Chinese Academy of Sciences, Institute of Zoology, Beijing
Yanxue Yu (2014), Chinese Academy of Plant Inspection and Quarantine, Beijing

Columbia University
1984 instructor, Biology G9007, Special Topics in Developmental Neurobiology
1982-84 instructor, Biology G4006, Biochemistry of Nerve Cells
1981-84 instructor, Biology G4004, Biology of Nerve Cells

Postdoctoral Fellows
Ian D. Harrow, Ph.D. (1981-84), *last known: Founder, Director & Principal Consultant at Ian Harrow Consulting Ltd., UK*
Sally G. Hoskins, Ph.D. (1982-85), *Professor Emerita of Biology, City College of New York*
Timothy G. Kingan, Ph.D. (1980-83*), last known: U.S. Patent and Trademark Office*

Graduate Student

Akira Hishinuma, M.D., Ph.D. (Ph.D. conferred 1986), *Professor, Dept. of Clinical Laboratory Medicine, Dokkyo University School of Medicine, Japan*

Undergraduate Research Students

Jeffrey E. Arle, Carla Cerami, Annemarie I. Coffman, Tristan Davies, Dennis Deltoro, Claire Kedeshian, William Korn, Robert Kovelman, Art Papier, Paul Quartararo

Harvard University

1979 course director and instructor, Biology 25, Neurobiology
1977 instructor, Eliot 111, Senior Seminar in Developmental Neurobiology
1976-80 instructor, Biology 126, Biochemistry of Nerve Cells (with Edward Kravitz)
1975-77 instructor, Biology 240, Invertebrate Behavior (with Bert Hölldobler)
1973 co-instructor, Neurobiology 206, Physiology of Synaptic Transmission
1971-73 lecturer in Neurobiology 210, Introductory Neurobiology
1963-64 teaching Assistant in Natural Sciences 5 (General Biology)

Postdoctoral Fellows

Scott M. Camazine, M.D., Ph.D. (1978-79), *physician in private practice*
Nikolai E. Klemm, Ph.D. (1978), *position unknown*
Steven G. Matsumoto, Ph.D. (1977-80), NIH Postdoctoral Fellow, *Associate Professor, Oregon Health & Science University*
Gerald D. Maxwell, Ph.D. (1975-79), NIH Postdoctoral Fellow, *Professor Emeritus of Neuroscience, University of Connecticut Medical School*
Margaret C. Nelson, Ph.D. (1975-79), *free-lance writer and illustrator*
David J. Prescott, Ph.D. (1974-75), *retired from faculty of Biology, Bryn Mawr College*
Leslie P. Tolbert, Ph.D. (1978-81), NIH Postdoctoral Fellow, *Regents Professor Emerita of Neuroscience, Univ. of Arizona*

Graduate Students

Karla S. Kent, Ph.D. (Ph.D. conferred 1985), *Professor Emerita of Integrative Biosciences, Oregon Health & Science University*
Joshua R. Sanes, Ph.D. (Ph.D. conferred 1975), *Professor of Molecular & Cellular Biology, Harvard University, Cambridge, MA*
Anne M. Schneiderman, Ph.D. (Ph.D. conferred 1984), *patent attorney in private practice, Ithaca, New York*

Undergraduate Research Students

Paul J. Deutsch, Margaret Drickamer, Marcia M. Moore, Erik S. Schweitzer, Jonathan F. Tait

Rockefeller University

1965-67 instructor, Summer Biology Program for high school students

Marine Biological Laboratory

1996-now instructor, summer SPINES program
1988 lecturer, Methods in Computational Neuroscience Course
1985 lecturer, Neural Systems and Behavior Course
1984 lecturer, Review and Update in Neurobiology for Neurosurgeons
1980-84 Co-Director and instructor, Summer Neurobiology Course
1978-79 instructor, Summer Neurobiology Course

Research

My research long has combined anatomical, behavioral, chemical, molecular, and neurophysiological approaches in multidisciplinary studies of the of the nervous system in insects and other arthropods. My principal research interests include: the physiology, functional organization, behavioral roles, and postembryonic development of the olfactory system; sensory control of mating behavior and insect-host interactions, including feeding and oviposition behaviors; chemical ecology and behavioral aspects of interactions with host plants; olfactory learning; and the behavior and sensory neurobiology of local species of Triatomine insects ("kissing bugs") as potential vectors of Chagas Disease. The main goal of this work has been to discover fundamental principles and mechanisms common to many or all nervous systems through studies of the experimentally favorable nervous systems of these invertebrate animals. In view of the importance of insects in their own right, my coworkers and I also have aimed to contribute to knowledge that will help to alleviate the harm done by insects that are predators of plants cultivated for food, fuel or fiber or are vectors of microbial or parasitic pathogens. Our principal research contributions have come in the following areas:
(i) *Functional organization and physiology of the insect olfactory system*. Our work has focused mainly on the olfactory system of the giant sphinx moth *Manduca sexta*. Using intracellular recording and staining methods, extracellular and multi-unit recording techniques, and pharmacological manipulations, we have explored the neuronal circuitry and synaptic interactions in the antennal lobe (AL), the primary olfactory center in the moth's brain. We also have used histological and neuronal tracing methods to learn about the anatomical organization of the AL and its sensory inputs. The goal has been to understand mechanisms of information processing in the olfactory pathways in the central nervous system. Much of this work has focused on the sexually dimorphic olfactory subsystem in the male moth that is specialized to detect and process information about the female's sex pheromone. We also have conducted multi-level studies of the detection and central processing of sensory information about volatile organic compounds (VOCs) emitted by living plants. Particular effort has addressed central neural mechanisms encoding olfactory information about behaviorally significant mixtures of VOCs. In addition to the primary focus on the AL, the reach of the work has extended to the higher-order olfactory pathways in the protocerebrum that are involved in processing of the outputs of the ALs and their integration with information of other sensory modalities.
(ii) *Behavior and chemical ecology***.** In parallel with studies of the olfactory system of *Manduca*, we have investigated the identities of the VOCs emitted by living host- and non-host plants and used a variety of chemical, physiological and behavioral methods to identify behaviorally significant compounds in those complex mixtures. We also have studied the effects of VOCs on the behavior of flying *Manduca* in the field and in a laboratory wind tunnel.
(iii) *Postembryonic, metamorphic development of the olfactory system***.** We long have been interested in neural development and plasticity in the ALs during the postembryonic development of *Manduca*. Among the outcomes of this line of research is the finding that certain, sexually dimorphic glomeruli characteristic of male and female ALs develop only if the AL is innervated, respectively, by axons of genetically male or female olfactory receptor cells.

My research program was funded through competitive research grants from federal agencies throughout the period 1971-2016, including funding from NIH, NSF, USDA, and DoD. I have also received research support from NATO and the University of Arizona as well as private sources including the American Heart Association, the A.P. Sloan Foundation, Monsanto Company, and the Hasselblad Foundation. My laboratory closed in May, 2016.

Invited Lectures and Seminars (2010-present)

2010 Stanford University Institute for Neuro-Innovation
Pomona College, Claremont, CA *[Phi Beta Kappa Visiting Scholar]*
Tennessee State University, Dept. of Biological Sciences
Florida State University, Tallahassee *[Phi Beta Kappa Visiting Scholar]*
Allegheny College, Meadville, PA *[Phi Beta Kappa Visiting Scholar]*
Symposium in honor of Michael Arbib, "Multidisciplinary Approaches to Understanding the Mind and Brain," Tucson, AZ

International Symposium in Honeybee Neuroscience, Berlin
University of Oklahoma, Dept. of Zoology *[Presidential Dream Course in Neuroethology]*
Yale University, Dept. of Cellular & Molecular Physiology
University of Georgia, Dept. of Entomology
Emory University, Neuroscience & Behavioral Biology Program

2011 Association of Anatomy, Cell Biology & Neurobiology Chairpersons Annual Meeting, Tucson
8th International Congress of Comparative Physiology & Biochemistry, Nagoya, Japan *[plenary]*
Gordon Research Conference on Neuroethology, Stonehill College, MA
International Symposium on Invertebrate Neurobiology, Tihany, Hungary
International Symposium on Molecular Insect Science, Amsterdam
US-ChinaWorkshop on Insect Olfaction, Chinese Academy of Sciences, Beijing
5th Asian-Pacific Conference on Chemical Ecology, Beijing *[plenary lecturer]*
Argentinian Society for Neuroscience (SAN) Annual Meeting, Cordoba *[First Hector Maldonado Memorial Lecturer]*
Siemens Stiftung Lecture, Munich, Germany

2012 UC-San Diego *[2012 Walter F. Heiligenberg Lecture]*
University of North Carolina, Dept. of Biology *[2012 Lawrence Gilbert Distinguished Lecture]*
American Association of Anatomists annual meeting, San Diego
Max-Planck-Institut f. Neurobiologie, Munich *[Distinguished Lecturer]*
Norwegian University of Science & Technology, Trondheim *[symposium speaker]*
Washington University, St. Louis, Dept. of Biology
Latin American Association for Chemical Ecology Annual Meeting, Cordoba *[plenary lecturer]*

2013 Yale Club of Southern Arizona
University of Cincinnati, Dept. of Biology
Universität Würzburg, Biozentrum
Universität zu Köln, Institute of Zoology
Universität Kassel, Dept. of Animal Physiology
University of Sydney, Australia, School of Biological Sciences
International Chemical Ecology Conference (ICEC2013), Melbourne, Australia
Louisiana State University, Dept. of Biological Sciences
University of Chicago, Dept. of Neurobiology
Kuffler Symposium, Rockefeller University

2014 Confluence Center, University of Arizona
Symposium on Biologically Inspired Robotics, AAAS Annual Meeting *[organizer & chair]*
West Virginia University, Dept. of Biology
Chilean Society for Neuroscience Annual Meeting, Valdivia *[plenary speaker]*
University of Santiago, Chile
2014 Inter-Academy Seoul Science Forum

2015 College of Charleston, SC *[Sigma Xi Darwin Week Lecturer]*
Northern Michigan University, Marquette, MI *[Sigma Xi Lecturer]*
Kansas State University, Manhattan, KS *[Sigma Xi Lecturer]*
Physics Teachers of Southern Arizona meeting

2016 University of Michigan, Ann Arbor *[Sigma Xi Lecturer]*
Lamar University, Beaumont, TX *[Sigma Xi Lecturer]*
Case Western Reserve University, Cleveland OH
NIH IRACDA Conference, Tucson, AZ
2016 XXV International Congress of Entomology, Orlando FL *[Wigglesworth Lecturer]*

Department of Neurobiology, Harvard Medical School, Boston *[50th anniversary celebration]*

2017 Florida State University, Tallahassee *[2017 James C. Smith Lecture]*
University of New England, Biddiford, ME, Center for Excellence in the Neurosciences
Israeli Entomological Society Annual Meeting in honor of Rachel Galun *[plenary lecture]*

2018 Yale Club of Southern Arizona
Philippine-American Academy of Science & Engineering 38th Annual Meeting, Tucson
ECRO 2018 Annual Meeting, Würzburg, Germany *[plenary lecture]*
Caribbean Academy of Sciences, 21st General Meeting, Kingston, Jamaica *[plenary lecture]*
Academia Sinica, 90th Anniversary Celebration, Taipei, Taiwan *[plenary lecture]*

2020 NAS Annual Meeting Symposium "NAS Grand Challenges"
Twelfth General Assembly of the African Academy of Sciences, Nairobi *[Zoom talk as a panelist]*
Annual Meeting of the Acoustical Society of America *[Zoom talk in a symposium]*

2021 Society for Neuroscience virtual meeting "Global Connectome" *[Zoom talk as a panelist]*
International conference "Insect Olfaction & Taste in 24 Hours Around the Globe" *[panelist]*

PUBLICATIONS

John G. Hildebrand

h-Index 85; *i10*-index: 180; >19,000 citations (4/23 – Google Scholar data)

Books

Hall ZW, Hildebrand JG, Kravitz EA (eds) (1974) *Chemistry of Synaptic Transmission: Essays and Sources*. Newton MA, Chiron Press

Sattelle DB, Hall LM, Hildebrand JG (eds) (1980) *Receptors for Neurotransmitters, Hormones and Pheromones in Insects*. Amsterdam, Elsevier/North Holland

Hagedorn HH, Hildebrand JG, Kidwell MG, Law JH (eds) (1990) *Molecular Insect Science*. New York, Plenum

Ciba Foundation Symposium 200 (1996) *Olfaction in Mosquito-Host Interactions*. West Sussex, UK, Wiley [meeting and book organized by JGH]

Meinwald J, Hildebrand JG (eds) (2010) *Science and the Educated American: A Core Component of Liberal Education.* American Academy of Arts and Sciences [available as a book or as a downloadable PDF: https://www.amacad.org/sites/default/files/publication/downloads/SLACweb.pdf

Original Reports

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Hanneman EH, Kanost MR (1992) Differential Alaserpin expression during development of the antennae in the tobacco hawkmoth *Manduca sexta*. Arch Insect Biochem Physiol 19:39-52

Mitchell BK, Itagaki H (1992) Interneurons of the subesophageal ganglion of *Sarcophaga bullata* responding to gustatory and mechanosensory stimuli. J Comp Physiol A 171:213-230

Stengl M (1993) Intracellular-messenger-mediated cation channels in cultured olfactory receptor neurons. J Exp Biol 178:125-147

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Kloppenburg P, Ferns D, Mercer AR (1999) Serotonin enhances central olfactory neuron responses to female sex pheromone in the male sphinx moth *Manduca sexta.* J Neurosci 19:8172-8181

Christensen TA, White J (2000) Representation of olfactory information in the brain. In: Finger TE, Silver WL, Restrepo D (eds) *The Neurobiology of Taste and Smell*, 2nd Ed., NY, Wiley-Liss, pp 201-232

Kloppenburg P, Heinbockel T (2000) 5-Hydroxytryptamine modulates pheromone-evoked local field potentials in the macroglomerular complex of the sphinx moth *Manduca sexta*. J Exp Biol 203:1701-1709

Riffell JA, Alarcón R, Abrell L (2008) Floral trait associations in hawkmoth-specialized and mixed pollination systems. Communicative & Integrative Bio 1:6-8.

Strausfeld N, Reisenman CE (2009) Dimorphic olfactory lobes in the Arthropoda. Ann NY Acad Sci 1170:487-496

Ribeiro JM, Assumpção TC, Pham VM, Francischetti IM, Reisenman CE (2012) An insight into the sialotranscriptome of *Triatoma rubida* (Hemiptera: Heteroptera). J Med Entomol 49:563-572

Reisenman CE, Riffell JA, Duffy K, Pesque A, Mikles D, Goodwin B (2013) Species-specific effects of herbivory on the oviposition behavior of the moth *Manduca sexta*. J Chem Ecol 39:76-89

Reisenman CE, Lee Y, Gregory T, Guerenstein PG (2013) Effects of starvation on the olfactory responses of the blood-sucking bug *Rhodnius prolixus*. J Insect Physiol 59:717-721

CURRICULUM VITAE
ULISES M. RICOY, PHD

CHRONOLOGY OF EDUCATION

1998 — The University of Texas at San Antonio, B.S. *cum laude*
Major: Neurobiology
Advisor: Edwin J. Barea-Rodriguez, Ph.D.

1998-2000 — San Francisco State University
Field: Marine Biology master's candidate (*abandoned due to health reasons*)
Advisor: Neo D. Martinez, Jr, Ph.D.

2003 — Universidad Ibero Americana, Department of Psychology, Mexico City, Mexico
Diplomado: Addiction Studies

2007 — The University of Texas, Ph.D.
Major: Neurobiology
Doctoral Dissertation: "Hippocampal Substrates of Methamphetamine Reinforcement."
Advisor: Joe L. Martinez, Jr., Ph.D.

CHRONOLOGY OF EMPLOYMENT

1995 — Undergraduate Researcher, Minority Access to Research Careers (NIH), Department of Biology, The University of Texas at San Antonio, Texas
Research Area: neurobiology of learning and memory
Advisor: Edwin J. Barea-Rodriguez, Ph.D.

1996 — Research Assistant, (NSF) REU, The University of Texas at Austin Marine Science Institute, Fisheries, Aquaculture and Mariculture Labs, Port Aransas, Texas
Research Area: aquaculture and larval fish ecology
Advisor: Joan Holt, Ph.D.

1997 — Research Assistant, (NSF) REU, The University of California at San Diego, Scripps Institution of Oceanography, Marine Life Research Unit, La Jolla, California
Research Area: biological oceanography
Advisor: David Checkley, Ph.D.,

1998 — Medical Research Assistant, (NIH) "Minority International Research Training," Jos University Teaching Hospital (JUTH), Nigeria, West Africa
Research Area: rickets and thyroid disease / ethnobotany and biochemistry
Advisor: Robert Glew, Ph.D. and Obadofin, M.D.

1998-2000 — San Francisco State University, Romberg Tiburon Station, Department of Biology, (became a master's candidate; *abandoned due to health reasons*), San Francisco, California, and Tiburon, California
Research Area: biological oceanography and food web ecology
Advisor: Neo D. Martinez, Jr, Ph.D.

2001-2003	Drug Abuse Counselor, Specialized Center in Solutions for Alcoholism and Drug Dependence, Mexico City, Mexico Under the supervision of: Dr. Jose Montalvo
2001-2003	High School Teacher, Instituto de Monterrey, Campus México City Subjects taught: Neuroscience, Biology, Ecology Under the supervision of: M. Sc. Jessica Vicencio
2003-2007	Research Assistant, University of Texas at San Antonio, Department of Biology, San Antonio, Texas Research Area: neurobiology of drug reward Advisor: Joe L., Martinez, Jr, Ph.D.
Summer 2004	Course Coordinator, Marine Biological Laboratory, SPINES 2004 Summer Course Woods Hole, MA Under the supervision of: Dr. Joe L. Martinez, Jr. Ph.D.
2008-2010	Post-Doctoral Trainee, Oregon Health Sciences University, Department of Behavioral Neuroscience, Portland, Oregon Research Area: neuroscience, synaptic biophysics Advisor: Matthew Frerking, Ph.D.
Summer 2011	Faculty and Student Teams (FaST) Fellow, Argonne National Laboratory, Center for Nanoscale Materials, Argonne, Illinois Research area: Nanoscience, nature-inspired chemistry, self-assembly amphiphiles Advisor: H. Christopher Fry, Ph.D.
2010-2014	Assistant Professor of Biology, Northern New Mexico College, Department of Biology, Española, New Mexico
2011-2012	Director of Biology and Chemistry Program, Northern New Mexico College, Española, New Mexico
Summer 2012	Visiting Faculty Program (VFP) / DOE, Argonne National Laboratory, Center for Nanoscale Materials, Argonne, Illinois Research area: nanoscience, nature-inspired chemistry, physical characterization amphiphiles Advisor: H. Christopher Fry, Ph.D.
2012- 2016	Founder and Chair of Department of Biology, Chemistry and Environmental Science, Northern New Mexico College, Española, New Mexico
Summer 2013	NSF ROA (Research Opportunity Award) Faculty Research, University of Pittsburgh, Department of Neuroscience, Pittsburgh, Pennsylvania Research area: presynaptic mechanisms in the frog neuromuscular junction Advisor: Stephen Meriney, Ph.D.
2014-2019	Associate Professor of Biology (**earned Tenure**), Northern New Mexico College, Department of Biology and Chemistry and Environmental Science, Española, New Mexico

Summer 2014 Faculty Fellow / DOE, Los Alamos National Laboratory, Center for Integrated Nanotechnologies, Albuquerque, New Mexico
Research area: amphiphilic pH modulated photonic micelle nanocomposites for brain delivery
Advisor: Gabriel Montaño, Ph.D.

Summer 2015 NIH IMSD (Initiative for Maximizing Student Development), Visiting Faculty, University of Massachusetts at Amherst, Department of Neuroscience and Behavior, Amherst, MA
Research area: synaptic transmission; neural signal encoding and decoding
Advisor: Genglin Li, Ph.D.

2016-2017 **Interim Dean of Arts and Sciences**, Northern New Mexico College, Española, New Mexico

Summer 2016 Visiting Faculty, Los Alamos National Laboratory, Center for Integrated Nanotechnologies, Albuquerque, New Mexico
Research area: polymer nanocomposites for non-targeted brain drug delivery
Advisor: Gabriel Montaño, Ph.D.

2017-2019 **Dean of Arts and Sciences**, Northern New Mexico College, Española, New Mexico

2019-present **Research Professor**, Northern New Mexico College, Department of Biology and Chemistry and Environmental Science, Española, New Mexico

2019-present **Associate Research Scientist** (***continuing eligible***; parallel to ***Tenure-track***), Faculty Director Neuroscience & Cognitive Science (NSCS), Associate Department Head, The University of Arizona, Department of Neuroscience, Tucson, Arizona

2019-present Neural Systems and Behavior Course **Faculty**, Marine Biological Laboratory, Woods Hole, MA, Course Directors: Alberto Pereda, and Stephanie White

2020-present **Director of Outreach** Initiatives, The Grass Foundation, Woods Hole, Massachusetts

2023-present **Associate Research Scientist** (***continuing status***; parallel to ***Tenured***), Faculty Director Neuroscience & Cognitive Science (NSCS), Associate Department Head, The University of Arizona, Department of Neuroscience, Tucson, Arizona

2023-present Crawfly Invertebrate Neurophysiology Course **Faculty**, Cornell University Department of Neurobiology and Behavior.

SPECIAL COURSES

2001 Curso de Neurociencia, Universidad Autónoma México, (Campus Iztapalapa)

2002 United Nations Addictive Drugs Course, Mexico City, Mexico

2005 Specialized Program in Neuroscience, Ethics and Survival (SPINES), Marine Biological Laboratory, Woods Hole, MA

2006	Neurobiology, Marine Biological Laboratory, Woods Hole, Massachusetts
2015	Crawdad Invertebrate Neurophysiology Course, Cornell University Department of Neurobiology and Behavior.
2016	Crawfly Invertebrate Neurophysiology Course, Cornell University Department of Neurobiology and Behavior.
2017	Neuro Workshop: Hardware and Software Experiments to teach Neuroscience, University of Missouri Department of Electrical and Computer Engineering

HONORS AND AWARDS

Undergraduate, Graduate School, Postdoc

1996-1998	Minority Access to Research Careers (MARC, NIH)
1996	Research Experiences for Undergraduates (REU, NSF)
1997	Scripps Undergraduate Research Fellowship (SURF, NSF)
1998	Minority International Research Training (MIRT, NIH)
1998	UTSA *Cum Laude* Graduate B.S. Neurobiology
1998-2000	Research Initiatives for Student Enhancement (RISE, NIH)
2002	ITESM Best Teacher in 2002 (based on student's evaluations)
2004	Vanderbilt Travel Award *"Frontiers in Addiction Biology"*
2004	NIDA Travel Award 2004 (NIDA Mini convention – San Diego)
2004	Minority Biomedical Research Support (MBRS PhD, NIH)
2005-2007	APA Diversity Program in Neuroscience Predoctoral Fellowship NIH-T32
2005	APA Travel Award (SFN)
2005	NIDA Travel Award (NIDA Mini convention - Washington)
2005	NHSN Travel Award (Miami)
2006	Alfred Sloan Foundation Scholar
2006	NIDA Travel Award (NIDA Mini convention - Atlanta)
2006	HHMI scholarship (Neurobiology course MBL 2006)
2006	American Cell Biology Society scholarship (Neurobiology course MBL 2006)
2006	William Townsend Porter scholarship (Neurobiology Course MBL 2006)
2006	NHSN Travel Award (Arizona)
2007	Minority Biomedical Research Support (MBRS PhD, NIH)
2010	NRSA Post-doctoral Training grant (T32-NS045553)

Faculty, Director, Chair, Interim Dean, Dean while at Northern New Mexico College

2010	SACNAS Travel Award (Anaheim, CA)
2011	DOE Faculty and Student Teams Award (Argonne National Laboratory)
2011	NHSN Travel Award (Miami)
2012	DOE Visiting Faculty Program Award (Argonne National Laboratory)
2010-2014	NSF S-STEM (P.I. Ulises Ricoy) NSF-DUE Award Number 0806469 2010-2014
2013	NSF-ROA (Parent Grant: P.I. Stephen Meriney Award Number EAGER IOS 1249546)
2014	DOE Visiting Faculty Program Award (Los Alamos National Laboratory)
2014	Early Career Neuroscience Institute (Faculty Training Grant, University of Pittsburgh)
2015	Crawdad Invertebrate Neurophysiology Course Scholarship Cornell University Department of Neurobiology and Behavior, Cornell University, Ithaca, NY 14853, USA. Instructors: Ron Hoy, Bruce Johnson, Wes Colgan (AD Instruments)

2015	Grass Foundation Neuroscience Education Award
2015	DOE-VFP LANL (P.I. Ulises Ricoy and Gabriel Montaño; accepted but declined)
2015	NSF ROA Vanderbilt University (accepted but declined)
2015	MBL Neural Systems & Behavior (accepted but declined)
2015	NIH IMSD VFP U Massachusetts Neuroscience (P.I. Ulises Ricoy)
2016	NIH BUILD UNM Neurosciences (accepted but declined)
2016	DOE-VFP LANL (P.I. Ulises Ricoy and Gabriel Montaño; accepted)
2016	Linton-Poodry SACNAS / HHMI Leadership
2017	NIH BUILD Mentoring Award
2016-pres	Alfred Sloan National Mentoring Board of Directors
2018-2020	New Mexico Citizen Advisory Board (DOE)

Faculty Director, NSCS UA Department of Neuroscience

2019	Nominated to PULSE HHMI Fellow
2020	Named Director of Outreach for the Grass Foundation, https://grassfoundation.org/outreach-initiatives/
2020	Named in 100 Inspiring Hispanic/Latinx Scientist in Cell Press, https://twitter.com/CellMentor/status/1305827471628152832
2020	NHSN Travel Award (Detroit, MI; Cancelled due to COVID)
2020	NHSN National Public Service Award
2021	NHSN Travel Award (Grand Rapids, MI)
2021	UA Provost – Arizona Champion Award
2022	Affiliate faculty, Center for Latin American Studies (CLAS), a recognized National Resource Center (NRC) by the US Department of Education. The University of Arizona, Tucson, AZ

OUTREACH *(activities since arrival UA related to my position)*

Local/State/National Outreach

2019	Grass foundation Outreach Workshop, institutions with limited resources. Host: Ulises M. Ricoy, The University of Arizona, Department of Neuroscience
2019	UA Hispanic Service Institution, panelist for 2019 fellows. Host: Marla Franco, Ph. D, Assistant Vice Provost for Hispanic Serving Institution (HSI) Initiatives at the University of Arizona (UA)
2019	Bisbee elementary school, Neuroscience Outreach Workshop. Host: Ulises M. Ricoy, The University of Arizona, Department of Neuroscience
2020	South Tucson, Neurociencia para la comunidad. Host: Ulises M. Ricoy, The University of Arizona, Department of Neuroscience
2021	Brain Edu: A Window to the Brain, Una Ventana al Cerebro, Summer Camp, Host: Girls Scouts of Southern Arizona
2021	Grass Foundation Workshop; NEURON: Neuroscience Education in Undergraduate Research, Outreach, and Networking: Linking high school and undergraduate students through low-cost approaches to teaching neuroscience. Host: Ulises M. Ricoy, The University of Arizona, Tucson, Arizona

2021 Dana Foundation Workshop; Peer mentoring of URM students. Host: Ulises M. Ricoy, The University of Arizona, Tucson, Arizona

2020-present South Tucson, Tattoos, Cockroaches and Spikes (Street Science Series). Host: Ulises M. Ricoy, The University of Arizona, Department of Neuroscience

2021-present The Brain, Health, and Disease. Host: Amphitheatre Public School System, Tucson, Arizona. Implementation of Neuroscience K1-12 Neuroscience curriculum expanding our peer mentor program: NEURON (Neuroscience Education in Undergraduate Research, Outreach, and Networking)

2021-present Ricoy Lab Neuroscience. Host: STAR Lab, Tucson, Arizona. Implementation of Neuroscience for High School curriculum expanding our peer mentor program: NEURON (Neuroscience Education in Undergraduate Research, Outreach, and Networking)

2022 Why It's Important to Bring Neuroscience to Underrepresented Communities
Dana Foundation Partner. Ulises M. Ricoy, The University of Arizona, Tucson, Arizona
https://www.youtube.com/watch?v=U8EgIHdYNs0

2022-present STAR Lab Sunnyside group is continuing their project expanding it to publish the outreach work: "The effect of caffeine in the intact nervous system of the Hissing cockroach *Gromphadorhina Portentosa***.** John E. Moore, Molly Matty, and **Ulises M. Ricoy**. **Micropublication.** The University of Arizona. Department of Neuroscience. Tucson, AZ 85721

International Outreach

2016 Grass foundation outreach. Host: Steve J. Zottoli and Ulises M. Ricoy**.** Marine Biological Laboratory, Woods Hole, MA

2019 Low-Cost Approaches in Neuroscience workshop. Host: Xicano Institute of Teaching and Organizing (XITO)

2021 Puerto Peñasco, Sonora, Mexico, Neurociencia y Biología Marina para la comunidad. Host: Ulises M. Ricoy, The University of Arizona, Department of Neuroscience

2021 Xicano Institute of Teaching and Organizing (XITO), Decolonizing Neuroscience workshop. Host Ulises M. Ricoy, The University of Arizona, Department of Neuroscience

SERVICE

Departmental Committees

2019-present Faculty Director, Undergraduate Program in Neuroscience & Cognitive Science (NSCS)
2019-present Member and Chair, NSCS Curriculum Committee
2019-Present Member and Chair, NSCS Steering Committee
2019-2021 Member and Chair, NSCS Admissions Committee

2020	Member and Chair, Lecturer Search Committee, Department of Neuroscience
2020	Member and Chair, UA NSCS Advisor Search
2021	Member and Chair, UA NSCS Coordinator Search
2021	Member and Chair, UA NSCS Senior Advisor Search
2022	Member and Chair, UA Department of Neuroscience Education Committee
2021	Member and Chair, UA NSCS Advisor Search
2021	Member and Chair, UA NSCS Student Worker
2022	Member and Chair, UA NSCS Advisor Search
2022	Member and Chair, UA NSCS Lecturer AZ Online

College of Science Committee

2019-present	Associate Department Head, Department of Neuroscience
2019-present	UA COS Diversity, Equity, and Inclusion (DEI) Committee
2019-present	UA COS DEI Student Success Subcommittee
2019-present	UA COS Student Awards Committee
2020	Member, Five Year Review of Neuroscience Department Head Committee
2022	Member, Associate Dean of Student Success Committee Search

University Service

2020-2023	University of Arizona-Pima Community College STEM Mentor
2020-2023	Reviewer, UA HSI Faculty Seed Grants
2022	College of Science Hiring Committee; Associate Dean of Student Success

National / Extramural Committees

2015	NSF IOS Reviewer
2015	NIH BUILD Reviewer
2016	NIH NM INBRE Reviewer
2016	SACNAS Committee Member (Student Posters)
2016-present	SACNAS Mentor
2016-present	Alfred Sloan Foundation Mentoring Network Board member
2016-present	NSF DUE Reviewer
2018-present	Alfred Sloan Mentoring Network Reviewer
2018	NIH BUILD Reviewer
2019-present	PULSE HHMI Fellow
2019-present	Grass Foundation Director of Outreach
2021	Chan Zuckerberg Initiative (Mentor)
2012-present	Grass Foundation Advisory Board committee (Member and Chair)

Journal Reviewer

2016-present	Peer Reviewer for Journal of Neuroscience
2016-present	Peer Reviewer for Journal of Neurophysiology
2016-present	Peer Reviewer for Behavioral Neuroscience
2016-present	Peer Reviewer for PLOS
2019-present	Peer Reviewer for Experimental Brain Research
2019-present	Peer Reviewer for Hardware X
2019-present	Peer Reviewer for Scientific Reports
2019-present	Peer Reviewer for Frontiers in Behavioral Neuroscience

2019-present Peer Reviewer for Frontiers in Physiology
2019-present Peer Reviewer for Invertebrate Physiology
2023-present Peer Reviewer for Cell
2023-present Peer Reviewer for STAR Protocols

PROFESSIONAL AFFILIATIONS

1996-present Life Member, Society for the Advancement of Chicano and Native American Scientists (SACNAS)
2004-present Member, Society for Neuroscience (SFN)
2004-present Member, National Hispanic Science Network on Drug Abuse (NHSN)
2016-present Member, American Physiological Society

PUBLICATIONS/CREATIVE ACTIVITY
KEY: *student mentee

1. Ricoy UM, Martinez JL Jr. Local hippocampal methamphetamine-induced reinforcement. Front Behav Neurosci. 2009; 3:47. doi: 10.3389/neuro.08.047.2009. ecollection 2009. PubMed PMID: 19949457; PubMed Central PMCID: PMC2783399.
2. Ricoy UM, Mao P, Manczak M, Reddy PH, Frerking ME. A transgenic mouse model for Alzheimer' disease has impaired synaptic gain but normal synaptic dynamics. Neurosci Lett. 2011 Aug 18;500(3):212-5. doi: 10.1016/j.neulet.2011.06.043. Epub 2011 Jun 29. PubMed PMID: 21741442; PubMed Central PMCID: PMC3252233.
3. Fry HC, *Garcia JM, *Medina MJ, Ricoy UM, Gosztola DJ, Nikiforov MP, Palmer LC, Stupp SI. Self-assembly of highly ordered peptide amphiphile metalloporphyrin arrays. J Am Chem Soc. 2012 Sep 12;134(36):14646-9. doi: 10.1021/ja304674d. Epub 2012 Aug 28. PubMed PMID: 22916716.
4. Ricoy UM, Frerking ME. Distinct roles for Cav2.1-2.3 in activity-dependent synaptic dynamics. J Neurophysiol. 2014 Jun 15;111(12):2404-13. doi: 10.1152/jn.00335.2013. Epub 2014 Feb 12. PubMed PMID: 24523520; PubMed Central PMCID: PMC4044429.
5. Torres DJ, Ricoy UM, Roybal S. Modeling Honeybee Populations. PLoS One. 2015;10(7): e0130966. doi: 10.1371/journal.pone.0130966. eCollection 2015. PubMed PMID: 26148010; PubMed Central PMCID: PMC4493160.
6. Torres DJ, Cannon JL, Ricoy UM, Johnson C. Self-Contained Statistical Analysis of Gene Sets. PLoS One. 2016;11(10): e0163918. doi: 10.1371/journal.pone.0163918. eCollection 2016. PubMed PMID: 27711232; PubMed Central PMCID: PMC5053608.
7. Franco D, Zamudio J, Blevins KM, Núñez-Larios EA, Ricoy UM, Iñiguez SD, Zavala AR. Early-life ketamine exposure attenuates the preference for ethanol in adolescent Sprague-Dawley rats. Behav Brain Res. 2020 Jul 1; 389:112626. doi: 10.1016/j.bbr.2020.112626. Epub 2020 Apr 30. PubMed PMID: 32361040; PubMed Central PMCID: PMC7521832.
8. Torres DJ, *Romero A, Colgan W 3rd, Ricoy UM. A low-cost computational approach to analyze spiking activity in cockroach sensory neurons. Adv Physiol Educ. 2021 Mar 1;45(1):145-153. doi: 10.1152/advan.00034.2020. PubMed PMID: 33661048; PubMed Central PMCID: PMC8091935.
9. Ramadan B, Ricoy UM. The NEURON Program: Utilizing Low-Cost Neuroscience for Remote Education Outreach. J Undergrad Neurosci Educ. 2023 May 19;21(2):A126-A132. doi: 10.59390/HMMK4371. PMID: 37588648; PMCID: PMC10426826.

OTHER SCHOLARSHIP

Conference Proceedings: Gomez-Molina J.F., Corredor M., Restrepo-Velasquez A.A**., Ricoy U.M.** (2017) Computer models for ions under electric and magnetic fields: random walks and relocation of calcium in dendrites depends on timing and population type. In: Torres I., Bustamante J., Sierra D. (eds) VII Latin American Congress on Biomedical Engineering CLAIB 2016, Bucaramanga, Santander, Colombia, October 26th -28th, 2016. IFMBE Proceedings, vol 60. Springer, Singapore. https://doi.org/10.1007/978-981-10-4086-3_175

WORKS IN PROGRESS

KEY: *student mentee

Research in Progress

Ricoy, U.M., D.J. Torres**,** Iñiguez, S.D., and Zavala A.R. Natural and Drug Reward in Cockroaches: Conditioned Place Preference in Invertebrates. In preparation. Experimental design, experiments and initial data analyses were performed in New Mexico (2013-2019) by Ricoy U.M. This manuscript examines conditioned place preference in four different species of cockroaches. Preliminary data was obtained by undergraduates as part of my CURE course in New Mexico (funded by a grant from NSF S-STEM #1562008 to U.M. Ricoy). Further, data analyses will be completed in fall of 2021 with assistance from collaborators. Manuscript was written by Ricoy U.M. and anticipate submission in Winter of 2022. Work was funded in part by a Grass Foundation Grant to U. M. Ricoy.

*Romero, A., and **Ricoy U.M.** The importance of personal experience to mentoring at-risk undergraduates and improving the probability of completion of a college degree. This manuscript examines strategies in URM STEM mentoring in the southwest by Ricoy U.M. in the fields of neuroscience and neurophysiology. Previous work and preliminary data were obtained by undergraduates as part of my CURE course in New Mexico (funded by a grant from to U.M. Ricoy). Data analyses will be completed in fall / winter of 2022. Manuscript was written by Ricoy U.M. and anticipate submission in Fall of 2023. Invited to submit to the Journal of Neuroscience Education. Work was funded in part by a Grass, NIH seed award and NSF Grants to U. M. Ricoy.

Nelson, T.M., Gonzalez, T.A., Garcia, A.K., Pham, D.Q., Franco, D., Bates E.A., **Ricoy, U.M**., Iniguez, S.D. and Zavala A.R. Sex and dose dependent differences in preference for ethanol in preadolescent and adolescent rats. This is a collaboration with A.R. Zavala and is a follow up of Franco et al., 2020. Data analyses will be completed in fall of 2021 with assistance from all collaborators. Group anticipates submission in Winter of 2023. Work was funded in part by a Grass Foundation Grant to U. M. Ricoy.

Zottoli, S.J. and **Ricoy U.M.** On the Origin of Diversity at the MBL. This is historical recollection including interviews to map the origin of diversity initiatives at the Marine Biological Laboratory that led to courses such as SPINES. Group anticipates submission in Winter of 2023. Work was funded in part by a Grass Foundation Grant to U. M. Ricoy. Manuscript design, idea, plan, experiments, and data collection analyses were performed by Ricoy U.M.

MEDIA

Featured in: Virtual Conference Lightning Talks. Neuroethology: From Behavior to Brain Lightning Talks: Characterizing Vibration Frequency Sensitivity and Neural Activity in Escaping Earthworms In this video, Ulises Ricoy and Andres Romero discuss how the earthworm can be used as a low-cost animal model to study escape behaviors at an undergraduate serving institution. https://neuronline.sfn.org/scientific-research/neuroethology-from-behavior-to-brain-lightning-talks

Featured in: Why It's Important to Bring Neuroscience to Underrepresented Communities
Dana Foundation Partner. Ulises M. Ricoy, The University of Arizona, Tucson, Arizona
https://www.youtube.com/watch?v=U8EgIHdYNs0

CONFERENCES/SCHOLARLY PRESENTATIONS

Invited Colloquia, Seminars, Symposia, and Conferences

Invited Colloquia

The Role of GABA B mediated presynaptic inhibition on CA 1 synaptic dynamics. The University of Texas at San Antonio. Center for Research and Training in Sciences. MBRS RISE/MARC Programs. Fall 2010 Seminar Series. Host: Dr. Barea-Rodriguez.

The role of presynaptic voltage gated calcium channels on Hippocampal CA1 synaptic transmission during realistic firing patterns. The University of New Mexico. School of Medicine. Department of Neurosciences. Spring 2011 Seminar Series. Host: Dr. Fernando Valenzuela.

Contribution of N, P/Q, and R type calcium channel mediated presynaptic inhibition on CA 1 synaptic dynamics. The University of North Texas Health Science Center, Department of Pharmacology and Neuroscience. Spring 2011 Seminar Series. Host: Dr. Eric Gonzales

Hippocampal Synaptic Plasticity: Behavioral Relevance and Implications for Addiction. National Hispanic Science Network on Drug Abuse. Miami, Florida. Fall 2011

Utilizing the Cockroach and Grasshopper as model systems in Neurobiology as tools to recruit and retain STEM students in Northern New Mexico. Highlands University, Las Vegas, New Mexico. Spring 2012.

The effects of presynaptic inhibition on synaptic dynamics. SACNAS 2012 National Convention. Seattle, Washington. Oct 12, 2012.

Hippocampal Synaptic Plasticity: Behavioral Relevance and Implications for Addiction. UTEP VIDA Colloquium. El Paso, Texas. Fall 2013

"The effects of environmental insult on homeostatic adaptations of synaptic transmission." Early Career Neuroscience Institute. University of Pittsburgh. Department of Neurobiology. Grant writing workshop. February 2015.

Hippocampal Synaptic Plasticity: Behavioral Relevance and Implications for Addiction. California State University, Long Beach, CA Spring 2015.

A Comparison of Locomotor Behavior between North American (Periplaneta americana) and South American (Blaptica dubia) Cockroaches. The University of New Mexico, Department of Neuroscience. Spring 2016. Host: Dr. Don Partridge.

Locomotor Behavior in an Invertebrate Biomedical Model. San Juan College. Department of Biology. Spring 2016. Host: Dr. Veronica Evans.

Keynote Seminar for RISE and MARC (NIH) students. The University of Texas at San Antonio, Department of Biology. Fall 2016. Host: Dr. Edwin Barea-Rodriguez.

Running Behavior of North American (Periplaneta americana) and South American (Blaptica dubia) Cockroaches. Ponce Health Science University. Spring 2017. Host: Dr. Kenira Thompson.

Locomotor Behavior in an Invertebrate Biomedical Model. University of Puerto Rico Ponce. Department of Biology. Spring 2017. Host: Dr. Edu Suarez.

Low-Cost Approaches in Teaching/Research an Invertebrate Biomedical Model. Marine Biological Laboratory. Woods Hole, MA. Summer 2017. Host: Dr. Gina Poe (UCLA).

Behavior and Physiology using cockroaches in a rural small College. Southern Oregon College. Coos Bay, OR. 2018.

Accessible Active Learning in Neuroscience. The University of Arizona. Tucson, AZ. Spring 2019. Host: Dr. Lynne Oland.

Low-Cost Approaches in Neuroscience (Computation, Physiology and Behavior). Grinnell College. Grinnell, IA. Spring 2019. Host: Dr. Clark Lindgren.

Modeling Natural and Drug Reward in Cockroaches. Texas A&M, College Station Texas. Spring 2020. Host: Dr. Carlos Bolanos.

Conditioned Drug Reward in Cockroaches. New Jersey Institute of Technology, NJ. Spring 2020. Host: Dr. Eric Fortune.

Life Journey - Drug Reward in Cockroaches. UTEP. Summer 2020. Host: Dr. Laura O'Dell.

Modeling Natural and Drug Reward in Cockroaches. CSULB. Summer 2020. Host: Dr. Arturo Zavala.

Low-Cost Approaches in Neuroscience (Computation, Physiology and Behavior). Claremont Colleges. Spring 2021. Host: Dr. Tom Borowski

Natural and Drug Reward in Cockroaches: Conditioned Place Preference in Invertebrates. The University of New Mexico. Spring 2021. Host: Dr. Benjamin Clark

Approaches to establishing science identity in underserved students in the Southwest. Prescott College. Spring 2021. Host: Dr. Zoe Hammer

Low-Cost Approaches to doing Good Science. Marine Biological Laboratory. Woods Hole, MA. Summer 2021. Host: Dr. Steph White (UCLA)

Low-Cost Approaches to doing Good Science. Universidad Nacional de Córdoba. Córdoba, Argentina. Fall 2021. Host: Dr. Victor Ramirez-Amaya

Low-Cost Approaches to doing Good Science. Prescott College; Dopoi Center, Kenya. Summer 2022. Host: Dr. Mary Poole

Low-Cost Neuroethology. Marine Biological Laboratory. Woods Hole, MA. Summer 2022. Host: Dr. Steph White (UCLA)

Natural Reward in Cockroaches. Universidad Nacional Autónoma de México, Colegio de Medicina. Laboratory de Endocannabinoids. Spring 2022. Host: Dr. Oscar Prospero

Culturally Responsive Mentoring in Neuroscience to increase Retention. University of Arizona; Hispanic Serving Institution (HSI) Initiatives. Fall 2022. Host: Dr. Judy Kiyama

Cultural Mentoring in Neuroscience via low-cost approaches. Arizona State University. Spring 2023. Host: Dr. Janet Neisewander

Accessible Neuroscience: Culture and Mentoring via low-cost Approaches. Massachusetts Institute of Technology. Spring 2023. Host: Dr. Guoping Feng

Accessible Neuroscience: Culture and Mentoring via low-cost Approaches. Duke University. Spring 2023. Host: Dr. Kafui Dzirasa

Culturally Responsive Mentoring Via Low-Cost Approaches in Neuroscience to Increase Retention. Marine Biological Laboratory. Neural Systems and Behavior Course Summer 2023. Host: Steph White and Alberto Pereda.

Neuroscience Culturally Responsive Mentoring Via Low-Cost Approaches in Neuroscience to Increase Retention. Marine Biological Laboratory. Neural Systems and Behavior Course Summer 2023. Host: Steph White and Alberto Pereda.

Neuroscience Culturally Responsive Research and Outreach. University of Virginia. Graduate program in Neuroscience. Spring 2024. Host: Mark Beenhakker.

Neuroscience Culturally Responsive Research and Outreach. California State University, Long Beach. Department of Psychology. Spring 2024. Host: Arturo Zavala.

Neuroethology and Neurophysiology Culturally Responsive Research and Outreach. Cornell University. Department of Neurobiology and Behavior Spring 2024. Hosts: Dr. Ron Hoy and Dr. Bruce Johnson.

The NEURON program: a culturally responsive program using neuroetholohy and neurophysiology with low cost approaches as a vehicle to recruit and retain marginalized (excluded) students. University of Nevada, Reno. Fall 2024. Host: Dr. Jennifer Hoy.

The NEURON program: a culturally responsive program using neuroetholohy and neurophysiology with low cost approaches as a vehicle to recruit and retain marginalized (excluded) students. University of Arizona, Tucson. Fall 2024. Host: Department of Entomology.

The NEURON program: a culturally responsive program using neuroetholohy and neurophysiology with low cost approaches as a vehicle to recruit and retain marginalized (excluded) students. University of California, Irvine. Fall 2024. Host: Center for the Neurobiology of Learning and Memory's CONNECT Initiative (Collaborative Outreach Network for Neuroscience Education and Community Training)

State-wide, NNMC and University of Arizona:

3rd Annual New Mexico Experimental Program to Stimulate Competitive Research (EPSCoR) Junior Faculty Leadership Workshop. January 4-7, 2011. Jemez Springs, New Mexico.

Methamphetamine Induced Behavioral Sensitization via Hippocampal Dialysis. Joshua De Aguero* and Ulises M. Ricoy. Northern New Mexico College, Department of Biology and The University of Texas at

San Antonio, Department of Biology. (Presented at Northern New Mexico College Spring 2011 Poster Session).

The Cockroach Genome Project: de novo mapping of the Periplaneta Americana and Blattella germanica genomes. Justin Salazar*, Shanae Roybal*, Richard Plunkett, Ulises M. Ricoy, and Seth Frietze. Northern New Mexico College, Department of Biology and Highlands University. (Alliance for Minority Participation, 2012).

Nature Inspired Light-Charge Transfer Molecules. Ulises M. Ricoy. Northern New Mexico College, Department of Math and Science, Program in Biology and Chemistry. Spring 2012 Seminar Series. Host: Dr. Anthony Sena.

Utilizing the Cockroach and Grasshopper as model systems in Neurobiology as tools to recruit and retain STEM students in Northern New Mexico. Ulises M. Ricoy. Highlands University, Las Vegas, New Mexico. Spring 2012 Host: Dr. Richard Plunkett.

Qualia and the Cockroach. Ulises M. Ricoy. NNMC. Spring 2012.

Soxhlet extraction techniques. Theresa Garcia*, Viviana Balzaretti, Harrison Rommel PhD, and Ulises M. Ricoy PhD Northern New Mexico College Department of Math and Physical Sciences. Northern Creativity Symposia 2013. Espanola, NM.

The cockroach transcriptome project: Identification of a methyltransferase in Periplaneta Americana. Aspen Lowance*, Shanae Roybal*, Richard Plunkett, PhD, Ulises M. Ricoy PhD, Seth Frietze, PhD. Northern New Mexico College, Department of Biology, The National Center for Research Resources & The National Institute of General Medical Sciences. 2013.

Neuroscience teaching at a minority undergraduate institution. Ulises M. Ricoy. Northern New Mexico College. Department of Biology. (SACNAS 2012).

UTEP NIH BUILD workshop (Pipeline Partner). Dr. Ulises M. Ricoy and Dr. Anthony Sena. Northern New Mexico College. El Paso, Texas 2014.

Developmental gene expression patterns in the American cockroach. Oliver Oviedo*, Chien-Chi Lo, Seth Frietze Ph.D., Ulises M. Ricoy Ph.D. Department of Biology and Chemistry. Northern New Mexico College. Espanola, NM 87532 (INBRE 2015).

The role of Octopamine in Locomotor Behavior between North American (Periplaneta americana) and South American (Blaptica dubia) Cockroaches. Alyssa Lucero*, Mario Izaguirre-Sierra Ph.D., Ulises M. Ricoy Ph.D. Department of Biology and Chemistry. Northern New Mexico College. Espanola, NM 87532 (INBRE 2015).

Shanae Roybal*3, Edgar Ronquillo2, Ashis Nandy2, Ulises M. Ricoy3, David Torres1
Northern New Mexico College. Department of Math and Physical Sciences1
College of Engineering2 Department of Biology, Chemistry, Environmental Sciences3. Espanola, NM 87532. (Annual Research and Creativity Symposium 2015).

Modeling Honeybee Populations. David Torres, Ulises M. Ricoy, and Shanae Roybal*. Department of Mathematics and Physical Sciences and Department of Biology, Chemistry, Environmental Sciences. Northern New Mexico College. (Annual Research and Creativity Symposium 2015). Espanola, NM 87532.

Establishing New Colonies of Periplaneta americana and Blaberus discoidalis for use in Molecular Biology and Neuroscience Research. Aspen Lowance*, Sam Bennett, Mario Izaguirre-Sierra Ph. D. Ulises M. Ricoy Ph. D. Northern New Mexico College, Espanola, NM, 87532. (INBRE 2016).

Statistical Analysis of Gene Sets. David Torres, Judy Cannon, Ulises M. Ricoy, Christopher Johnson. Department of Mathematics and Physical Sciences and Department of Biology, Chemistry, Environmental Sciences. Northern New Mexico College. Espanola, NM 87532. (INBRE 2016).

Locomotor Behavior in an Invertebrate Biomedical Model. Lisa Y. Salazar*, Gabriella F. Trujillo, Bridget Ortiz, Mario Izaguirre-Sierra, and Ulises M. Ricoy. Department of Biology, Chemistry, Environmental Sciences. Northern New Mexico College. Espanola, NM 87532. (INBRE 2016).

The Effect of Novelty and Stress on Insect Grooming Behavior. Bridget D. Ortiz*, Gabriella F. Trujillo*, Mario Izaguirre-Sierra, and Ulises M. Ricoy. Department of Biology, Chemistry, Environmental Sciences. Northern New Mexico College. Espanola, NM 87532. (INBRE 2016).

A comparison of drug seeking behavior and preference in Periplaneta americana and Blaberus discoidalis. Bridget D. Ortiz*, Gabriella F. Trujillo*, and Ulises M, Ricoy1; 1Biol., Northern New Mexico Col., Espanola, NM. (ARCSS 2016).

Octopamine Receptor Expression in Periplaneta americana and Blaberus. Sam Bennett*, Mario Izaguirre-Sierra Ph. D. Ulises M. Ricoy Ph. D. Northern New Mexico College, Espanola, NM, 87532. (INBRE 2017).

The effects of sugar on cockroach (Blaberus discoidales) locomotor behavior (speed and grooming). Desiree Griego, John Archuleta, and Ulises M. Ricoy. Department of Biology, Northern New Mexico College. 921 North Paseo de Oñate, Española, NM 87532. (ARCSS 2018).

Running behavior in Blaberus discoidales, Blaptica dubia, Periplaneta americana, and Gromphadorhina portentosa. Marissa Salazar, Desiree Griego, John Archuleta, and Ulises M. Ricoy. Department of Biology, Northern New Mexico College. 921 North Paseo de Oñate, Española, NM 87532. (ARCSS 2018).

Video Analyses of Running behavior in Blaptica dubia, Periplaneta americana, and Gromphadorhina portentosa. John Archuleta, Marissa Salazar, Desiree Griego, and Ulises M. Ricoy. Department of Biology, Northern New Mexico College. 921 North Paseo de Oñate, Española, NM 87532. (ARCSS 2018).

Locomotor Behavior in an Invertebrate Biomedical Model. Lisa Y. Salazar*, Gabriella F. Trujillo, Bridget Ortiz, Mario Izaguirre-Sierra, and Ulises M. Ricoy. Department of Biology, Chemistry, Environmental Sciences. Northern New Mexico College. Espanola, NM 87532. (INBRE 2018).

Imaging the Caenorhabditis elegans Germline. Shae Madrid, Patrick Sanchez, Phil Duran, Catherine Davis-Sparks, Ulises M. Ricoy, and Sushmita Nandy. Department of Biology, Northern New Mexico College. 921 North Paseo de Oñate, Española, NM 87532. (Annual Research and Creativity Symposium, NNMC 2019)

Impact of abnormal glycemic levels on feeding behavior of Caenorhabditis elegans. Phil Duran, Andres Romero, Patrick Sanchez, Catherine Davis-Sparks, Shae Madrid, Ulises M. Ricoy (Ph. D), and Sushmita

Nandy (Ph. D). Department of Biology, Northern New Mexico College. 921 North Paseo de Oñate, Española, NM 87532. (Annual Research and Creativity Symposium, NNMC 2019).

Effects of Stimulated Drug Addiction on the Neural Spike Activity of *Gromphadorhina Portentosa* and their Applications in the Identification and Treatment of Addictions. Victor Vigbedorth, Joann Valenzuela, Cynthia Bujanda, John E Moore, and Ulises M. Ricoy (presented at SARSEF; 2nd place overall).

Effects of Caffeine and Nicotine on *Gromphadorhina Portentosa* on Neural Activity. Joseph Han Catalina Foothills, John E Moore, and Ulises M. Ricoy. (Presented at SARSEF).

Behavioral Analyses of the Madagascar Hissing Cockroach (*Gromphadorhina Portentosa)* after a long-term caffeine supplemented diet. Liam Superville and Adrian Miller (TMHS), John E Moore, and Ulises M. Ricoy. (Presented at SARSEF).

National/International Conferences / Workshops

Submitted Abstracts & Poster Presentations
KEY: *student mentee

Factors of Mortality among Larval Red Drum. U. M. Ricoy. The University of Texas at Austin. Marine Science Institute. Fisheries, Aquaculture, and Mariculture Laboratories, Port Aransas, TX. (Submitted and accepted at National Minority Research Symposium, NMRS, 1997).

Analysis of Optical Plankton Counter / Bongo Net Data during CalCOFI Cruise JD9707. U. M. Ricoy and David Checkley Jr. The University of California, San Diego. Scripps Institution of Oceanography. Marine Life Research Group, La Jolla CA. (Presented at NMRS, 1998).

HSC 70 mRNA expression during the acquisition of a hippocampus-dependent spatial memory in rats. U. M. Ricoy, J. M. Pizarro, J. Fey, J. Bowlin, J. L. Martinez Jr., and E. J. Barea Rodriguez. Division of Life Sciences. The University of Texas at San Antonio, TX. (Presented at Society for the Advancement of Chicano and Native American Scientists, SACNAS, 1998).

GAP 43 mRNA expression during the acquisition of a hippocampus-dependent spatial memory in rats. J. M. Pizarro, U. M. Ricoy, J. Fey, J. Bowlin, J. L. Martinez Jr., and E. J. Barea Rodriguez. Division of Life Sciences. The University of Texas at San Antonio, TX. (Presented at SACNAS, 1998).

Anatomical Distribution of GAP 43 and HSC 70 mRNA in the Rat Brain During Training in the Morris Water Maze Task. J. M. Pizarro, M. R. Gonzáles, H. Kim, U. M. Ricoy, J. Fey, D. Villareal, A. E. Martínez, J. L. Martínez Jr., and E. J. Barea Rodríguez. Division of Life Sciences. The University of Texas at San Antonio, TX. (Presented at Society for Neuroscience, 1999).

Microarray Analysis of Altered Gene Expression Associated with D-Amphetamine Self-Administered into the nucleus Accumbens in Fisher 344 Rats. J. S. Rodriguez, U. M. Ricoy, S. Y. Boctor, C. F. Phelix, and J.L. Martinez Jr. Cajal Neuroscience Institute and Department of Biology. The University of Texas at San Antonio, TX. (Presented at Society for Neuroscience, 2004).

Methamphetamine or Morphine Induced Conditioned Place Preference: Possible Role of the Hippocampus. U. M. Ricoy and J. L. Martinez Jr. Cajal Neuroscience Institute and Department of Biology. The University of Texas at San Antonio, TX. (Presented at Society for Neuroscience, 2005).

Unilateral Intra-Hippocampal Methamphetamine Induced Place Conditioning via reverse Microdialysis. U. M. Ricoy, Cesar Bañuelos and J. L. Martínez Jr. Cajal Neuroscience Institute and Department of Biology. The University of Texas at San Antonio, TX. (Society for Neuroscience 2006).

Roundtable Breakout on Long-Term Recovery. Nelson J. Tiburcio, W, Azul La Luz B and Ulises M. Ricoy. National Development and Research Institutes, Inc. / MHRA
71 West 23rd Street, 8th Floor. New York, New York, The University of New Mexico, Department of Sociology, Albuquerque, NM and the Cajal Neuroscience Institute, San Antonio, TX "Research Teams of the Future: Drug Use and HIV/AIDS". National Hispanic Science Network on Drug Abuse 6th Annual Conference. September 13-16 in Scottsdale, Arizona 2006.

NHSN Conference Town Hall Meeting "Meet the NIDA Director: Dr. Nora Volkow". Graduate Student Leader: Ulises M. Ricoy. National Hispanic Science Network on Drug Abuse 6th Annual Conference. September 13-16 in Scottsdale, Arizona 2006.

Hippocampal Dopamine Receptor involvement in Intra-Hippocampal Methamphetamine Induced Place Conditioning and Self Administration via reverse Microdialysis. U. M. Ricoy and J. L. Martinez Jr. Department of Biology. The University of Texas at San Antonio, TX. (Presented at Society for Neuroscience 2007).

D1/D5 Receptor Involvement in Intra-Hippocampal Methamphetamine Place Conditioning and Self-Administration. U. M. Ricoy[1] and J. L. Martinez Jr[2]. [1]Oregon Health Science University and [2]The Cajal Neuroscience Institute and Department of Biology. The University of Texas at San Antonio. (Presented at SACNAS 2008).

Stages of Graduate School: Survival Kit for your Success. Session Speakers: Greg Villareal, PhD (Galanea Corporation) and Ulises M. Ricoy, Ph.D. (OHSU Postdoc). SACNAS National Conference 2008 at Salt Lake City, Utah.

A transgenic mouse model for Alzheimer's disease has impaired synaptic gain but normal synaptic dynamics. Ulises M Ricoy, Peizhong Mao, Maria Manczak, P Hemachandra Reddy, and Matthew E Frerking. Oregon Health Science University. Department of Behavioral Neuroscience. (Presented at SACNAS 2010).

Distinct Roles for Cav2.1-2.3 in activity-dependent synaptic dynamics. Ulises M Ricoy and Matthew Frerking. Oregon Health Science University. Department of Behavioral Neuroscience. (Presented at SFN 2010).

Advancing Biomedical Research Workforce Diversity: NIGMS Workshop for Post-docs Transitioning to Independent Positions. Bethesda, Maryland (March 11-12, 2010).

Self-Assembly of Highly Ordered Peptide Amphiphile Porphyrin Arrays. Jamie M. Garcia*, Matthew J. Medina*, Ulises M. Ricoy Ph.D. (Northern New Mexico College. Española, New Mexico 87532) and H. Chris Fry Ph.D. (Argonne National Laboratory, Argonne, IL 60439) Faculty and Student Teams 2011.

Hippocampal Synaptic Plasticity: Behavioral Relevance and Implications for Addiction. Ulises M. Ricoy. Northern New Mexico College, Department of Biology. Presented at National Hispanic Science Network "New Investigators in Drug Abuse Research" Friday August 26, 2011, Miami.

Antimicrobial Properties of Medicinal Plants of the Southwest. Theresa Garcia*, BS in progress1, Harrison Rommel, PhD2, Viviana Balzaretti, MA1, Cathy Pacheco, BS1 and Ulises M. Ricoy, PhD3, (1)

Biology, Northern New Mexico College, Espanola, NM, (2) Math and Science, Northern New Mexico College, Espanola, NM, (3) Biology, Northern New Mexico College, Española, NM (SACNAS 2014).

The role of Octopamine in cockroach Locomotor behavior. Lorina Gallegos*, Yvonne Vigil*, and Ulises M Ricoy. Department of Biology and Chemistry. Northern New Mexico College. Espanola, NM 87532 (SACNAS 2014).

A Comparison of South American and North American cockroach Locomotor behavior. Yvonne Vigil*, Lorina Gallegos*, and Ulises M Ricoy. Department of Biology and Chemistry. Northern New Mexico College. Espanola, NM 87532 (SACNAS 2014).

Crawdad Invertebrate Neurophysiology Course. Cornell University / Department of Neurobiology and Behavior. Instructors: Ron Hoy, Bruce Johnson, Wes Colgan (AD Instruments). January 2015.

CrawFly Invertebrate Neurophysiology Course. Cornell University / Department of Neurobiology and Behavior. Instructors: Ron Hoy, Bruce Johnson, Wes Colgan (AD Instruments). August 2015.

Early Career Neuroscience Institute. University of Pittsburgh. Department of Neurobiology. Grant writing workshop. February 2015.

A comparison of speed, grooming and seeking behavior in North and South American cockroaches. Bridget D. Ortiz*, Gabriella F. Trujillo*, Juan F. Gomez-Molina2, Mauricio Corredor3, and Ulises M, Ricoy1; 1Biol., Northern New Mexico Col., Española, NM; 2Intl. Group of Neurosci. IGN · Intl. Group of Neurosci., Medellin, Colombia; 3Inst. de Biologia, Univ. of Antioquia, Medellin, Colombia. (Submitted to Society for Neuroscience 2016).

Teaching about probability in simple ways: location probabilities, Bayesian methods and exotic probabilities in the context of conditioned place preference with cockroaches. Juan F. Gomez-Molina2, Mauricio Corredor3, and Ulises M, Ricoy1; 1Biol., Northern New México Col., Española, NM; 2Intl. Group of Neurosci. IGN · Intl. Group of Neurosci., Medellin, Colombia; 3Inst. de Biologia, Univ. of Antioquia, Medellin, Colombia. (Submitted to Society for Neuroscience 2016).

Analogy between bacteria´s quórum sensing with nervous system. Mauricio Corredor3, Juan F. Gomez-Molina2, Ulises M, Ricoy3; 3Biol., Northern New México Col., Española, NM; 2Intl. Group of Neurosci. IGN · Intl. Group of Neurosci., Medellin, Colombia; 3Inst. de Biologia, Univ. of Antioquia, Medellin, Colombia. (Submitted to Society for Neuroscience 2016).

Left-Right preference and its orthogonal processes in insect navigation: teaching algorithms for recursive programs of general neural principles. *Juan. F. Gomez-Molina1, Ulises. M. Ricoy2, Mauricio Corredor3, A. Restrepo-Velazquez4, Fabiola Lopera1; 1Intl. Group of Neurosci. (IGN), Medellin, Colombia; 2Biology, Chem. and Envrn. Sci., Northern New Mexico Col., Española, NM;3Biol. (GEBIOMIC and GRC research groups), Univ. of Antioquia, Medellin, Colombia; 4Informatica y Sistemas, EAFIT Univ., Medellin, Colombia. (Submitted to Society for Neuroscience 2016).

Non-invasive brain stimulation for addiction: can we boost a hypothetical frontal ephaptic signaling of theta/gamma waves? Juan F. Gomez-Molina1, Ulises M. Ricoy3, Mauricio Corredor4, L. F. Botero-Posada5, J. Velez2; 1Intl. Group of Neurosci. (IGN), Medellin, Colombia; 2USA-member, Intl. Group of Neurosci. (IGN), New York, NY; 3Biology, Chem. and Envrn. Sci., Northern New Mexico Col., Española, NM; 4Biol. (GEBIOMICS, GRC research groups), Univ. of Antioquia, Medellin, Colombia; 5Med. Sch., CES Univ., Medellin, Colombia. (Submitted to Society for Neuroscience 2016).

Linton-Poodry SACNAS Summer Leadership Institute at the American Academy for the Advancement of Science in Washington D.C. (July 18-22, 2016). Ulises M. Ricoy.

Can diffuse and small molecular electric signaling due to oxidative stress cause neurodegenerative diseases? Computer tools, neuromodulation (TMS, TES) and diagnosis (EEG, new MRIs). U. M. Ricoy, J. F. Gomez-Molina, C. Vélez-Pardo, M. Jiménez Del Rio, M. Corredor, G. Perry; Intl. Group of Neurosci. (IGN), Medellín, Colombia; 2Inst. de Investigaciones Médicas, Biol. Inst., Univ. of Antioquia, Medellín, Colombia; Grupo de Neurociencias de Antioquia, University of Antioquia, Medellín, Colombia; Col. of Sci., Univ. of Texas at San Antonio, San Antonio, TX. (Submitted to Society for Neuroscience 2017).

Locomotion in insects (cockroaches and ants): waves and discrete states of neural activity in modules for central pattern generation. J. F. Gomez-Molina, A. L. Gomez-Molina, *U. M. Ricoy; Intl. Group of Neurosci. (IGN), Medellin, Colombia; Biol., Northern New Mexico Col., Espanola, NM. (Submitted to Society for Neuroscience 2017).

Teaching Python and MATLAB for insect behavior: a minimalist neural model with biologically realistic characteristics. U. M. Ricoy, J. F. Gomez-Molina, M. Corredor; Biol., Northern New México Col., Española, NM; Intl. Group of Neurosci. (IGN), Medellin, Colombia; Biol. Inst., Univ. of Antioquia, Medellin, Colombia. (Submitted to Society for Neuroscience 2017).

Characterizing vibration frequency sensitivity and neural activity in escaping earthworms. A. Romero, W. Colgan and U. M. Ricoy, Northern New Mexico Col., Espanola, NM 87532 (Society for Neuroscience 2019).

Modeling Drug Reward with Invertebrates. Y. Vigil and U. M. Ricoy, Department of Biology, Northern New Mexico College. 921 North Paseo de Oñate, Española, NM 87532. (Society for Neuroscience 2019).

Invertebrate Model of Drug Seeking with Cockroaches. U. M. Ricoy, Department of Biology, Northern New Mexico College. 921 North Paseo de Oñate, Española, NM 87532. (NHSN 2019).
Biological Models of Chronic Diseases. W. Atchison[1], Alexandra Colon[1], Ulises M. Ricoy[2], and Perez-Bonilla[1], P. [1]Michigan State University, Department of Neuroscience and [2]Northern New Mexico College. 921 North Paseo de Oñate, Española, NM 87532. (SACNAS 2019).

A simple oculomotor psychophysical experiment to teach interpretation of variance, p-values, and non-parametric statistics. J. F. Gomez-Molina, A. L. Gomez-Molina, *U. M. Ricoy; Intl. Group of Neurosci. (IGN), Medellin, Colombia; Biol., Northern New Mexico Col., Espanola, NM. (Society for Neuroscience 2019).

Cockroach Conditioned Place Preference. U. M. Ricoy[1,2], [1]Department of Biology, Northern New Mexico College. 921 North Paseo de Oñate, Española, NM 87532. [2]Department of Neuroscience, The University of Arizona. Tucson, AZ 85721. (NHSN 2020).

Cockroach Conditioned Place Preference. U. M. Ricoy[1, 2], [1]Department of Biology, Northern New Mexico College. 921 North Paseo de Oñate, Española, NM 87532. [2]Department of Neuroscience, The University of Arizona. Tucson, AZ 85721. (Presented Society for Neuroscience 2020).

Teaching the strange and unsolved mathematical issues of electromagnetism and quantum fields in the brain with mechanics, toy models, history, and a humble philosophical perspective. J. F. Gomez-Molina[1], U. M. Ricoy[2], A. L. Gomez-Molina[3]. [1]Intl. Group of Neuroscience, IGN: N (S, E, P), Medellin,

Colombia; [2]Dept Neurosci., Univ. of Arizona, Tucson, AZ; [3]Neuro-Philosophy subgroup NP, Intl. Group of Neuroscience, IGN:N(S,E,P), NP subgroup, Medellin, Colombia. (Presented Society for Neuroscience 2020).

Sex and dose dependent differences in preference for ethanol in preadolescent and adolescent rats. T.M. Nelson, T. A. González, A. K. García, D. Q. Pham, D. Franco, E. A. Bates, U. M. Ricoy, S. D. Iñiguez, A. R. Zavala. California State University, Long Beach, CA, The University of Arizona, Tucson, AZ, The University of Texas at El Paso. (Submitted to Society for Neuroscience 2021).

A spreadsheet structure for an EEG/neurofeedback-based re-classification of Alzheimer-disease trajectories with a novel philosophical approach. *J. F. Gomez-Molina1, U. M. Ricoy2, Á. L. Gomez-Molina1;1Intl. Group of Neuroscience, IGN: N (S, E, P), Medellin, Colombia; 2Dept. of Neurosci., Univ. of Arizona, Tucson, AZ. (Presented Society for Neuroscience 2021).

Developing Low-Cost Invertebrate Platforms for Neuroscience Outreach, Education, and Research. Johnathan E. Moore[1,2], David A. Esparza[1], Ian A. Mendez[1], Ulises M. Ricoy[2], and Laura E. O'Dell Montelongo.[1] [1]Department of Psychology, The University of Texas at El Paso, El Paso, TX 79968 [2]Department of Neuroscience, The University of Arizona, Tucson, AZ 85721. (Presented at NIDA SMART MIND; 2022)

Developing Low-Cost Methods for Research in Neuroscience and Substance Use for High School Curricula. David A. Esparza, [1]Johnathan E. Moore[1,2], Laura E. O'Dell Montelongo[1] and Ulises M. Ricoy[2]. and [1]Department of Psychology, The University of Texas at El Paso, El Paso, TX 79968 [2]Department of Neuroscience, The University of Arizona, Tucson, AZ 85721. (Presented at NIDA SMART MIND; 2022)

Low-cost approaches in neuroscience to quantify animal behavior in cockroaches
J. E. Moore 1, V. Truong 2, U. M. Ricoy 1, *J. Verpeut 3; 1 Dept Neurosci., Univ. of Arizona, Tucson, AZ; 2 Psychology, 3 Arizona State Univ., Tempe, AZ. (Presented at Society for Neuroscience; 2023)

HSI STEM National Hub Conference: Empowering Faculty and Unlocking Pathways for Leadership. Ulises M. Ricoy. Albuquerque, New Mexico, 2023.

AWARDED GRANTS AND CONTRACTS

Federal

DOE-FaST LANL 2012 (P.I. H. Ulises Ricoy) **$25,000**
NSF-ROA 2013 (Parent Grant: P.I. Stephen Meriney Award Number EAGER IOS 1249546) 2014 **$ 25,000**
NSF S-STEM (P.I. Ulises Ricoy) NSF-DUE Award Number 0806469 (*ended on December 31, 2013*) **$600,000**
NSF-STeP (Parent Grant: Highlands University; 2013-2017) $ **60,000** / year
NSF-ROA 2014 (Parent Grant: P.I. Stephen Meriney Award Number EAGER IOS 1249546) Summer 2013 **$ 25,000**
DOE-VFP LANL 2014 (P.I. Ulises Ricoy) **$25,000**
DOE; LANL-Chemistry **$200,000**
UTEP-BUILD $ 22.6 million → 1 % approximately to Northern **$ 226,00**NIH BUILD SEED (P.I. Ulises Ricoy) Collaboration with Dr. David Torres for Computational Biology course 2015. **$ 20,000**
NIH INBRE Pilot Award (P.I. Ulises Ricoy) Sensory Processing in a Model System. 2015. **$20,000**

NIH BUILD SEED (P.I. Ulises Ricoy) Collaboration with Dr. David Torres for Low-Cost Approaches in Neuroscience 2017. **$ 20,000**
NSF INCLUDES (former Co-P.I. Ulises Ricoy) NSF-ICER Award Number 1649296 September 12, 2016. **$ 299,776**
NIH INBRE Pilot Award (Co-P.I. Ulises Ricoy) Analyzing Gene Sets in Cancer 2016. **$20,000**
NIH AREA R15 SEED (P.I. Ulises Ricoy) Computational approaches in Neuroscience in rural Northern New Mexico course 2019. **$20,000**
NSF EPSCoR IWG (P.I. Ulises Ricoy) Indigenous approaches in Science April 1, 2017, **$ 7,500**
NSF S-STEM (P.I. Ulises Ricoy) NSF-DUE Award Number 1562008 August 31, 2016 – August 31, 2022**. $ 999,999** (Co-PI at no cost since joining UA)

Private Foundation

Grass Foundation (P.I. Ulises Ricoy) Neuroscience Outreach in New Mexico 2015, **$10,000**
Grass Foundation (P.I. Ulises Ricoy) Neuroscience Educator Award 2016, **$10,000**
Grass Foundation (P.I. Ulises Ricoy) Neuroscience Institutions with Limited Resources 2019 **$30,000**
Grass Foundation (P.I. Ulises Ricoy) Neuroscience Peer-mentoring 2020 **$ 30,000**
Grass Foundation (P.I. Ulises Ricoy) Director of Outreach 2020 **$ 10,000**
Grass Foundation (P.I. Ulises Ricoy) Low-Cost Approaches in Neuroscience; (a research initiative in peer mentor outreach in education: determining the maximization of retention). 2021 **$36,000**
Dana Foundation (P.I. Ulises Ricoy) NEURON: Neuroscience Education in Undergraduate Research, Outreach, and Networking. **$1,500**
Grass Foundation (P.I. Ulises Ricoy) Director of Outreach 2021 **$20,000**
Grass Foundation (P.I. Ulises Ricoy) Neuroscience Ricoy Vision 2022 **$ 200,000**
Grass Foundation (P.I. Ulises Ricoy) Bridge Summer Funding Ricoy 2023 **$ 40,000**

University of Arizona

CURE Institute (P.I. Martha Bhattacharya and Co-P.I. Ulises Ricoy) 2021-2022 **$7500**
Undergraduate Research Expansion Faculty Challenge Grant 2021-2022 **$2500**

SUBMITTED GRANTS/CONTRACTS (not awarded)

Federal

NSF MRI (P.I. Ulises Ricoy) January 13, 2017, **$ 650,000** (ranked highly, not recommended)
NSF REU (Co P.I. Ulises Ricoy with UMass Amherst) August 27, 2018, **$ 600,000** (ranked highly, not recommended)

University of Arizona

Provost Investment Fund 2019 (P.I. Ulises Ricoy) **$200,000** STEM Mobile – Southwest mobile outreach vehicle (ranked highly, not recommended)
Provost Investment Fund 2022 (P.I. Ulises Ricoy) **$200,000** NEURON: Neuroscience Education in Undergraduate Research, Outreach, and Networking (ranked highly, not recommended)

Curriculum vitae
Nicholas James Strausfeld

Education

University College London, UK	BSc	1961-1965	Zoology
University College London, UK	Ph.D.	1965-1968	Neurophysiology
University of Frankfurt, German Federal Republic	Habilitation	1985	Zoology

Academic Appointments

2005- 2021 **Director**, Center for Insect Science
2005- 2021 **Director**, NIH IRACDA Program: Postdoctoral Excellence in Research & Teaching.
1997- 1998 **Professor of International Studies**, University of Arizona
1995- present **Professor of Ecology and Evolutionary Biology**, University of Arizona,
1994 **Adjunct Professor of Art**, The Depart of Art, University of Arizona
1992- present **Professor of Entomology**, Department of Entomology. University of Arizona,
1987- present **Professor of Neuroscience**, University of Arizona, Tucson
1975- 1986 **Group Leader (tenured)**, Neurobiology Group, European Molecular Biology Laboratory, Heidelberg, GFR.
1970-75 **Staff Scientist (tenured)**, Max-Planck-Institute for Biological Cybernetics, Tübingen, GFR.
1968-1970 **Postdoctoral Scholar**, University of Frankfurt, GFR

Awards/Honors

2013 PROSE Award for Excellence in Biological & Life Sciences**,** Association of American Publishers, Spring
2011 Henry & Phyllis Koffler Prize for Research, Scholarship and Creative Activity
2009 Volkswagen Stiftung Visiting Professorship, Max-Plank-Institute for Chemical Ecology.
2008 Resident Scholar. Rockefeller Foundation Bellagio Center, Italy
2008 Elected corresponding member of the Akademia Scientiarum Göttingensis.
2002 Elected Fellow of the Royal Society of London
2001 Alexander von Humboldt Senior Research Prize
1999 Regents' Professor, University of Arizona
1995 Fellow, Japanese Society for the Promotion of Science
1995 Fellow, John D. and Catherine T. MacArthur Foundation
1994 Fellow, John Simon Guggenheim Memorial Foundation
1968-70 Alexander von Humboldt Foundation Postdoctoral Scholar, University of Frankfurt, GFR.

Grants since preceding APR

05/09/18, Boulder Nonlinear Systems; Amplitude and Polarization High-Speed Image Display (Aphid) for Characterizing Invertebrate Vision,	$45,000.
07/31/18, NIH, NIGMS; Postdoctoral Excellence In Research & Teaching,	$8,907,467
07/31/20, NIH, NIGMS; Postdoctoral Excellence In Research & Teaching,	$1,873,483
12/31/23, NSF, IOS; Collaborative Research: Origin and Evolutionary Divergence of the Pancrustacean Brain.	$712,371

Publications (since 2012). Total 206 since 1970, plus four books).

Strausfeld NJ. 2012. Arthropod Brains: Evolution, Functional Elegance, and Historical Significance. Harvard University Press, Belknap. 848 pp.

Ma X, Hou X, Edgecombe GD, **Strausfeld NJ**. 2012.Complex brain and optic lobes in an early Cambrian arthropod. Nature. 490:258-261.

Mu L, Ito K, Bacon JP, **Strausfeld NJ.** 2012. Optic glomeruli and their inputs in *Drosophila* share an organizational ground pattern with the antennal lobes. J Neurosci. 32:6061-6071.

Lin C, **Strausfeld NJ. 2012**. Visual inputs to the mushroom body calyces of the whirligig beetle *Dineutus sublineatus*: modality switching in an insect. J Comp Neurol. 520:2562-2574.

Phillips-Portillo J, **Strausfeld NJ**. 2012. Representation of the brain's superior protocerebrum of the flesh fly, *Neobellieria bullata*, in the central body. J Comp Neurol. 520:3070-3087.

Wolff G, Harzsch S, Hansson BS, Brown S, **Strausfeld NJ**. 2012. Neuronal organization of the hemiellipsoid body of the land hermit crab, *Coenobita clypeatus*: correspondence with the mushroom body ground pattern. J Comp Neurol. 520:2824-2846.

Lin C, **Strausfeld NJ**. 2013 A precocious adult visual center in the larva defines the unique optic lobe of the split-eyed whirligig beetle *Dineutus sublineatus*. Front Zool. 2013 Feb 19;101:7.

Strausfeld NJ, Hirth F. 2013. Deep homology of arthropod central complex and vertebrate basal ganglia. Science. 340:157-161.

Tanaka G, Hou X, Ma X, Edgecombe GD, **Strausfeld NJ**. 2013. Chelicerate neural ground pattern in a Cambrian great appendage arthropod. Nature. 2013 Oct 17;5027471:364-367.

Ito K, Shinomiya K, Ito M, Armstrong D, Boyan G, Hartenstein V, Harzsch S, Heisenberg M, Homberg U, Jenett A, Keshishian H, Restifo L, Rössler W, Simpson J, **Strausfeld NJ**, Strauss R, Vosshall LB. 2014. A systematic nomenclature for the insect brain. Neuron 18: 755–765.

Ma X, Cong P, Hou X, Edgecombe GD, **Strausfeld NJ**. 2014. An exceptionally preserved arthropod cardiovascular system from the early Cambrian. Nature Communications 5, 3560..

Mu L, Bacon JP, Ito K, **Strausfeld NJ**. 2014. Responses of Drosophila giant descending neurons to visual and mechanical stimuli. The Journal of Experimental Biology. 217Pt 12:2121–2129.

Cong P, Ma X, Hou X, Edgecombe G, **Strausfeld N. J.** 2014. Brain structure resolves the segmental affinity of anomalocaridid appendages. Nature 513, 538–542

Ma X, Edgecombe GD, Hou X, Goral T, **Strausfeld NJ.** 2015. Preservational pathways of corresponding brains of a Cambrian euarthropod. Current Biology 2522:2969–75.

Edgecombe GD, Ma X, **Strausfeld NJ**. 2015 Unlocking the early fossil record of the arthropod central nervous system. Philosophical transactions of the Royal Society of London. Series B, Biological Sciences. 3701684.

Strausfeld NJ. 2015. Palaeontology: clearing the heads of Cambrian arthropods. Current biology 2514, 616–618.

Wolff GH, **Strausfeld NJ.** 2015. Genealogical correspondence of mushroom bodies across invertebrate phyla. Current Biology 251:38–44.

Fiore VG, Dolan RJ**, Strausfeld NJ**, Hirth F. 2015. Evolutionarily conserved mechanisms for the selection and maintenance of behavioural activity. Philosophical transactions of the Royal Society of London. Series B, Biological Sciences 3701684

Strausfeld NJ, Wolff GH. 2016. The Insect Brain: A Commentated Primer. In: Structure and Evolution of Invertebrate Nervous Systems. Oxford: Oxford University Press; 2016 p. 597–639.

Strausfeld NJ, Ma X, Edgecombe GD, Fortey RA, Land MF, Liu Y, Cong P, Hou X. 2016. Arthropod eyes: The early Cambrian fossil record and divergent evolution of visual systems. Arthropod Structure & Development 45, 152-172.

Strausfeld NJ. 2016. *Waptia* revisited: Intimations of behaviors. Arthropod Structure & Development 45, 173-184.

Strausfeld NJ 2016 Introduction to 'Homology and convergence in nervous system evolution'. Philosophical Transactions of the Royal Society 371, 20-34.

Strausfeld NJ, & Wolff, G. H. 2016. Genealogical correspondence of a forebrain centre implies an executive brain in the protostome–deuterostome bilaterian ancestor. Philosophical Transactions of the Royal Society B: Biological Sciences, 3711685, 20150055. doi:10.1098/rstb.2015.0055

Strausfeld NJ, Hirth F. 2016. Introduction to 'Homology and convergence in nervous system evolution'. Philosophical Transactions of the Royal Society B, 371. doi:10.1098/rstb.2015.0034

Strausfeld N 2016. Waptia revisited: Intimations of behaviors. Arthropod Structure & Development. doi:10.1016/j.asd.2015.09.001

Strausfeld, N. J., Wolff, G. H., Marshall, N. J., & Thoen, H. H. 2017. Insect-Like Organization of the Stomatopod Central Complex: Functional and Phylogenetic Implications. *Frontiers in Behavioral Neuroscience*. doi:10.3389/fnbeh.2017.00012

Thoen, H. H., Marshall, J., Wolff, G. H., & **Strausfeld, N. J.** 2017. Insect-Like Organization of the Stomatopod Central Complex: Functional and Phylogenetic Implications. *Frontiers in behavioral neuroscience*, 11, 12.

Thoen, H. H., **Strausfeld, N. J**., & Marshall, J. 2017. Neural organization of afferent pathways from the stomatopod compound eye.. *The Journal of comparative neurology*, 52514, 3010-3030. doi:10.1002/cne.24256

Thoen, H. H., **Strausfeld, N. J**., & Marshall, J. 2017. Pathways underlying colour and polarisation processing in stomatopods. *Integrative and Comparative Biology*, 57.

Wolff, G. H., Thoen, H. H., Marshall, J., Sayre, M. E., & **Strausfeld, N. J.** 2017. An insect-like mushroom body in a crustacean brain.. *eLife*, 6. doi:10.7554/elife.29889

Lessios, N., Rutowski, R. L., Cohen, J. H., Sayre, M. E., & **Strausfeld, N. J.** 2018. Multiple spectral channels in branchiopods. I. Vision in dim light and neural correlates.. *The Journal of experimental biology*, 221Pt 10. doi:10.1242/jeb.165860

Thoen, H. H., Sayre, M. E., Marshall, J., & **Strausfeld, N. J.** 2018. Representation of the stomatopod's retinal midband in the optic lobes: Putative neural substrates for integrating chromatic, achromatic and polarization information.. *The Journal of comparative neurology*, 5267, 1148-1165. doi:10.1002/cne.24398

Sayre, M. E., & **Strausfeld, N. J**. 2019. Mushroom bodies in crustaceans: Insect-like organization in the caridid shrimp Lebbeus groenlandicus.. *The Journal of comparative neurology*, 52714, 2371-2387. doi:10.1002/cne.24678

Thoen, H. H., Wolff, G. H., Marshall, J., Sayre, M. E., & **Strausfeld, N. J**. 2020. The reniform body: An integrative lateral protocerebral neuropil complex of Eumalacostraca identified in Stomatopoda and Brachyura.. *The Journal of comparative neurology*, 5287, 1079-1094. doi:10.1002/cne.24788

Li, G., Forero, M. G., Wentzell, J. S., Durmus, I., Wolf, R., Anthoney, N. C., Parker, M., Jiang, R., Hasenauer, J., **Strausfeld, N. J**., Heisenberg, M., & Hidalgo, A. 2020. A Toll-receptor map underlies structural brain plasticity.. *eLife*, 9, 1-32. doi:10.7554/elife.52743

Strausfeld, N. J. 2020. Nomen est omen, cognitive dissonance, and homology of memory centers in crustaceans and insects.. *The Journal of comparative neurology*, 52815, 2595-2601. doi:10.1002/cne.24919

Strausfeld, N. J., & Sayre, M. E. 2020. Mushroom bodies in Reptantia reflect a major transition in crustacean brain evolution.. *The Journal of comparative neurology*, 5282, 261-282. doi:10.1002/cne.24752

Ludlow, Z. N., Kottler, B., Hirth, F., Hartmann, B., Goker, M., Dearlove, J., **Strausfeld, N. J**., Callaerts, P., Broeck, L. V., & Bridi, J. C. 2020. Ancestral regulatory mechanisms specify conserved midbrain circuitry in arthropods and vertebrates.. *Proceedings of the National Academy of Sciences of the United States of America*, 11732, 19544-19555. doi:10.1073/pnas.1918797117

Strausfeld, N. J., Wolff, G. H., & Sayre, M. E. 2020. Mushroom body evolution demonstrates homology and divergence across Pancrustacea.. *eLife*, 9. doi:10.7554/elife.52411

Strausfeld, N. J.2021. Mushroom bodies and reniform bodies coexisting in crabs cannot both be homologs of the insect mushroom body.. *The Journal of comparative neurology*, 52912, 3265-3271. doi:10.1002/cne.25152

Strausfeld, N. J. 2021. The lobula plate is exclusive to insects.. *Arthropod structure & development*, 61, 101031. doi:10.1016/j.asd.2021.101031

Strausfeld, N. J., & Olea-Rowe, B. 2021. Convergent evolution of optic lobe neuropil in Pancrustacea.. *Arthropod structure & development*, 61, 101040. doi:10.1016/j.asd.2021.101040

Strausfeld, N. J., & Sayre, M. E. 2021. Shore crabs reveal novel evolutionary attributes of the mushroom body.. *eLife*, 10, 1-38. doi:10.7554/elife.65167

Lan, T., He, Y., Zhao, Y., Zhao, F., Martinez, P., & **Strausfeld, N. J**. 2021. Leanchoiliidae reveals the ancestral organization of the stem euarthropod brain.. *Current biology : CB*, 3119, 4397-4404.e2. doi:10.1016/j.cub.2021.07.048

Steinbrenner, A. D., Snell, E. H., Royer, C. A., Murphy, C. A., Morris, J. T., Kim, H., Jolles, A. E., Caetano-Anolles, G., Bogdan, P., & **Strausfeld, N. J.** 2022. Biological Networks across Scales-The Theoretical and Empirical Foundations for Time-Varying Complex Networks that Connect Structure and Function across Levels of Biological Organization.. *Integrative and comparative biology*, 616, 1991-2010. doi:10.1093/icb/icab069

Strausfeld, N. J., Hou, X., Sayre, M. E., & Hirth, F. 2022. The lower Cambrian lobopodian *Cardiodictyon* resolves the origin of euarthropod brains. *Science*, 3786622, 905-909. doi:10.1126/science.abn6264

Strausfeld, N. J., Hou, X., Sayre, M. E., & Hirth, F. 2023. Response to Comment on "The lower Cambrian lobopodian *Cardiodictyon* resolves the origin of euarthropod brains". Science 380, DOI: 10.1126/science.adg6

Strausfeld, N. J. Hirth, F. 2024. Marine Origin of the Arachnid Brain Reveals Early Divergence of Chelicerata. bioRxiv, doi: https://doi.org/10.1101/2024.02.27.58239

MELVILLE WOHLGEMUTH

University of Arizona
Department of Neuroscience
Tucson, AZ 85721
www.arizonabatlab.com

wohlgemuth@arizona.edu
520-621-6640 (work)
415-867-2242 (cell)

EDUCATION

University of California-San Francisco — **Ph.D. in Neuroscience, 2008**
The University of St. Andrews — **M.Phil. in Animal Behavior, 2002**
Haverford College — **B.S. in Behavioral Ecology, 1999**

ACADEMIC RESEARCH

University of Arizona (2020-)
- Assistant Professor, research on bottom-up and top-down circuit dynamics for sensing and adaptive behavior in the natural environment.

Johns Hopkins University (2014-2019)
- Postdoctoral research on sensorimotor integration and spatial representation in echolocating bats (mentor: Cynthia Moss).

University of Maryland (2009-2014)
- Postdoctoral research on sensorimotor integration in bats (mentor: Cynthia Moss).

University of California-San Francisco (2002-2009)
- Doctoral research on the motor coding for bird song.
- Title: Song coding in the Robust Nucleus of the Arcopallium (RA) of Bengalese finches, *Lonchura domestica* (mentor: Michael Brainard).

The University of St. Andrews, Department of Biology (2001-2002)
- Masters research on song evolution in the Chaffinch (*Fringilla Coelebs*).
- Title: A longitudinal study of syllable usage in the Orcadian population of chaffinches, *Fringilla coelebs* (mentor: Peter Slater).

Bryn Mawr and Haverford Colleges (1998-1999)
- Senior thesis research on selective frugivory in seasonal avian migrants.
- Title: A comparative study of the migratory nutritional requirements in North American thrushes.

Swarthmore College, Department of Biology (1997-1998)
- Research on the effects of land formations upon nocturnal migratory routes.
- Title: Preliminary results of a combined radar and ceilometer study of bird migration through a mountain pass, Franconia Notch, New Hampshire.

Makalu Barun National Park and Conservation Area, Nepal (1998)
- Assessment of the effects of human population density upon species diversity for the Mountain Institute and His Majesties Government, Nepal.
- Title: The relationship between village size and species diversity in avian communities of Makalu Barun National Park and Conservation Area.

PUBLICATIONS (* Denotes equal contribution)

LAWLOR, J. **WOHLGEMUTH, MJ.** MOSS, CF. KUCHIBHOTLA, KV (2023). Spatially clustered neurons encode vocalization categories in the bat midbrain. *bioRxiv* 2023:6/14.

WOHLGEMUTH, MJ. SALLES, A. MOSS, CF. (2023). Sonar-guided attention in natural tasks. *Molecular Psychology: Brain, Behavior, and Society*.

SALLES, A. **WOHLGEMUTH, MJ.** MOSS, CF. (2022). Neural coding of 3D spatial location, orientation, and action selection in echolocating bats. *Trends in Neuroscience,* 46(1): 5-7.

WIJESINGHE, L. P., **WOHLGEMUTH, M. J.**, SO, R. H., TRIESCH, J., MOSS, C. F., & SHI, B. E. (2021). Active head rolls enhance sonar-based auditory localization performance. PLoS Computational Biology, 17(5), E1008973.

YU, C. LUO, J. **WOHLGEMUTH, MJ.** MOSS, CF. (2019). Echolocating bats inspect and discriminate landmark features to guide navigation. *Journal of Experimental Biology* 222.8: jeb191965

WOHLGEMUTH, MJ. YU, C. MOSS, CF. (2018). 3D hippocampal place field dynamics in free-flying echolocating bats. *Frontiers in Cellular Neuroscience* 12 (270): 10.3389/ fncel.2018.00270.

WOHLGEMUTH*, MJ. KOTHARI*, NB. MOSS, CF. (2018). Dynamic representation of 3D auditory space in the midbrain of the free-flying echolocating bat. *eLife* 7: e29053.

KOTHARI, NB. **WOHLGEMUTH, MJ.** MOSS, CF. (2018). Adaptive sonar call timing supports target tracking in echolocating bats. *Journal of Experimental Biology*: jeb-176537.

JONES, TK. **WOHLGEMUTH, MJ.** CONNER, WE. (2018). Active acoustic interference elicits echolocation changes in heterospecific bats. *Journal of Experimental Biology*: jeb-176511.

WOHLGEMUTH, MJ. KOTHARI, NB. MOSS, CF. (2018). Functional organization and dynamic activity in the superior colliculus of the echolocating bat, *Eptesicus Fuscus*. *Journal of Neuroscience* 38(1): 245-256.

WOHLGEMUTH, MJ. LUO, J. MOSS, CF. (2016). Three-dimensional auditory localization in the echolocating bat. *Current Opinion in Neurobiology* (41): 76-86.

KIM, JJ. **WOHLGEMUTH, MJ.** MOSS, CF. HORIUCHI, T. (2016). BatFlash: a Head-Mounted Led for Detecting Bat Echolocation. *IEEE, International Conference on Biomedical Circuits & Systems* (Bio CAS2016).

WOHLGEMUTH, MJ. KOTHARI, NB. MOSS, CF. (2016). Action Enhances Acoustic Cues for 3-D Target Localization by Echolocating Bats. *PLoS Biology* 14.9: e1002544.

WOHLGEMUTH, MJ. MOSS, CF. (2016). Midbrain auditory selectivity to natural sounds. *Proceedings of the National Academy of Sciences*, 113(9): 2508-2513.

WOHLGEMUTH*, MJ. KOTHARI*, NB. HULGARD, K. SURLYKKE, A. MOSS, CF. (2014). Timing matters: sonar call groups facilitate localization in bats. *Frontiers in Physiology*, 168. doi:10.3389

WOHLGEMUTH, MJ. and MOSS, CF. (2013). Active listening in a complex environment. *Journal of the Acoustical Society of America*, POMA, Vol. 19, 010030.

WOHLGEMUTH*, MJ. SOBER*, S. BRAINARD, M. (2010). Linked control of syllable sequence and phonology in birdsong. *Journal of Neuroscience*, 30(39): 12936-49.

WOHLGEMUTH*, MJ. SOBER*, S. BRAINARD, M. (2008). Central contributions to acoustic variation in a songbird. *Journal of Neuroscience* 28(41): 10370-9.

SINCICH, L. PARK, K. **WOHLGEMUTH, MJ.** HORTON, J. (2004) Bypassing V1: a direct geniculate input to area MT. *Nature Neuroscience* 7(10): 1123-1128.

AWARDS & FUNDING

Seymour Benzer/Sydney Brenner Lecture (2024)

- Invited speaker for the 2024 National Academy of Sciences Distinctive Voices Lecture Series

Kavli Fellow (2023-)

- Invited speaker for the 2023 Kavli Frontiers of Science Symposium

N.I.H. B.R.A.I.N. Initiative R34 (2020)

- Technology development grant between Johns Hopkins University and the University of Arizona to create optical tools (imaging and optogenetics) for the echolocating bat.

Hartwell Foundation Biomedical Research Award (2017)

- Postdoctoral fellowship for work on sensorimotor integration in the superior colliculus for natural adaptive behaviors.

Johns Hopkins University Dean's Teaching Fellowship (2017)

- Fellowship awarded to postdoctoral fellows to conceive, develop, and teach an upper-level undergraduate course.

Internationals Society for Neuroethology Travel Award (2016)

- Travel award to present at the International Congress on Neuroethology Meeting in Montevideo, Uruguay.

ASA Travel Award (2014)

- Travel award to present at the Hokkaido Neuroethology Workshop Satellite Symposium for the International Congress on Neuroethology Meeting in Sapporo, Japan.

CEBH Fellowship (2009-2012)

- University of Maryland, Center for the Evolutionary Biology of Hearing Postdoctoral Training grant (NIH T32 training grant).

Regent's Fellowship (2002)

- University of California-San Francisco Regent's Award.

Member of Sigma Xi (1998-present)

- Member of Swarthmore College's chapter of Sigma Xi.

CURRICULUM VITAE

Konrad E. Zinsmaier, Ph. D.
School of Brain, Mind and Behavior
Department of Neuroscience
University of Arizona
Tucson, AZ 85721-0077
(520) 626-1343
Email: kez4@arizona.edu

Education and Positions

1969 – 1979	Abitur	Staffelsee Gymnasium, Murnau, Germany.
1979 – 1981	Military Service	5. Gebirgsjägerbatallion 222, Mittenwald, Germany.
1981 – 1987	Diploma Biology	Julius Maximilian Universität, Würzburg, Germany.
1987 – 1988	Thesis of Diploma	Institut für Genetik (advisor: E. Buchner), Julius Maximilian Universität, Würzburg, Germany.
1988 – 1990	Dr. rer. nat. (Ph.D.)	Institut für Genetik (advisor: Dr. Erich Buchner), Julius Maximilian Universität, Würzburg, Germany.
1990 – 1993	Research Fellow	Division of Biology (advisor: Dr. Seymour Benzer), California Institute of Technology, Pasadena, California.
1993 – 1995	Senior Research Fellow	Division of Biology (advisor: Dr. Seymour Benzer), California Institute of Technology, Pasadena, California.
1995 – 2002	Assistant Professor	Department of Neuroscience, University of Pennsylvania School of Medicine, Philadelphia, Pennsylvania.
2002 – 2008	Associate Professor	Arizona Research Laboratories Division of Neurobiology, University of Arizona, Tucson, Arizona; (primary appointment).
2002 – 2008	Associate Professor	Department of Molecular and Cellular Biology, University of Arizona, Tucson, Arizona; (secondary appointment).
2008 – 2009	Professor	Arizona Research Laboratories Division of Neurobiology, University of Arizona, Tucson, Arizona; (primary appointment).
2008 – 2022	Chair	Graduate Interdisciplinary Program in Neuroscience, University of Arizona. Tucson, Arizona.
2008 – today	Professor	Department of Molecular and Cellular Biology, University of Arizona, Tucson, Arizona; (secondary appointment).
2009 – today	Professor	Department of Neuroscience, University of Arizona, Tucson, Arizona; (primary appointment).
2021 – 2022	Interim-Head	Department of Neuroscience, University of Arizona. Tucson, Arizona.
2022 – today	Head	Department of Neuroscience, University of Arizona. Tucson, Arizona.

Memberships in Graduate Groups

1995 – 2002	Neuroscience Graduate Group, University of Pennsylvania School of Medicine, Philadelphia, Pennsylvania.
2002 – today	Graduate Interdisciplinary Program in Neuroscience, Committee on Neuroscience, University of Arizona. Tucson, Arizona.
2002 – today	Graduate Program in Biochemistry and Molecular & Cellular Biology, University of Arizona. Tucson, Arizona.
2002 – today	Graduate Interdisciplinary Program in Physiological Sciences, University of Arizona. Tucson, Arizona.
2004 – today	Graduate Interdisciplinary Program in Insect Science, University of Arizona. Tucson, Arizona.

Editorial Activities

2022 – today	Frontiers in Neuroscience, Associate Editor.

Professional Awards (including past Research Awards)

1988 – 1990	Doctoral Fellowship, Julius Maximilian Universität, Würzburg, Germany.

1991 – 1992 Post-Doctoral Fellowship, Deutsche Forschungsgemeinschaft, Germany.
1996 Equipment Award, The Research Foundation, University of Pennsylvania, Philadelphia, Pennsylvania.
1996 – 2000 Research Award, "Genetic dissection of synaptic vesicle exocytosis in *Drosophila"*, Whitehall Foundation, Palm Beach, Florida.
1997 – 1999 Basil O'Connor Starter Scholar Research Award, "Identification of CSP ligands and analysis of their role in neurotransmission", March of Dimes Birth Defects Foundation, White Plains, New York.
1997 – 2001 Research Grant Award (IBN-9604889), "Analysis of *Drosophila* CSP and its role for neurotransmission", National Science Foundation (NSF).
1998 – 2006 Research Grant Award (1RO1NS38274-01), "The role of CSP/Hsc70 for regulated neurotransmitter release", National Institute of Neurological Disorders and Stroke.
2002 – 2005 Research Grant Award (IBN-013542), "Mechanisms of fast neurotransmitter secretion", National Science Foundation.
2006 – 2009 Exploratory/Development Grant R21 (R21 NS55202), *"*Role of presynaptic calcium stores", National Institute of Neurological Disorders and Stroke (NINDS).
2007 – 2010 Small Research Grant Program (RO3 NS057215), "Genetic analysis of synaptic function", National Institute of Neurological Disorders and Stroke (NINDS).
2007 – 2015 Research Grant Award (R01NS052664), *"Role of dMiro signaling for axonal transport of mitochondria"*, National Institute of Neurological Disorders and Stroke (NINDS).
2009 – 2011 Small Research Grant Program (RO3 MH087827), "Neuronal Role of Lipid Flippases", National Institute of Neurological Disorders and Stroke (NIMH).
2010 – 2012 Research Program for Science Advancement, "Molecular Mechanisms of Mitochondrial Transport in Axons and Dendrites", Arizona Partners in Science.
2011 – 2015 Research Grant Award (IOS-1121054), "Molecular Mechanisms of Neurotransmitter Release", National Science Foundation (NSF).
2014 – 2016 Research Grant Award (RO1 NS083846, sub-contract), "Characterization of CSP-Dynamin interactions preventing neurodegeneration", National Institute of Neurological Disorders and Stroke (NINDS).
2015 – 2017 2015 Bisgrove Scholar Program (18851, Co-PI), Science Foundation Arizona.
2015 – 2018 Research Grant Award (1R21 NS094809-01), "A Fly Model of Autosomal-Dominant Adult-Onset Neuronal Ceroid Lipofuscinosis (ANCL)", National Institute of Neurological Disorders and Stroke (NINDS).
2020 – 2023 Research Grant Award (1R21 NS117855-01), "Cysteine-string Protein and Neurodegeneration", National Institute of Neurological Disorders and Stroke (NINDS).

Memberships in Professional and Scientific Societies

The Genetics Society of America
The Society for Neuroscience

Service to Scientific Community

Invited Lecturer, Drosophila Neurobiology Course, Cold Spring Harbor Laboratories, Cold Spring Harbor, New York, July 12, 1999.
Session Chair, 42nd Annual *Drosophila* Research Conference, March 21-25, 2001, Washington, DC.
Reviewer Journals: Cell, Neuron, Science, Journal of Neuroscience, The EMBO Journal, Journal of Physiology, Journal of Neurobiology, Biochemical Journal, The Journal of Comparative Neurology, Journal of Cell Biology, Public Library of Science (Plos), Frontiers in Neuroscience**,** Human Molecular Genetics**,** Philosophical Transactions B, Genetics, Disease Models & Mechanisms.
Reviewer Grant Agencies:
National Institutes of Health (ad hoc member): NDPR 2004; NOMD 2006; SYN 2006, 2008, 2009, 2010, 2012, 2015; ZRG1 2009; F03 2011, 2011, 2014; ZRG1 MDCN-T 2011, 2012; ZRG1 MDCN-A (SYN), 2014, 2015; ZRG1 MDCN-G, 2014; F03B, 2017; ZNS1 SRB-M, 2017; ZMH1 ERB-Q (T32), 2018; ZRG1 F03A-A (20) L, 2022; CMND, 2022.
National Science Foundation 1994, 1998, 1999, 2008, 2009, 2012, 2013, 2015.
National Research Council, American Association for the Advancement of Science (COBRE) 2001, 2002.
U.S. Civilian Research and Development Foundation (CRDF) 2004, 2005, 2007.
Estonian Science Foundation (ETF) 2010.

Medical Research Council (MRC) 2010, 2012, 2017.
The Wellcome Trust 2003, 2004, 2005, 2008, 2009, 2010.
Fonds National de la Recherche (FNR) Luxembourg, CORE Review, 2015.
Biotechnology and Biological Sciences Research Council (BBSRC), UK, July 11, 2016; June 2017.
Fondazione Telethon ETS, Italy, April 24, 2024.

Workshop Organizer: Michael S. Levine, Barbara Lom, Konrad E. Zinsmaier. "Challenges in Neuroscience Training". 55th Annual Drosophila Research Conference, November 9, 2013, San Diego, CA. This workshop is disseminated as online content on SfN.org.

Major Teaching Responsibilities

Medical Student Teaching

1. Brain and Behavior, Neuroanatomy Lab, Section Leader, 1999 – 2002.

Graduate Student Teaching

1. Cell & Molecular Neuroscience Core Course (INSC 571), Instructor, 1996 – 2001.
2. Cell & Molecular Neuroscience Core Course (INSC 571), Director & Instructor, 1998 – 2001.
3. Neuropharmacology/Neurochemistry (INSC 510), Instructor, 1998 – 2002.
4. Basic Skills Journal Club (INSC 577), Instructor, 1998 – 2002.
5. Electrical Language of Cells (INSC 572), Instructor, 1998 – 2002.
6. Cellular and Molecular Biology (BIOM 600), Instructor, 2000 – 2002.
7. Advanced Topics in Synaptic Transmission (INSC 579), Director & Instructor, 2001 – 2002.
8. Concepts in Genetics Analysis (MCB 545), Advisor, 2002.
9. Problem Solving with Genetic Tools (MCB 323) Director & Instructor, 2003.
10. Problem Solving with Genetic Tools (MCB 422) Director & Instructor, 2004 – 2011.
11. Molecular Biology (MCB411), Instructor, 2007.
12. Neuro Journal Club (NRSC 399), Director & Instructor, 2003 – 2005.
13. Principles of Molecular and Cellular Neurobiology (NRSC 588), Director & Instructor, 2003 – 2022.
14. Neuroscience Colloquium (NRSC 695F/G), Director & Instructor, 2005 – 2021.

Undergraduate Student Teaching

1. Problem Solving with Genetic Tools (MCB 323), Lecturer, 2003.
2. Problem Solving with Genetic Tools (MCB 422), Lecturer, 2004.
3. Molecular Biology (MCB 411), Lecturer, Spring 2007.
4. Honors Biology (Bio181H), Instructor, Spring 2003 – 2004.
5. Problem Solving with Genetic Tools (MCB 422), Director & Lecturer, Spring 2005 – 2011.
6. Learning and Memory (NROS 412) Director & Instructor, 2012 – 2013.
7. Engaging Topics in NSCS (NSCS 195B) Instructor, 2018 – 2020.
8. Neurogenetics (NROS 430) Director & Instructor, 2012 – today.
9. Neurogenetics (NROS 430 AZonline) Director & Instructor, 2023 – today.
10. Learning & Memory (NROS 412) Director & Instructor, 2023 – today.

Internships

1. Salomon Abuliak (1996), Federal Work Study Program
2. Keesha Haemlin (1998), Federal Work Study Program
3. Julia Jackson (1999), Federal Work Study Program
4. James C. Lee (2000), Federal Work Study Program
5. Miriam Schoenfield (2004), Undergraduate Biology Research Program (funded by NSF REU)
6. Bryan M. Thomas (2005), Minority Health Disparities Summer Research Program (funded by NIH)
7. Amit Srivastava (2008), Undergraduate Biology Research Program (funded by NSF REU)
8. Amit Srivastava (2009), Undergraduate Biology Research Program (funded by NSF REU)
9. Kiria Kiviat (2009), Undergraduate Biology Research Program (funded by NSF REU)
10. Brenda Lundt (2009), Arizona Science Teacher Advancement and Research Training Program (AZ START), funded by the Science Foundation Arizona
11. Brenda Lundt (2010), Arizona Partners in Science, funded by Research Corporation for Science Advancement
12. Alie Jonathan Buckmire (2010), Volunteer
13. Rachel E. Langston (2011), Undergraduate Biology Research Program (UBRP, funded by NSF REU)
14. Micheal O'Connor (2011), Volunteer
15. Brenda Lundt (2011), Arizona Partners in Science (funded by Research Corporation for Science Advancement)
16. Alexander Wellington (2011-12), High School Student, Volunteer

17. Adam M. James (2012), Undergraduate program MCB, Volunteer
18. Richard A. Jamison (2013), Undergraduate program MCB, Volunteer
19. Hojin Seo (2013 – 2014), Undergraduate program MCB Volunteer
20. Gabby Grinslade (2014 spring), Undergraduate program MCB, Volunteer
21. Cruice, Kathryn Lynn (2014 spring), Undergraduate program Vet Science/Microbiology, Volunteer
22. Joseph Anthony Agosttini (2014 summer), MARC program (NSCS), Research Internship
23. Ryan Sangston (2014 summer), Undergraduate Biology Research Program (funded by NSF REU), NSCS Undergraduate Program, Research Internship
24. Kimberly F Young (2014 fall), MCB Undergraduate Program, Volunteer
25. Mirka Maria Honkanen (2013 – 2014), Neuroscience B.S., Volunteer
26. Jin Sang Pyon (2015 summer), NSCS Undergraduate Program, NSCS Summer Research Program (NSCS SRP)
27. Stephan Christopher Dong (2015 summer), NSCS Undergraduate Program, Volunteer
28. Selina Kindelay (2015 summer), The Border Latino & American Indian Summer Exposure to Research (BLAISER), NSCS Undergraduate Program
29. Gurneet Singh Dhaliwal (fall 2018), NSCS Undergraduate Program, Volunteer
30. Sahej Dodd (fall 2018),NSCS Undergraduate Program, Volunteer
31. Moqian (Albert) Zheng (fall 2018), NSCS Undergraduate Program, Volunteer
32. Eleazar Togawa Moreno (fall 2019), PSIO Undergraduate Program, Volunteer
33. Harkee S Halait (spring 2021), NSCS Undergraduate Program, Volunteer.
34. Ciara Lynn Faude (summer 2021), Native American Cancer Prevention Program, Internship.
35. Ciara Lynn Faude (fall 2021 - spring 2022), NSCS Undergraduate Program, Volunteer.
36. Franchesca Fernandez, (summer 2022), Smith College, Paid Summer Internship.
37. Brianna Rivera, (summer 2023), Arizona State University (ASU).
38. Elizabeth Lopez, (summer – fall 2022), NSCS Undergraduate Program, Volunteer.
39. Alex Agnello, (summer 2022), NSCS Undergraduate Program, Volunteer.
40. Jake Lee Chester (fall 2021 - today), NSCS Undergraduate Program, Volunteer.
41. Noah Alan Shedivy (fall 2022 - today), NSCS Undergraduate Program, Volunteer.
42. Sam Lee (fall 2022), MCB Undergraduate Program, Volunteer.
43. Brianna Rivera (summer 2024), ASU, Neuroscience Program, Summer Internship.

Foreign Graduate Exchange Program

1. Isabell Schwenkert (spring/summer 2001), Biology Diploma Student, University of Würzburg, Germany
2. Christian Simon (summer 2005), Biology Diploma Student, University of Würzburg, Germany

Undergraduate Student Studies

1. Anandani Nellan (BMCB), Independent Study, 2003 –2004
2. Derek Burdsall (BMCB), Independent Study, 2003
3. Keta Joshipura (BMCB), Senior Honors Thesis, 2004 – 2005
4. Jon Dzwonkoski (BMCB), Independent Study, 2005 – 2005
5. Renee Zerui (BMCB), Independent Study, 2006 – 2007
6. David Salkoff (BMCB), Independent Study, 2006 – 2007
7. Van Duong (BMCB), Independent Study, 2006 – 2008
8. Kei Nagatomo (BMCB), Independent Study, 2006 –2 007
9. Gary J Russo (BMCB), Senior Honors Thesis, 2006 – 2007
10. Briana Bermudez (BMCB), Independent Study, Senior Honors Thesis, 2007 – 2008
11. Min Zhu (BMCB), Independent Study, Senior Honors Thesis, 2008 – 2008
12. Adele D Zhou (BIOC), Honors Independent Study, 2008 – 2009
13. Becky J Emerson (MCB) Independent Study, 2008 – 2008
14. Derek M Donovan (ECOL) Independent Study, 2008 – 2009
15. Amit Srivastava (BMCB), Independent Study and Honors Thesis, 2008 – 2010
16. Craig M Shuman (MCB), Directed Research, 2009 – 2010
17. Christopher J Gay (PSIO), Independent Study and Senior Capstone Thesis, 2009 – 2010
18. Tzu Chuan Chen (MCB), Directed Research, 2010 – 2011
19. Natalie S Provencio (BMB), Independent Study, 2010 – 2012
20. Amanda A Lee (MCB), Independent Study, 2010 – 2012
21. Jinyuan (Nathan) Zhang (PSYC), Independent Study, 2011
22. Rachel E Langston (MCB, UBRP), Independent Study & Honors Thesis, 2011 – 2012

23. Timothey Corley (BMB), Independent Study & Senior Capstone, 2011– 2012
24. Micheal O'Connor (MCB), Directed Research, 2011– 2012
25. Sara Pousti (ECOL), Independent Study, 2011– 2012
26. Miqdalia Gonzales (BIOC), Independent Study, 2011 – today
27. Terra Kuhn (MCB, UBRP), Independent Study & Honors Thesis, 2012 – 2013
28. Richard A Jamison (MCB), Directed Research, 2012 – 2013
29. Adam M James (MCB), Directed Research, 2012 – 2013
30. Benjamin Hunter (BIOC), Independent Study, 2013 – 2014
31. Jaime Lynn Sexton (MCB, PSYC) Independent Study, 2013 – 2014
32. Marija Zaruba (NSCS/Linguistics), Independent Study, 2013 – 2014
33. Kimberly F Young (MCB), Independent Study, 2014 (spring)
34. Nathan Alan Stange (NSCS), Independent Study, 2014 (fall)
35. Dylon K Gookin (NSCS), Honors Thesis, fall 2014 – spring 2015
36. Ryan Michael Sangston (NSCS), Honors Thesis, summer 2014 – spring 2015
37. Cruice, Kathryn Lynn (Microbiology), Independent Study, fall 2014 – spring 2015
38. Kimberly F Young (MCB), Independent Study, spring 2015
39. Hojin Seo A (MCB), Independent Study, spring 2014 – spring 2016
40. Jin Sang Pyon (NSCS), Honors Independent Study (spring 2015), spring 2015 – spring 2016
41. Stephan Christopher Dong (NSCS), Independent Study (fall 2016), summer 2015 – spring 2016
42. Selina Kindelay (NSCS), Independent Study (fall 2014), Independent Study (2016-) fall 2014 – spring 2016
43. David Tyler Eves (NSCS), Independent Study, fall 2015 – fall 2016
44. Nicole Wysteria Buss (NSCS), Independent Study, fall 2015 – fall 2016
45. Anna Liliana Seghezzo (NSCS), Honors Thesis Independent Study, fall 2015 – spring 2016
46. Srini Venkatesh (NSCS, Honors Independent Study, spring 2016
47. Lior Attias (NSCS), Honors Thesis Independent Study, fall 2016 – spring 2017
48. Alyssa C Lane (PSIO), Honors Thesis Independent Study, fall 2016 – spring 2017
49. Israel Jimenez (Biol), Independent Study, summer– fall 2017
50. Patrick James Maloney (MCB/Pub Health), summer 2017 – spring 2018
51. Justine Marissa Mona (NSCS), Honors thesis, fall 2017 – spring 2018
52. Sam Beauchamp (NSCS), Independent Study, fall 2017 – spring 2018
53. Jesse Scott (BMCB), Independent Study, fall 2017 – spring 2018
54. Nick Zellmer (Bio), Independent Study, fall 2017 – spring 2018
55. Drew Sheets (Performance/Philosophy), Independent Study, fall 2017 – fall 2018
56. Naya Nejib Ibrahim (NSCS), Independent Study, fall 2018
57. Moqian (Albert) Zheng (NSCS), Independent Study, spring 2019 – fall 2019
58. Eleazar Togawa Moreno (PSIO), Independent Study, spring 2020
59. Bryce Andrew Richey (NSCS), Independent Study, spring 2019 – spring 2021
60. Leonel Angel Elena-Sanchez (NROS), Independent Study, spring 2020 – spring 2021
61. Gurneet Singh Dhaliwal (NSCS), Independent Study, spring 2019 – spring 2021
62. Anayse Leah Blakley (MCB/NSCS), Independent Study, fall 2020 – spring 2022
63. Gurneet Singh Dhaliwal (NSCS), Honors Thesis, spring 2021 – spring 2022
64. Harkeerat Halait (NSCS), Honors Thesis, spring 2021 – spring 2022
65. Jake Lee Chester (NSCS), Independent Study, fall 2021 – today
66. Alex Agnello (NSCS), Independent Study, fall 2022
67. Paola Arambula Hernandez (NSCS), Preceptorship, spring 2023
68. Holden Blau (NSCS), Independent Study, spring 2023 - today
69. Elizabeth Lopez (NSCS), Independent Study, spring 2023
70. Sam Lee (MCB), Independent Study, spring 2023
71. Brennan Kennedy (BIOC), Capstone Thesis, fall 2023 – spring 2024
72. Sage Ann Higbee (ECOL), Independent Study, fall 2023 – today
73. Daniel Gregory Hom (NSCS), Independent Study, fall 2023 – today
74. Alex Agnello (NSCS), Independent Study, fall 2023 – today
75. Moorea Linda Neimeier (NSCS), Independent Study, spring 2024 – today
76. Sthuthi Das (NSCS), Independent Study, spring 2024 – today
77. Donovan Alexander Davis (NSCS), Independent Study, spring 2024 – today

Graduate Student Laboratory Rotations

1. Julia Wenniger (NRSC), fall 1996

2. Peter Bronk (NRSC), spring 1997
3. Peter Bronk (NRSC), fall 1997
4. Xiufang Guo (NRSC), summer 1997
5. Xiufang Guo (NRSC), fall 1997
6. Mark Beenhakker (NRSC), fall 1998
7. Shari Hertzberg (NRSC), fall 1999
8. James Clay Gaspard (BIO), fall 1999
9. Matthew Giampola (NRSC), spring 2001
10. Darren Hess (MD/PHD), spring 2001
11. Matthew Giampola (NRSC), summer 2001
12. Joe Mazzulli (NRSC), fall 2001
13. Alexander Bobbs (BMCB), fall 2003
14. Dan Burhans (NRSC), spring 2005
15. Marina Cholanian (NRSC) summer 2009
16. Judith Tello (NRSC), fall 2009
17. Clayton Mosher (NRSC), spring 2010
18. Lillian Patron (NRSC), summer 2010
19. Meaghan Torvund (NRSC), fall 2011
20. Elliot Imler (NRSC) spring 2012
21. Anjaneya Sinha (ABBS), spring 2013
22. Oscar Mendez (NRSC), spring 2015
23. Cesar Augusto Medina (NRSC), fall 2015

Preliminary Exam Committees

1. Mike Kaplan (NRSC), 1995
2. Gregory M. Bump (NRSC), 1996
3. Peter Schotland (NRSC), 1997
4. Kareen Davis (NRSC), 1997
5. Aae Suzuki (NRSC), 1998
6. Wei Song (NRSC), 2000
7. Yang Jin (NRSC), 2001
8. Shari Hertzberg (NRSC), 2001
9. Ann-Marie Cziko (NRSC), 2004 (Chair)
10. David Lent (NRSC), 2005
11. Jennie Crane (NRSC), 2004 (finished with Master's degree)
12. Jason Worrell (PS), 2005
13. Sarvari Panchumarthi (BMCB), 2006
14. Christopher Theal (NRSC), 2006
15. Fangle Hu (BMCB), 2007 (finished with Master's degree)
16. David Andrew (NRSC), 2008
17. Alex Thome (NRSC), 2009
18. Babic Milos (NRSC), 2009
19. Marina Cholanian (NRSC), 2010
20. Minryong Song (NRSC), 2010 (Chair)
21. Gary Russo (BMCB), 2010
22. Lilian Patron (NRSC), 2011
23. Sarah Lewis (NRSC), 2012
24. Sarah MacNamee (NRSC), 2012
25. Brian Mozer (NRSC), 2012
26. Judith Tello (NRSC), 2012 – 2013
27. Adam Lester (NRSC), 2012 – 2013
28. Sara S. Parker (Cell Mol Med), 2013
29. Ji-Young Kim (PHARM), 2013.
30. Elliot Imler (NRSC), 2013
31. Alyssa Coyne (NRSC), 2013 – 2014 (Chair)
32. Andrew J. Flores (PSIO), 2014 – 2015
33. Ernesto Manzo (MCB), 2014 – 2015
34. Meaghan Torvund (NRSC), 2015

35. Daniel Thomas Gray (NRCS), 2015 – 2016
36. Philip Putnam (NRSC), 2016
37. Oscar A. Mendez (NRSC), 2016
38. Samer Masri (NRSC), 2016 –2017 (Chair)
39. Silvana Ayala Pelaez, Sep. 2017
40. Benjamin Aaron Schwartz, 2019 Chair)
41. Hannah Dollish (NRSC), 2019 (Chair)
42. Laurel Dieckhaus (BME), 2021
43. Christopher Scott Campbell (NRSC), 2021
44. Elizabeth Wright (NRSC), 2021 (Chair)
45. Marc Zempare (NRSC), 2022
46. Brendan Riske (EIS), 2020 – 2024

Ph.D. & M.S. Thesis Committees

1. Mike Kaplan (NRSC), Ph.D., 1996 – 2001
2. Julia Wenniger (NRSC), Ph.D., 1997 – 1999 (Advisor)
3. Xiufang Guo (NRSC), Ph.D., 1998 – 2004 (Advisor)
4. Peter Bronk (NRSC), Ph.D., 1998 – 2002 (Advisor)
5. Zhaohai Yang (NRSC), Ph.D., 1999 – 2001
6. Leslie Hickman (NRSC), Ph.D., 1998 – 2002
7. Peter Schotland (NRSC), Ph.D., 1998 – 2002
8. Angela M. Jaramillo (NRSC), Ph.D., 2000 – 2002 (Chair until 2002, external member).
9. Keith Fournier (PHARM), Ph.D., 2001 – 2002
10. Davide Dulcis (PSIO), Ph.D., 2002 –2003
11. Jenny Crane (NRSC), Ph.D., 2003 –2004
12. David Lent (NRSC), Ph.D., 2004 – 2006
13. Susy Kim (NRSC), Ph.D., 2006 – 2007 (Chair, Advisor)
14. Fangle Hu (BMCB), M.S., 2007 (Advisor)
15. Christopher Theal (NRSC), M.S., 2006 – 2007
16. Jason Worrell (PSIO), Ph.D., 2005 – 2008
17. Ann-Marie Cziko (NRSC), Ph.D., 2004 – 2009 (Chair, Advisor)
18. Sarvari Panchumarthi (BMCB), Ph.D., 2006 – 2010 (Chair, Advisor)
19. Riddhi Majumder, Biology, Ph.D., 2009 (external reviewer, TATA Institute of Fundamental Research, India)
20. Aimee J. Littleton (BMCB), M.S., 2008 – 2009
21. Lan Hoang (NRSC), M.S., 2010
22. Alex Thome (NRSC), Ph.D., 2009 – 2012
23. Min Zhu (MCB). M.S., 2009 – 2012, (Advisor)
24. David Andrew (NRSC), Ph.D., 2011 – 2012
25. Zaneta Navratilova (NRSC), Ph.D., 2012
26. Gary Russo (BMCB), Ph.D., 2010 – 2012, (Chair, Advisor)
27. Marina Cholanian (NRSC), 2010 – 2013
28. Clayton Mosher (NRSC), Ph.D., 2012 – 2014
29. Shizuka Bridget Yamada (MCB), M.S., 2013 – 2014, (Accelerated M.S.)
30. Sara S. Parker (CMM), Ph.D., 2013 – 2015
31. Milos Babic (NRSC), Ph.D., 2009 – 2015, (Advisor)
32. Sarah Lewis (NRSC), Ph.D., 2012 – 2015
33. Ji-Young Kim (PHARM), Ph.D., 2013 – 2015
34. Christopher Deer (ABS-PSM). M.S., 2015
35. Sarah MacNamee (NRSC), Ph.D., 2012 – 2016
36. Alyssa Coyne (NRCS), Ph.D., 2014 – 2016, (Chair)
37. Elliot Imler (NRCS), 2014 – 2016, (Advisor)
38. Lilian A. Patron Ayala (NRSC), Ph.D., 2010 – 2017, (Advisor)
39. Andres Alejandro Morera (MCB), Ph.D., 2014 – 2018
40. Nicole Wysteria Buss (MCB), M.S., 2017 – 2018, (Advisor)
41. Adam Lester (NRSC), 2016 – 2019, (Chair)
42. Ernesto Manzo (MCB), 2015 – 2019
43. Meaghan Torvund (NRSC), 2015 – 2019, (Advisor)
44. Dilia Ayala (CMM), 2018 – 2019, (Chair, M.S.)

45. Hannah Dollish (NRSC), 2019 – 2022, (Chair)
46. Benjamin Aaron Schwartz (NRSC), 2020 – 2021, (Chair)
47. Erik Larsen (NRSC), 2020 – 2022
48. Brendan Riske (EIS), 2020 – today
49. Elizabeth Wright (NRSC), 2021 – today, (Chair)
50. Kiara Bachtle (PCOL), 2024 – today

Graduate Students and Post-Doctoral Fellows

Graduate Students

1. Julia Wenniger (Ph.D.), Neuroscience, 1997 – 1999
2. Peter Bronk (Ph.D.), Neuroscience, supp. by a NRSA fellowship, 1998 – 2002
   Winner of Saul Winegrad Award for Outstanding Dissertation at the University of Pennsylvania
   Winner of Flexner Price for Outstanding Dissertation in Neuroscience
3. Xiufang Guo (Ph.D.), Neuroscience, 1998 – 2004
4. Wei Song (Ph.D.), Neuroscience, 2000 – 2004
5. Fangle Hu ,(M.S.), Neuroscience, 2004 – 2007
6. Susy Kim (Ph.D.), Neuroscience, 2007 – 2007
7. Ann-Marie Cziko (Ph.D.), Neuroscience, 2007 – 2009
8. Sarvari Panchumarthi (Ph.D.), Biochemistry and Mol. & Cell. Biology, 2004 – 2010
9. Gary Russo (Ph.D.) Biochemistry and Mol. & Cell. Biology, 2008 – 2012
10. Min Zhu (M.S.), Mol. & Cell. Biology, 2009 – 2012
11. Milosh Babic (Ph.D.), Neuroscience, 2008 – 2015
12. Elliot Imler (Ph.D.), Neuroscience, 2012 – 2016
13. Lilian Adilene Patron Ayala (Ph.D.), Neuroscience, 2010 – 2017
14. Meaghan Torvund (Ph.D.), Neuroscience, 2012 – 2019
15. Nicole Wysteria Buss (MCB), M.S., 2017 – 2018
16. Dilia Ayala (CMM), 2018 – 2019

Post-Doctoral Fellows

1. Ravi Ranjan, 1996 – 2000
2. Zhiping Nie, 1997 – 2000
3. Greg Macleod, 2004 – 2006
4. Jessica Garb, supported by a Kirschstein NRSA fellowship, 2007 – 2009
5. Mays Imad, supported by PERT fellowship, 2006 – 2013
6. Gary Russo, 2012 – 2013
7. Sara S. Parker, supported by Bisgrove Scholar fellowship, SFS, 2015 – 2017

Visiting scientists hosted.

Mingshan Xue (May 2005), Graduate Student, Baylor College of Medicine, Houston TX,
Erich Buchner (12/27/05 – 2/7/06), Professor of Genetics and Neurobiology, Department of Genetics and Neurobiology, Julius Maximilian Universität, Würzburg, Germany.

Academic Committees

University of Pennsylvania, 1995-2002

Curriculum Committee of the Neuroscience Graduate Group, Member, 1997 – 2002
Hearing Board for the Student Disciplinary System, Member, 1998 – 2002
Hearing Board for the Code of Academic Integrity, Member, 1998 – 2002
Library Committee of the Institute of Neurological Sciences, 1998 – 2002
Research Fellow Mentor Committee, Elizabeth Meyer-Bernstein, 2001 – 2002

University of Arizona, 2002 - today

Faculty Search Committee, Arizona Research Laboratories, Division of Neurobiology, UA, 2002
Annual Report Evaluation Committee, Arizona Research Laboratories, Division of Neurobiology, UA, 2003
Executive Committee, GIDP in Neuroscience, UA, 2003 – 2007
Curriculum Evaluation Committee, Committee on Neuroscience, UA, 2004
Neuroscience Training Grant Steering Committee, UA, 2004 – 2007
Admissions Committee, Interdisciplinary Graduate Program in Insect Science (IDPIS), UA, 2005
Search Committee for Director of Center for Insect Science, Arizona Research Laboratories, UA, 2005

Neuroscience Admissions Committee (Chair), Committee on Neuroscience, UA, 2006 – 2007
Graduate Student Admissions Committee, Committee on Neuroscience, UA, 2007
Interim Chair, Graduate Interdisciplinary Program in Neuroscience and Committee on Neuroscience, UA, 2007 – 2008
Small Grant Award Committee, Center of Insect Science, UA, 2008
Seminar Committee (Chair since 2005), Committee on Neuroscience, UA, 2003 – 2008
PERT Search Committee, Center for Insect Science, UA, 2004 – 2009
Vision Group Committee, chaired by L. Nadel, Transformation of University of Arizona, 2008 – 2008
Interim Chair, Neuroscience Graduate Group, Committee on Neuroscience, UA, 2008 – 2008
Committee developing a Neuroscience Initiative that links basic and clinical research between UA COM, ASU, and the area hospitals, College of Medicine-Phoenix, 2008 – 2009
Taskforce Entomology & Insect Science Graduate Program, UA, 2009 – 2009
Planning Committee, Promotion & Tenure Rules, Department of Neuroscience, UA, 2009 – 2009
PERT Search Committee, Center for Insect Science, UA, 2004 – 2009
SWOT Committee, chaired by C. Barnes, BIO5 initiative for Neuroscience, UA, 2008 – 2009
School of Mind, Brain and Behavior, Initiative Committee, UA, 2008 – May 2009
Director, Fly Food Facility, ARL, UA, 2008 – 2011
Neuroscience Search Committee for Clinical and Translational Science Institute (CTSI), chaired by C. Barnes, BIO5 initiative for Neuroscience, UA, 2009 – 2011
Planning Committee Neuroscience Major, Department of Neuroscience, UA, 2009 – 2010
Neuroscience Search Committee for Clinical and Translational Science Institute (CTSI), UA, 2009 – 2013
Academic Program Review, GIDP Neuroscience, Self Study Committee, UA, 2010
Bylaws Committee, Department of Neuroscience, UA, 2010
Academic Program Review Committee, Department of Psychology, UA, 2011
Executive Committee, Entomology & Insect Science Graduate Program, UA, 2011 – 2012
Vision & Planning Committee, Department of Neuroscience, UA, 2012
Promotion and Tenure Committee, Department of Neuroscience, UA, 2012
Society for Neuroscience, Committee on Neuroscience Departments and Programs (CNDP), 2010 – 2013
Faculty Search Committee, Department of Neuroscience, UA, 2012 – 2013
Review Committee, NSCS major, School of Mind, Brain and Behavior, UA, 2013
Chair, Faculty Search Committee, Department of Neuroscience, UA, 2013 – 2014
Faculty Search Committee, Department of Physiology, UA, 2014
IMSD Steering Committee, UA, 2009 – 2014
Faculty Search Committee, Department of Neuroscience, UA, 2014 – 2015
Strategic Planning Workshop on Imaging, Office for Research & Discovery, Biosphere2, UA, Aug. 17-18, 2015
Faculty Search Committee, Department of Neuroscience, UA, 2015 – 2016
NSCS Planning Committee, Department of Neuroscience, UA, 2016
Academic Program Review, GIDP Neuroscience, Self-Study Committee, UA, 2017 – 2018
College of Science Faculty Advisory Committee, College of Science, UA, 2014 – 2018
Promotion and Tenure Committee, Department of Neuroscience, UA, 2015 – 2019
Faculty Search Committee, Department of Neuroscience, UA, 2018 – 2019
Chair, Promotion and Tenure Committee, Department of Neuroscience, UA, 2020
Chair, Executive Committee, GIDP in Neuroscience, UA, 2008 – 2022
Chair, Department Head Search Committee, Department of Neuroscience, UA, 2021 – 2022.
Strategic Planning Committee, Department of Neuroscience, UA, 2021 – 2022.
NSCS Program Review & Planning Committee, Department of Neuroscience, UA, 2016 – today
Executive Committee, School of Mind, Brain and Behavior (MBB), College of Science, UA, 2009 – today
Curriculum Committee, Department of Neuroscience, UA, 2023 – today.
Chair, Associate Dean of Research (ADR) Search Committee, College of Science, UA, 2023 – 2024.
Dean's Council, College of Science, UA, 2021 – today.

Other Educational Activities & Outreach

Member of the Mahoney Institute of Neurological Sciences, 1996 – 2002
Member of the Neuroscience Graduate Group, University of Pennsylvania, 1996 – 2002
Speaker, Annual Retreat of the Pennsylvania Muscle Institute, 1997
Federal Work Study Program, 1998 – 2002
Student Advisor, Neuroscience Graduate Group, University of Pennsylvania, Lab Rotation Talks, 1998 – 2002
Speaker, 16th Annual Neuroscience Retreat of the Mahoney Institute of Neurological Sciences, University of Pennsylvania, April 14, 1999.

Speaker, Annual Retreat of the Systems & Integrative Biology Training Grant, University of Pennsylvania, May 17, 1999
Invited Lecturer, Drosophila Neurobiology Course, Cold Spring Harbor Laboratories, Cold Spring Harbor, New York, July 12, 1999.
Career Services Program, Faculty Conversations on the Academic Job Search and Academic Life", Talk/Discussion group, University of Pennsylvania, 2000.
Brain Awareness Week, Society for Neuroscience, local chapter, Flandreau Center, University of Arizona, 2005.
Participant Arizona Science Teacher Advancement and Research Training Program (AZ START), funded by the Science Foundation Arizona, University of Arizona, 2009-2011
"Field trip Neuroscience Department", Sonoran Science Academy (High School), Tucson AZ, 2013

Principle Investigator of Current Research Projects

Ongoing

None

Pending

None

Completed Research Support (past 3 years)

NINDS, 1R21NS117855-01 Zinsmaier (PI) 09/01/2020 – 08/31/2022 (1-year extension)
"Cysteine-string Protein and Neurodegeneration"
The major goal of this project is to test the hypothesis that the prelysosomal failure and neurodegeneration induced by the human CLN4 mutations is due to an increased affinity for one or some of CSP's interaction partners, namely the self-association of CSP, its increased interaction with the synaptically localized palmitoyl-transferase HIP14/DHHC17, and/or its interactions with Hsc70.

For further awards, see *Professional Awards*

Lectures by Invitation

August 23, 1992	Drosophila Visual System Development, Catalina Island, California.
February 18, 1993	Zentrum für Molekulare Neurobiologie, Universitaet Hamburg, Germany.
October 8, 1993	"Neurobiology of *Drosophila*", Research Conference, Cold Spring Harbor, New York.
August 25, 1994	"2nd Visual System Development Workshop", Asilomar, California.
December 12, 1994	Department of Pharmacology, Texas Tech University Health Sciences Center, Lubbock, Texas.
December 16, 1994	Department of Pharmacology, University of Maryland, Baltimore, Maryland.
February 5, 1995	Department of Neuroscience, The Johns Hopkins University School of Medicine, Baltimore, Maryland.
February 21, 1995	Section of Neurobiology & Behavior, Cornell University, Ithaca, New York.
March 23, 1995	Department of Neuroscience, University of Philadelphia School of Medicine, Philadelphia, Pennsylvania.
March 29, 1995	Department of Pharmacology, University of Minnesota School of Medicine, Minneapolis, Minnesota.
April 30, 1996	"37th Annual *Drosophila* Research Conference", Genetics Society of America, San Diego, California.
September 28, 1996	"The 2nd Meeting of European Neuroscience", European Neuroscience Association, Strasbourg, France.
February 10, 1997	Department of Biology, Temple University, Philadelphia, Pennsylvania.
October 18-21, 1998	"Latrotoxins and Secretory Systems", Instituto Di Biologia Cellulare, Consiglio Nazionale Delle Ricerche, Gaeta (LT), Italy.
July 12, 1999	"*Drosophila* Neurobiology Course", Cold Spring Harbor Laboratories, Cold Spring Harbor, New York.
January 22-29, 2000	"Winter Conference on Brain Research", Breckenridge Colorado.
March 28, 2000	Department of Biology, Brandeis University, Waltham, Massachusetts.
April 3, 2000	Department of Pharmacology, New York University Medical Center, New York, New York.

May 18, 2000	Department of Pharmacology, Yale University School of Medicine, New Haven, Connecticut.
June 21, 2000	Department of Genetics, Biozentrum Julius Maximilian Universität, Würzburg, Germany.
September 8, 2000	Department of Physiology and Biophysics, University of Colorado School of Medicine, Denver, Colorado.
October 5, 2000	Department of Physiology, Emory University School of Medicine, Atlanta, Georgia.
October 25, 2001	Division of Neuroscience, Baylor College of Medicine, Houston, Texas.
November 30, 2001	Department of Neurobiology, Biozentrum Julius Maximilian Universität, Würzburg, Germany.
December 11, 2001	Department of Neuroscience, University of Connecticut Health Center, Farmington, Connecticut.
January 10, 2002	Department of Biology, University of Maryland Baltimore County, Baltimore, Maryland.
January 17, 2002	Department of Neurobiology, University of Alabama, Birmingham, Alabama.
January 31, 2002	Arizona Research Laboratories Division of Neurobiology, The University of Arizona, Tucson, Arizona.
September 17, 2002	University of Arizona, Neuroscience Community Data Blitz, Tucson, Arizona.
September 26, 2002	Department of Molecular and Cellular Biology, University of Arizona, Tucson, Arizona.
October 5, 2002	Neuroscience Retreat, Graduate Program in Neuroscience, University of Arizona, Madeira Canyon, Arizona.
January 23, 2003	Center for Insect Sciences, University of Arizona, Tucson, Arizona.
February 16, 2003	Graduate Student Interviews, Committee on Neuroscience, Data Blitz, Tucson Arizona.
March 13, 2003	Arizona Imaging and Microanalysis Society, Annual Meeting, University of Arizona, Tucson, Arizona.
October 10, 2003	Physiology Program, University of Arizona, Tucson, Arizona (Data Blitz).
October 24, 2003	DOINGS, University of Arizona, Tucson, Arizona.
January 26, 2004	Center for Research on Occupational and Environmental Toxicology (CROET), Oregon Health and Sciences University, Portland, Oregon.
February 24, 2004	Master Seminar "Evolution and Evolving". Arizona Respiratory Center University Medical Center, University of Arizona, Tucson, Arizona.
June 21, 2004,	Honorary Lecture (Festrede) "Genetic Dissection of Neurotransmitter Release: A Couple of Unexpected Lessons". Department of Genetics and Neurobiology, Theodor-Boveri Institute of Biosciences, Biozentrum, Julius Maximilian Universität, Würzburg, Germany.
September 21, 2004	Graduate Program in Neuroscience, Data Blitz, University of Arizona, Tucson, Arizona.
August 26, 2005	Department of Physiology, University of Arizona, Tucson, Arizona.
September 6, 2005	Center for Basic Neuroscience, University of Texas, Southwestern Medical Center, Dallas, Texas.
April 3, 2007	19th National Meeting of the British Neuroscience Association, April 1-4, 2007, Harrogate, North Yorkshire, UK.
December 5, 2007	Department of Molecular and Medical Pharmacology, University of California Los Angeles (UCLA)) School of Medicine. Los Angeles, California.
November 12, 2008	The Huck Institutes of Life Sciences, The Intercollegiate Graduate Program in Neuroscience. The Pennsylvania State University, University Park, PA.
March 26, 2009	Keystone Symposia: Mitochondrial Dynamics and Physiology. Whistler, British Columbia. "*Drosophila* Miro is Required for Both Anterograde and Retrograde Axonal Mitochondrial Transport."
May 21, 2009	Institute of Neuroscience, University of Oregon, Eugene, OR. "Mitochondrial transport to and from synapses".
September 29, 2009	Symposium: Neurogenetics of the Synapse in *Drosophila*. BioCenter, University of Wuerzburg, Germany. "Mitochondrial transport: An Achilles Heel of axons."
September 13, 2011	UA Genetics GIDP, Fall 2011 Seminar Series, Tucson, Arizona. "Of Synapses, Synaptic Vesicles and Mitochondria".
February 1, 2012	Department of Biological Sciences, Florida Atlantic University, Boca Raton, FL. "Mechanisms controlling the direction of mitochondrial transport and mitochondrial logistics in axons".
March 22, 2012	Keystone Symposia: Mitochondrial Dynamics and Function. Banff, Alberta, Canada. "Miro controls mitochondrial transport, structure, and health in axons through its GTPase or EF-hand domains".

December 6, 2012	Program in Neuroscience Seminar Series, University of Massachusetts Medical School, Worcester, MA. "A presynaptic signaling role for the lipid phosphatidylserine (PS): Implications for SV exo- and endocytosis."
April 11-12, 2013	Neurobiology Symposium "Neural Development, Function and Demise: A Genetic Perspective", Baylor College of Medicine, Houston, TX. "Evoked neurotransmitter release requires high levels of the anionic lipid phosphatidylserine in the cytoplasmic leaflet of the presynaptic membrane".
January 27, 2015	UA Neuroscience Community Data-Blitz, Neuroscience GIDP University of Arizona. "A Fly Model of Adult-onset Neuronal Ceroid Lipofusinosis (ANCL)."
March 11, 2015	MCB/CBC/CMM Joint Seminar Series, University of Arizona. "A Fly Model for Autosomal-Dominant Adult-Onset Neuronal Ceroid Lipofuscinoses (ANCL)."
April 4, 2016	UA Neuroscience Data-Blitz, Neuroscience GIDP University of Arizona. "Synapses, Lysosomes and Disease: Lessons from a Fly Model of Adult-Onset Neuronal Ceroid Lipofuscinoses (ANCL)."
September 18, 2017	UA Neuroscience Data-Blitz, Neuroscience GIDP University of Arizona. "A Fly Model for Autosomal-Dominant Adult-Onset Neuronal Ceroid Lipofuscinoses (ANCL)."
January 23, 2018	UA Neuroscience Data-Blitz, Neuroscience GIDP University of Arizona. "Protein Ubiquitination and Intellectual Disability."
January 28, 2019	UA Neuroscience Data-Blitz, Neuroscience GIDP University of Arizona. "Synaptic Function, Plasticity, and Neurodegeneration."
February 5, 2019	Department of Biology, New Mexico State University, Las Cruces, NM. "DCAF12 regulates synaptic function and plasticity at the Drosophila neuromuscular junction."

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Reifegerste R., C. Faust, N. Lipski, G. Heimbeck, A. Hofbauer, G. Pflugfelder, K.E. Zinsmaier, C.W. Heizmann, S. Buchner, E. Buchner (1991). A novel EF-hand Ca^{2+}-binding protein is expressed in discrete subsets of muscle and nerve cells of *Drosophila*. In "Novel Calcium-Binding Proteins" (ed. Heizmann, C.W.). Springer-Verlag, Berlin, pp. 505-510.

Reifegerste, R., S. Grimm, S. Albert, N. Lipski, G. Heimbeck, A. Hofbauer, G.O. Pflugfelder, D. Quack, C. Reichmuth, K.E. Zinsmaier, S. Buchner, and E. Buchner (1993). An invertebrate calcium-binding protein of the calbindin subfamily: protein structure, genomic organization and expression pattern of the calbindin-32 gene of *Drosophila*. J. Neuroscience 13, 2186-2198.

Zinsmaier, K.E., K.K. Eberle, E. Buchner, Walter, N., and S. Benzer (1994). Paralysis and early death in cysteine-string protein mutants of *Drosophila*. Science 263, 977-990.

Umbach, J.A., K.E. Zinsmaier, K.K. Eberle, E. Buchner, S. Benzer, and C. B. Gundersen (1994). Presynaptic dysfunction in *Drosophila csp* mutants. Neuron 13, 899-907.

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Ranjan, R., P. Bronk, K.E. Zinsmaier (1998). Cysteine string protein is required for calcium secretion coupling of evoked neurotransmitter release, but not for vesicle recycling. J. Neuroscience 18, 956-964.

Eberle K. K., K. E. Zinsmaier, S. Buchner, M. Gruhn, M. Jenni, C. Arnold, C. Leibold, D. Reisch, N. Walter, E. Hafen, A. Hofbauer, G.O. Pflugfelder, E. Buchner (1998). Wide distribution of the cysteine-string proteins in *Drosophila* tissues revealed by targeted mutagenesis. Cell & Tissue Research 294, 203-217.

Nie, Z., R. Ranjan, J. Wenniger J., S. Hong, P. Bronk, and K. E. Zinsmaier (1999). Overexpression of cysteine-string protein in *Drosophila* reveals interactions with syntaxin. J. Neuroscience 19, 10270-10279.

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Bronk, P., J. J. Wenniger, K. Dawson-Scully, X. Guo, S. Hong, H. L. Atwood, and K. E. Zinsmaier (2001). *Drosophila* Hsc70-4 is critical for neurotransmitter exocytosis in vivo. Neuron 30, 475-488.

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Song, W. and K. E. Zinsmaier (2003). Endophilin and Synaptojanin hook up to promote synaptic vesicle exocytosis. Neuron 40, 665-667.

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Macleod, G.T., and K.E. Zinsmaier (2006) Synaptic homeostasis on the fast-track. Neuron 52, 569-571.

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Patron, L.A., Nagatomo, K., Eves, D.T., Imad, M., Young, K., Torvund, M., Guo, X., Rogers, G.C., and Zinsmaier, K.E. (2019). Cul4 ubiquitin ligase cofactor DCAF12 promotes neurotransmitter release and homeostatic plasticity. J. Cell Biol. 218, 993–1010. DOI: 10.1083/jcb.201805099. PMID: 30670470; PMCID: PMC6400570.

Imler, E., J.S. Pyon, Y. Zhang, S. Kindelay, M. Torvund, S. Chandra, K.E. Zinsmaier (2019). A Drosophila model of neuronal ceroid lipofuscinosis CLN4 reveals a hypermorphic gain of function mechanism. eLife 8, e46607. DOI: 10.7554/eLife.46607. PMCID: PMC6897512, PMID: 31663851.

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Abstracts (past 10 years)

Salkoff, D. B., G. J. Russo, F. Hu, A. Wellington, K. Louie, and K. E. Zinsmaier (2007). Altering Miro protein levels has complex effects on mitochondrial transport and structure in larval motor axons of *Drosophila***.** "Neurobiology of *Drosophila*" Research Conference, Cold Spring Harbor, New York. Poster presentation.

Macleod, G.T., J. Zhang, and K. E. Zinsmaier (2007). Motor nerve terminals with different neurotransmitter release properties are supported by mitochondria with contrasting Ca^{2+}-handling characteristics. "Neurobiology of *Drosophila*" Research Conference, Cold Spring Harbor, New York. Poster presentation.

Imad, M., K. Nagamato, K.E. Zinsmaier (2007). The Drosophila lipid flippase ATP8B1 is required for neurotransmitter release. "Neurobiology of *Drosophila*" Research Conference, Cold Spring Harbor, New York. Poster presentation.

Panchumarthi, S., A.J. Wellington, X. Guo, Konrad E. Zinsmaier (2007). Identification and characterization of new mutations affecting neurotransmitter release at larval neuromuscular junctions of *Drosophila*. 37th Annual Meeting of the Society for Neuroscience", San Diego, CA. Program and Abstracts 356.5/I3. Poster presentation.

Salkof, D.B., G.J. Russo, F. Hu, and K.E. Zinsmaier (2007). Altering Miro protein levels has complex effects on mitochondrial transport and structure in larval motor axons of *Drosophila.* 37th Annual Meeting of the Society for Neuroscience", San Diego, CA. Program and Abstracts 356.9/J26. Poster presentation.

Imad, M., K. Nagatomo, and K.E. Zinsmaier (2007). The *Drosophila* lipid flippase ATP8B1 is required for neurotransmitter release. 37th Annual Meeting of the Society for Neuroscience", San Diego, CA. Program and Abstracts 355.16/H35. Poster presentation.

Russo, G.J., K. Louie, D.B. Salkoff, F. Hu, A. Wellington, and K.E. Zinsmaier (2008). Overexpression of Miro protein increases mitochondrial length and reduces mitochondrial transport in larval motor axons of *Drosophila*. "49th Annual *Drosophila* Research Conference", San Diego, CA. Program and Abstracts: 910A. Poster presentation.

Macleod, G.T., A.K. Chouhan, J. Zhang, K. E. Zinsmaier (2008). Evidence for a presynaptic Ca2+ regulation mechanism that integrates mitochondrial activity with axonal firing patterns. 38th Annual Meeting of the Society for Neuroscience", Washington, DC. Program and Abstracts 34.5/E8. Poster presentation.

Imad, M., A. J. Wellington, K. E. Zinsmaier (2008). The *Drosophila* Ortholog of Human Lipid Flippase ATP8B1 is Critical for Neurotransmitter Release. 38th Annual Meeting of the Society for Neuroscience", Washington, DC. Program and Abstracts 332.17/D41. Poster presentation.

Panchumarthi, S., A. J. Wellington, K. E. Zinsmaier (2008). Serrate is required for synaptic transmission at larval neuromuscular junctions of Drosophila. 38th Annual Meeting of the Society for Neuroscience", Washington, DC. Program and Abstracts 537.1/E30. Poster presentation.

Russo, G.J., K. Louie, A. Wellington, and K.E. Zinsmaier (2009). *Drosophila* Miro is required for both anterograde and retrograde axonal mitochondrial transport. Keystone Symposia: Mitochondrial Dynamics and Physiology, March 22 - 27, 2009. Whistler, British Columbia. Poster presentation.

Russo, G.J., A. Wellington, M. Babić, and K.E. Zinsmaier (2009). *Drosophila* Miro domains and their unique contributions to mitochondrial transport in axons. 39th Annual Meeting of the Society for Neuroscience", Chicago, Ill. Program and Abstracts 717.10/C50. Poster presentation.

Babic, M., G.J. Russo, A. Wellington, J. Zhang, K.E. Zinsmaier (2010). dMiro's control of kinesin- and dynein-driven mitochondrial movements in axons of *Drosophila*. 40th Annual Meeting of the Society for Neuroscience", San Diego, CA. Nanosymposium 10.4. Oral presentation.

Imad, M., K. Nagatomo, C. Shuman, K.E. Zinsmaier (2010). A novel WD40 repeat protein facilitates evoked neurotransmitter release at larval neuromuscular junctions of *Drosophila*. 40th Annual Meeting of the Society for Neuroscience", San Diego, CA. Program and Abstracts 549.2/G56. Poster presentation.

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Russo, G.J., Wellington, A.J., Babic, M., Lundt, B.D. and K.E. Zinsmaier (2011). Structure-function analysis of Miro's GTPase and EF-hand domains. "Neurobiology of *Drosophila*" Research Conference, Cold Spring Harbor, New York. Poster presentation.

Patron, L.A., M. Imad, K. Nagatomo, C. Schuman, K.E. Zinsmaier (2011). A conserved WD40-repeat protein (dWD40A) facilitates evoked neurotransmitter release at the *Drosophila* larval neuromuscular junction. "Neurobiology of *Drosophila*" Research Conference, Cold Spring Harbor, New York. Poster presentation.

Russo, G.J., A.J. Wellington, M. Babic, B.D. Lundt, and K.E. Zinsmaier (2012). Miro controls mitochondrial transport, structure, and health in axons through its GTPase or EF-hand domains. Keystone Symposia: Mitochondrial Dynamics and Function. Banff, Alberta, Canada, Poster and oral presentation.

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Patrón, L.A., M. Imad, K. Nagatomo, M. Babic, K.E. Zinsmaier (2012). Drosophila dWD40A controls synaptic growth and function in a neuron-specific manner. 42nd Annual Meeting of the "Society for Neuroscience", New Orleans, LA. Program and Abstracts 549.2/G56. Poster presentation.

Imler, E., M. Imad, C. Gay, M. Babic, K.E Zinsmaier (2012). Does the anionic lipid phosphatidylserine mark the endo- and exocytotic route of the synaptic vesicle cycle? 42nd Annual Meeting of the "Society for Neuroscience", New Orleans, LA.

Imad, M., C. Gay, E. Imler, M. Torvund, and K.E. Zinsmaier (2012). dATP8B-mediated inward translocation of phosphatidylserine is required for evoked neurotransmitter release at larval neuromuscular junctions of Drosophila. 42nd Annual Meeting of the "Society for Neuroscience", New Orleans, LA.

Zinsmaier, K.E. (2013). Evoked neurotransmitter release requires high levels of the anionic lipid phosphatidylserine in the cytoplasmic leaflet of the presynaptic membrane. Neurobiology Symposium "Neural Development, Function and Demise: A Genetic Perspective", Baylor College of Medicine, Houston, TX.

Patron, L., M Imad, K. Nagatomo, K.E. Zinsmaier (2013). Drosophila WDR40A facilitates evoked neurotransmitter release at presynaptic terminals via a novel lipid based mechanism. 54th Annual Drosophila Research Conference, Washington, DC. Program and Abstracts: 1017. Poster presentation.

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Imad, M., C. Gay, E. Imler, M. Torvund, and K.E. Zinsmaier (2013). The anionic phospholipid phosphatidylserine is involved in synaptic vesicle exo- and endocytosis at larval neuromuscular junctions. 55th Annual Drosophila Research Conference, San Diego, CA. Poster presentation 424.09/G46.

Imler, E., M. Imad, M. Babic, K.E. Zinsmaier (2013). The dynamic role of the anionic lipid phosphatidylserine during the endocytosis and trafficking of synaptic vesicles. "Neurobiology of *Drosophila*" Research Conference, Cold Spring Harbor Laboratories, Oct. 1-5, Cold Spring Harbor, NY. Poster presentation.

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Babic, M., B.W. Hunter, G.J. Russo, A.J Wellington, K.E. Zinsmaier (2014). Control of antero- and retrograde mitochondrial transport in Drosophila motor axons. Annual Meeting of the "Society for Neuroscience", Nov. 15-19, Washington, DC. Poster presentation.

Imler, E., J. Pyon, Y. Zhang, S. Chandra, K.E. Zinsmaier (2015). A Drosophila model of CLN4B, a neurodegenerative autosomal dominant adult-onset Neuronal Ceroid Lipofuscinosis, links CSPα's chaperone activity to toxicity. "Neurobiology of *Drosophila*" Research Conference, Cold Spring Harbor Laboratories, Sep. 29 - Oct. 3, Cold Spring Harbor, NY. Oral presentation.

Patrón, L.A., M. Imad, K. Nagatomo, and K.E. Zinsmaier (2015). Drosophila WDR40A is required for evoked release and synaptic homeostasis at the neuromuscular junction. "Neurobiology of *Drosophila*" Research Conference, Cold Spring Harbor Laboratories, Sep. 29 - Oct. 3, Cold Spring Harbor, NY. Poster presentation.

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