Karla R. Kaun, Ph.D.

Dept. Neuroscience
Brown University
185 Meeting St, Box GL-N
Providence, RI 02912

Office: 362 Sidney Frank Hall
Ph: 401-863-5825
email: karla_kaun@brown.edu
website: www.kaunlab.com

EDUCATION AND RESEARCH EXPERIENCE

Associate Professor	**Brown University** Department of Neuroscience	July 2020-
Assistant Professor	**Brown University** Department of Neuroscience	2013-2020
Research Specialist	**HHMI Janelia Research Campus** Advisor: Dr. Ulrike Heberlein	2011-2013
Postdoctoral Fellow	**University of California, San Francisco** Department of Anatomy**,** Advisor: Dr. Ulrike Heberlein	2007-2011
Ph.D.	**University of Toronto** Department of Zoology, Advisor: Dr. Marla B. Sokolowski	2001-2007
B.Sc.	**University of British Columbia** Department of Psychology, Advisors: Dr. Cathy Rankin, Dr. Janet Werker	1997-2001

SCIENTIFIC INTERESTS

I use an innovative approach to investigate the molecular and neural mechanisms underlying addiction using powerful cutting-edge molecular and genetic tools available in the fruit fly, *Drosophila melanogaster*. My goal is to understand the molecular mechanisms facilitating neuronal plasticity associated with memory, and identify how alcohol and drugs of abuse influence these mechanisms. My lab is currently developing new models to study memory for alcohol and drug intoxication, mapping circuits for these memories, and investigating the molecular mechanisms within these circuits that affect neuronal plasticity and function. This interdisciplinary approach has the potential to contribute to a comprehensive understanding of how cue-induced cravings are formed and maintained, which could lead to development of more effective pharmacotherapies to treat addiction.

HONORS

Recipient, National Association of Biology Teachers *Genetics Education* Award	2023
Plenary speaker at 64th Annual *Drosophila* Research Conference	2023
President, International Behavioural and Neural Genetics Society	2023
Fellow of Inaugural Brown University Faculty Leadership Program	2022
Awarded International Behavioural and Neural Genetics Society Young Investigator Award	2018
Named Robert J. and Nancy D. Carney Assistant Professor of Neuroscience	2015
Awarded Smith Family Award for Excellence in Biomedical Research	2014

PUBLICATIONS

Fiala A, **Kaun KR** (2024) What do the mushroom bodies do for the insect brain? Twenty-five years of progress. Learning & Memory 31(5), 1-1, a053827.123 (Invited Editorial)

Scaplen KM, **Kaun KR** (2023) Dopamine determines how reward overrides risk. Nature, 623(7986) 258-9. (Invited News and Views)

Hernandez JS, Brown TM, **Kaun KR** (2023) *Drosophila* Reward Circuits. Oxford Research Encyclopedias, Neuroscience. *open access article,* doi: 10.1093/acrefore/9780190264086.013.495. (Invited Review)

Nunez KM, Catalano JL, Scaplen KM, **Kaun KR** (2023) Ethanol behavioral responses in *Drosophila*. Cold Spring Harbor Protocols: *Drosophila* Neurobiology. *epub ahead of print,* doi: 10.1101/pdb.top107887.

Nunez KM, Catalano JL, Scaplen KM, **Kaun KR** (2023) Methods for Exploring the Circuit Basis of Ethanol-Induced Changes in *Drosophila* Group Locomotor Activity. Cold Spring Harbor Protocols: *Drosophila* Neurobiology. *epub ahead of print,* doi: 10.1101/pdb.prot108138.

Hernandez J, **Kaun KR** (2022) Alcohol, neuronal plasticity, and mitochondrial trafficking. Proc Natl Acad Sci 119: e2208744119. (Invited Commentary)

Huggett SB, Ikeda AS, McGeary JE, **Kaun KR**, Palmer RHC (2022) Opioid use disorder and alternative mRNA splicing in reward circuitry. Genes 13(6): 1045.

Scaplen KM, Talay M, Fisher JD, Cohn R, Sorkac A, Aso Y, Barnea G, **Kaun KR** (2021) Transsynaptic mapping of *Drosophila* mushroom body output neurons. eLife 10: e63379.

Oepen AS, Catalano JL, Azanchi R, **Kaun KR** (2021) The *foraging* gene affects alcohol sensitivity, metabolism and memory in *Drosophila*. J Neurogenet 7:1-13.

Scaplen KM, Talay M, Nunez KM, Salamon S, Waterman AG, Gang S, Song SL, Barnea G, **Kaun KR** (2020) Circuits that encode and guide alcohol associated preference. eLife 9: e48730.

Petruccelli E, Brown T, Waterman A, Ledru N, **Kaun KR** (2020). Alcohol causes lasting differential transcription in *Drosophila* mushroom body neurons. Genetics 215(1): 103-116.

Scaplen KM*, Mei NJ*, Bounds HA, Song SL, Azanchi R, **Kaun KR** (2019) Automated real-time quantification of group locomotor activity in *Drosophila melanogaster*. Scientific Reports 9:4427. *These authors contributed equally to this work.

Petruccelli E, Feyder M, Ledru N, Jaques Y, Anderson E, **Kaun KR** (2018) Alcohol Activates Scabrous-Notch to Influence Associated Memories. Neuron 100: 1-15.

Petruccelli E, **Kaun KR** (2018) Insights from Intoxicated *Drosophila*. Alcohol 74: 21-27. (Invited Review).

Nunez K, Azanchi R, **Kaun KR** (2018) Cue-induced alcohol seeking in *Drosophila melanogaster* is dose-dependent. Front Physiology 9(438): 1-12.

Kaun KR*, Rothenfluh A (2017) Dopaminergic rules of engagement for memory in Drosophila. Curr Opin Neurobiol 43: 56-62. (Invited Review). *KR Kaun is corresponding author.

Scaplen KM, **Kaun KR** (2016) Reward from bugs to bipeds: A comparative approach to understanding how reward circuits function. J Neurogenet 30: 133-48. (Invited Review)

Engel GL, Marella S, **Kaun KR**, Wu J, Adhikari P, Kong EC, Wolf FW (2016) Sir2/Sirt1 links acute inebriation to presynaptic changes and the development of alcohol tolerance, preference and reward. J Neurosci 36: 5241-51.

Albin SD, **Kaun KR**, Knapp J-M, Chung P, Heberlein U, Simpson J (2015) A subset of serotonergic neurons evokes hunger in adult *Drosophila*. Curr Biol 25: 2435-40.

Aso Y, Sitaraman D, Ichinose T, **Kaun KR**, Vogt K, Belliart-Guerin G, Placais P-Y, Robie A, Nobuhiro Y, Schnaitmann C, Rowell WJ, Johnston RM, Ngo T, Chen N, Korff W, Nitabach M, Heberlein U, Preat T, Branson KM, Tanimoto H, Rubin GM (2014) Mushroom body output neurons encode valence and guide action selection in *Drosophila*. e-Life 3: e04580.

King IF, Eddison M, **Kaun KR**, Heberlein U (2014) EGFR and FGFR pathways have distinct roles in *Drosophila* mushroom body development and ethanol-induced behavior. PLoS One 9: e87714.

Azanchi R*****, **Kaun KR*†,** Heberlein U. (2013) Competing dopaminergic responses determine behavioral choice in *Drosophila*. Proc Natl Acad Sci 110: 21153-8. *****These authors contributed equally to this work. †K.R. Kaun is corresponding author.

PRE-PRINTS:

D'Silva NM, McCullar KS, Conard A, Blackwater T, Azanchi R, Heberlein U, Larschan E, **Kaun KR** (2021) Neuromolecular and behavioral effects of ethanol deprivation in *Drosophila*. bioRχiv 425101.

Catalano JL, Mei N, Azanchi R, Song SL, Blackwater T, Heberlein U, **Kaun KR** (2020) Behavioral features of motivated response to alcohol in *Drosophila*. bioRχiv 953026.

PEDAGOGY-BASED PUBLICATIONS:

Ly S, **Kaun KR**, Lee C-H, Stewart D, Pulver SR, Keene AC (2018) Long term impact of intensive post graduate laboratory training at the Cold Spring Harbor Neurobiology of *Drosophila* summer course. bioRxiv 369892.

WORKS PUBLISHED AS AN EARLY CAREER RESEARCHER:

Brown HLD, **Kaun KR**, Edgar BA (2012) A small GTPase Rheb affects central brain neuronal morphology and memory formation in *Drosophila*. PLoS One 7: e44888.

Shohat-Ophir G, **Kaun KR**, Mohammed H, Azanchi R, Heberlein U (2012) Sexual deprivation increases ethanol intake in *Drosophila.* Science 335:1351-1355.

Kaun KR*, Devineni AV*****, Heberlein U (2012) Drosophila as a model to study drug addiction. Hum Genet 131: 959-75. (Review) *These authors contributed equally to this work

Kaun KR, Azanchi R, Maung Z, Hirsh J, Heberlein U (2011) A *Drosophila* model for alcohol reward. Nat Neurosci 14:612-9.

Kaun KR, Heberlein, U. (2009). Too fat to fly? New brain circuits regulate obesity in *Drosophila*. Neuron, 63: 279-81. (Commentary)

Kaun KR, Sokolowski MB (2009) cGMP-dependent protein kinase: linking foraging to energy homeostasis. Genome 52: 1-7.

Kaun KR, Chakaborty-Chatterjee M, Sokolowski MB (2008) Natural variation in plasticity of glucose homeostasis. J Exp Biol 211: 3160-3166.

Kaun KR, Riedl CAL, Chakaborty-Chatterjee M, Belay AT, Douglas SJ, Gibbs AG, Sokolowski MB (2007). Natural variation in food acquisition via a cGMP-dependent protein kinase. J Exp Biol 210: 3547-3558.

Kaun KR, Hendel T, Gerber B, Sokolowski MB (2007) Natural variation in *Drosophila* larval reward learning and memory due to a cGMP-dependent protein kinase. Learn Mem 14: 342-349.

Hendel T, Michels B, Neuser K, Schipanski A, **Kaun K**, Sokolowski MB, Marohn F, Michel R, Heisenberg M, Gerber B (2005) The carrot not the stick: Appetitive rather than aversive gustatory stimulation support associative olfactory learning in individually assayed larvae. J Comp Physiol A Neuroethol Sens Neural Behav Physiol 191: 265-79.

Rose JK, **Kaun KR**, Shen SH, Rankin CH (2003) GLR-1, a non-NMDA glutamate receptor homolog, is critical for long term memory in *Caenorhabditis elegans*. J Neurosci 23: 9595-9599.

Rose JK, **Kaun KR**, Rankin C (2002) A new group-training procedure for habituation demonstrates that presynaptic glutamate release contributes to long-term memory. Learn Mem 9: 130-7.

GRANTS and FELLOWSHIPS

CURRENT FUNDING:

NIDA R01DA058947 — Kaun (PI) — 2023-28

Gene regulation in memory circuits as a consequence of polysubstance abuse

The goal of this project is to understand the molecular mechanisms through which preference for alcohol or nicotine influence methamphetamine response. With Brown University collaborators Kate O'Connor-Giles and Erica Larschan. (Impact score 28, for special RFA on mechanisms of polysubstance use)

Brown University Salomon Award — Kaun (PI) — 2023-24

Molecules for Need and Want

The goal of this project is to understand how to understand how to best bridge the gap between the molecular basis of addiction and latest progressive policies on substance uses disorder.

NIGMS R01GM115510 — Kaun (Co-PI) — 2023-27

Functional role of dual neurotransmission in aggression

The goal of this project is to understand the neural and molecular mechanisms through which octopamine and glutamate co-transmission mediate behavior. We will perform *in vivo* imaging in behaving flies. With collaborators Sarah Certel (University of Montana) and Steve Stowers (Montana State)

Brown University Seed Funding — Kaun (PI) — 2022-24

Establishing a Drosophila model of opioid self-administration

The goal of this project is to develop a *Drosophila* model for opioid self-administration and identify the receptors associated with this response.

Hubert & Richard Hanlon Trust Grant Award Kaun (Co-PI) 2020-24
The Stress Factor: Understanding the role of norepinephrine in Alcohol Use Disorder
The goal of project is to understand how the alpha-1 receptor antagonist doxazosin, commonly used to alleviate high blood pressure, affects the brain to reduce alcohol consumption during stress conditions. *Drosophila* will be used to identify how microcircuits are affected during alcohol memory expression. This will be complemented by investigating how the drug attenuates neural activity and alters brain metabolites in humans with collaborators Drs. Tara White (Behavioral and Social Sciences), Carolina Haass-Koffler (Psychiatry & Human Behavior) and John McGeary (Psychiatry & Human Behavior).

NIAAA R01AA24434 Kaun (PI) 2016-26
Notch-dependent microcircuit regulation of alcohol reward memory
The goal of this project is to understand a how a feed-forward dopamine-glutamate-acetylcholine circuit functions during formation of alcohol reward memory and alcohol seeking, and to identify Notch-dependent transcriptional regulation within this circuit during alcohol exposure.

COMPLETED FUNDING:

NIDA R21DA042622 Kaun (PI) 2019-22
Whole-brain mapping of opiate sensitive circuits in Drosophila
The goal of this project is to identify the *Drosophila* μ opiate receptor (μOR), and investigate brain wide expression of μORs at a single cell level, define which of these neurons are involved in the reward and aversion, and understand how these circuits are integrated.

Carney Innovation Award Kaun (Co-PI) 2018-20
With Co-PI Dr. Kate O'Connor-Giles, Brown University
Understanding contributions of alternative splicing to appetitive memory
The goal of this project is to understand how alternative splicing events that occur as a result of formation of memory of a cue with alcohol intoxication affect the subsequent function of reward memory circuits.

BIBS NPNI New Frontier Award Kaun (Co-PI) 2017-19
With Co-PI Dr. John McGeary, Psychiatry and Human Behavior, Brown University
The role of Microfibrillar Associated Protein 2 (MFAP2) and Notch1 in alcohol cravings
The goal of this project is the use some of our findings from the role of Scabrous and Notch in *Drosophila* to increase our understanding of genetic variation associated with alcohol cravings in humans.

NIAAA R01AA24434-03S1 Kaun (PI) 2018-19
Notch-dependent microcircuit regulation of alcohol reward memory
The goal of this project is to understand a how alcohol regulates neurodegeneration associated with Alzheimer's Disease through Notch signaling.

United-States Israel Binational Research Foundation Start-up Grant Kaun (Co-PI) 2016-19
With Co-PI Dr. Moshe Parnas, Tel-Aviv University
Microcircuits for reward driven decisions in Drosophila
The goal of this project is to understand the electrophysiological responses within a dopamine-glutamate circuit during acute alcohol intoxication and memory for the intoxicating properties of alcohol.

NSF MCB EAGERS for Conference / Symposium Kaun (Course Co-Director) 2017-20
PI: D. Stewart, IOS1523125
CSHL Drosophila Neurobiology: Genes, Circuits & Behavior Course
The goal of this funding was to provide support for students, teaching assistant and visiting faculty of the 2016-2018 CSHL *Drosophila* Neurobiology course. This grant was prepared in collaboration with S. Pulver (St. Andrews University) and C-H. Lee (NIHCD, and Academia Sinica, Taiwan).

BIBS COBRE Center for Nervous System Function Kaun (Project Leader) 2015-18
PI: J Sanes 5P20GM103645-03 (NIGMS)

Microcircuits for reward-driven decisions in Drosophila

This project was intended to develop genetic tools for *in vivo* visualization of dopamine autoreceptors in order to understand how a dopamine-glutamate feedback loop regulates alcohol memory.

Rhode Island Foundation Medical Research Grant Kaun (PI) 2015-16

Neuronal mechanisms underlying rewarding memories of alcohol intoxication

The goal of this project was to investigate the sparse populations of dopamine neurons in acquisition and expression of alcohol memory.

Smith Family Awards Program for Excellence in Biomedical Research Kaun (PI) 2014-18

Neuro-molecular mechanisms of alcoholism

The goal of this project was to investigate the neural and molecular mechanisms within a simple feedback loop that mediates the switch from aversive to appetitive alcohol memory.

RI-INBRE Kaun (Project Leader) 2014-16

PI: Z. Shaikh, P20GM103430 (NIGMS)

The role of Notch signaling in alcohol reward memory

The goals of this project were to define where *Notch* affects alcohol reward memory in the adult *Drosophila* brain and to identify genes that are the direct targets of *Notch*.

Brown University Seed Funding Kaun (Co-PI) 2014

With Co-PI Dr. Gilad Barnea, Neuroscience, Brown University

Establishing a technique for studying the neural circuits underlying alcohol responses in flies

The goal of this project was to test a new *Drosophila* genetic trans-synaptic tracing tool developed by Dr. Barnea to identify neurons post-synaptic alcohol memory circuits.

MENTEE FUNDING:

Dean's Diversity Fellowship in Biology and Medicine to Postdoctoral Associate Dr. Rebecca Oramas 2024
Undergraduate Teaching and Research Fellowship to Megan Wang 2024
Undergraduate Teaching and Research Fellowship to Liliana Cunha 2024
IBANGS travel award to Postdoctoral Fellow Dr. John Hernandez 2024
IBANGS travel award to PhD student Tariq Brown 2023
Undergraduate Teaching and Research Fellowship to Brian Lee 2023
Undergraduate Teaching and Research Fellowship to Miauxochitl Haske 2023
Undergraduate Teaching and Research Fellowship to Rohan Freedman 2022
Undergraduate Teaching and Research Fellowship to Imaad Said 2022,23
Undergraduate Teaching and Research Fellowship to Owen Wogmon 2022
F31 Ruth L. Kirschstein NRSA to PhD Student Tariq Brown 2022-25
F32 Ruth L. Kirschstein NRSA to Postdoctoral Associate Dr. John Hernandez 2021-24
Dr. Daniel C. Cooper Graduate Award and Mahoney Fund to PhD student Tariq Brown 2021-22
Chemers Neustein '75 and Dana Graduate Fellowship to PhD Student Jamie Catalano 2020-21
F99/K00 NIH Blueprint D-SPAN Award to PhD student Kavin Nunez 2020-25
Collaborative SPRINT Award to Vaishnavi Sankar 2020
Undergraduate Teaching and Research Fellowship to Eve Glenn 2020
Presidential Scholar Summer Undergraduate Research Award to Anthony Walley 2019
HHMI Gilliam Fellowship awarded to PhD student Kavin Nunez 2018-20
Research Society for Alcoholism travel award to Postdoctoral Associate Dr. Emily Petruccelli 2018
Undergraduate Teaching and Research Fellowship to Ryan Cohen 2018
Undergraduate Teaching and Research Fellowship to Sydney Gang 2018
Undergraduate Teaching and Research Fellowship to Fahim Mahmud 2018
HHMI EXROP Summer Undergraduate Research Award to Tyler Blackwater 2018
Undergraduate Teaching and Research Fellowship to Sophia Song 2017
Four Directions Summer Undergraduate Research Program Award to Tyler Blackwater 2017
IBANGS travel award to post-doctoral associate Dr. Kristin Scaplen 2015

Undergraduate Teaching and Research Fellowship to Samantha Hyung	2016
Undergraduate Teaching and Research Fellowship to Rachel Muster	2015
Undergraduate Teaching and Research Fellowship to Hayley Bounds	2015
Undergraduate Teaching and Research Fellowship to Sophie Yan	2014

EARLY CAREER AWARDS:

IBANGS Young Investigator Travel Award ($2,500)	2011
Heart & Stroke Foundation of Canada Postdoc Research Fellow ($100,000)	2008-10
University of Toronto PhD Finishing Grant ($2,500)	2006-7
Ontario Graduate Scholarship in Science and Technology ($15,000)	2005-6
University of Toronto Sheila Freeman Graduate Award in Zoology ($2,277)	2005
NSERC Canadian Graduate Scholarship ($70,000)	2003-5
University of Toronto Frederic P. Ide Scholarship in Zoology ($1,648)	2003
NSERC Post-graduate Scholarship A ($34,600)	2001-3
University of Toronto Senior Alumni Association Prize in Zoology ($800)	2003
University of Toronto Frederick P. Ide Scholarship in Zoology ($1,500)	2002
NSERC Undergraduate Research Award ($4,000)	2000
UBC Outstanding Student Initiative ($10,000)	1997-01
UBC Norman MacKenzie Alumni Scholarship ($1,750)	1997-8

SERVICE and OUTREACH

UNIVERSITY SERVICE:

Brown University Service and Outreach Involvement

Women in STEM Brown Networking Conference	Panelist	2023
Neuro Dept. Undergrad. Group Lab Tours	Host	2022
Conflict of Interest Review and Management Committee	Member	2020-present
Native American & Indigenous Studies Steering Comm.	*Ad hoc* member	2019
CLPS Whalen Award selections	Reviewer	2019,20
Brown University Big Bang Waterfire	Invited Public Lecture Speaker	2018
Brown Staff Outreach Seminar	Invited Carney Faculty Speaker	2018
Mind-Brain Research Day	Poster judge	2017,19
Young Scholars Conference	Faculty Participant	2015,16,18
Living Biology First Year Science Outreach	Invited Faculty Speaker	2017
Smith Award applications	Reviewer	2016-18
UTRA applications	Reviewer	2016,17
BIBS graduate award applications	Reviewer	2016
Division of Advancement (OFR) Young Faculty Panel	Panelist	2016
Neuroscience convocation	Faculty reader	2015,19
BIBS Advanced Microscopy Symposium	Co-organizer	2015
International Mentoring Program Orientation	Faculty Participant	2015
Day of Biology	Lab Tour (Host)	2015
GWiSE “Women in Stem” Panel	Panelist	2015
Brown 250th Anniversary “Brains at Brown”	Interactive Demo Leader	2014
“Women in Science and Engineering” Event	Guest Speaker	2013

Brown University Neuroscience Departmental Commitments

Appointments and Promotions Committee	Committee Member	2022-present
Diversity and Inclusion Action Plan Committee	Committee Member	2019-present
Undergraduate Curriculum Committee	Committee Member	2019-22
Graduate Program Student ‘In House’ Seminar Series	Faculty Co-ordinator	2018-22
Graduate Program Admissions Committee	Committee Member	2016-present
Graduate Program Steering Committee	Committee Member	2015-2020

HHMI Janelia Farm Research Campus Service

"Transitions from Post-doc to PI"	Panelist	2014

ACADEMIC SERVICE:

Academic Society Service

President**,** International Behavioural and Neural Genetics Society	2023-present
President-elect**,** International Behavioural and Neural Genetics Society	2022-23

Editorial Service

Editor, *Learning & Memory*, 25th Anniversary Edition on the Mushroom Body	2023-present
Associate Editor**,** *Genetics* (Neurobiology & Behavior Section)	2020-present

Conference Program Committees

Society for Neuroscience	Program Committee Member	2018-22
Research Society on Alcoholism	Program Committee Member	2019-21
IBANGS Genes, Brains & Behavior	Program Committee Member	2019-present
IBANGS Genes, Brains & Behavior	*Ad hoc* Program Committee Member	2017

Grant Review

NIH, NIAAA AA-4, NIGMS/NIDA NMB	*Ad hoc* Reviewer	2023
NIH, NIDA special emphasis, LMND	*Ad hoc* Reviewer	2022
NIH, NIAAA NAL	*Ad hoc* Reviewer	2020,21
NIH, NIDA special emphasis panels	Panelist	2019-21
NIH, NIAAA special emphasis panels	Panelist	2019,20
The Royal Society (UK grant agency),	*Ad hoc* Reviewer	2019
French National Research Agency (ANR)	*Ad hoc* Reviewer	2018
NIH Neurotoxicology and Alcohol	*Ad hoc* Panelist	2018
The Wellcome trust / DBT India Alliance (UK/India grant agency)	*Ad hoc* Reviewer	2017
Medical Research Council (UK grant agency)	*Ad hoc* Reviewer	2017
NSF Division of Integrative Organismal Systems, Neural Systems	Panelist	2016
NSF Division of Integrative Organismal Systems, Neural Systems	*Ad hoc* Reviewer	2014

External PhD thesis examiner

Martin Sabandal, Davis Lab, Scripps Florida	2022
Yuanyuan Li, Masek Lab, Binghampton University	2021
Joey Adams, Griffiths Lab, Brandeis University	2020
Bethany Christmann, Griffiths Lab, Brandeis University	2015

International Scientific Training Course Co-Director

CSHL Neurobiology of *Drosophila*: Genes, Brains & Behavior	2014-17

Ad hoc scientific journal review: *Molecular Psychiatry, Biological Psychiatry, Cell Reports, PLoS Genetics, PLoS Biology, Genetics, G3, Neuron, Journal of Neuroscience, Journal of Neuroscience Methods, Proc Natl Acad Sci, Genes Brain Behavior, Journal of Studies Alcohol and Drugs, Behavioral Neuroscience, Alcohol, Addiction Biology, Alcohol Clin Exp Res, Animal Behavior, JoVE, Journal of Neurogenetics, Cell and Tissue Research, Current Biology, Nature Communications, Scientific Reports, BMC Biology, Nature, eLife, Journal of Experimental Biology, Frontiers in Physiology, Journal of Comparative Neurology, The Scientist, Psychopharmacology, Science, Learning & Memory*

SYMPOSIA ORGANIZED / CHAIRED:

Of Flies and Rodents: Transcription, Translation and Metabolism of Alcohol Use Disorder, Research Society for Alcoholism 42nd Annual Meeting, Bellevue, WA	Session Co-Chair	2023
Alcohol and the Nervous System Gordon Research Conference, Ventura, CA	Session Chair	2022
63rd Annual Drosophila Research Conference, San Diego, CA	Session Co-Chair	2022
International Behavioural and Neural Genetics Society, Genes, Brains and Behavior Annual Conference, Woodshole, MA	Co-Organizer	2021-22
Genetic and Molecular Mechanisms underlying Complex Behavior Janelia Scientific Milestone Symposium (to honor Dr. Ulrike Heberlein)	Co-Organizer	2019
Boston Area *Drosophila* Meeting, Providence, RI	Co-Organizer	2019
Alcohol Regulation of RNA Splicing and Binding Proteins in the Brain Research Society for Alcoholism 42nd Annual Meeting, Minneapolis, MN	Session Co-Chair	2019
Higher Brain Function and Behavioral Plasticity CSHL Neurobiology of *Drosophila*	Session Chair	2019
Neural Circuits to Information Processing to Behavior Columbia University Workshop on Brain Circuits, Memory and Computation	Session Chair	2019
Neuromodulation and its evolution Janelia Neuro-evo: A comparative approach to cracking circuit function	Session Chair	2016
Brown Institute for Brain Science Symposium Advanced Microscopy Techniques in Biomedical Research	Co-Organizer	2015
Technological Innovations Workshop CSHL Neurobiology of *Drosophila* Meeting	Session Co-Chair	2015

COMMUNITY OUTREACH:

Career and Science discussion	UBC Science One Program	2024
Career and Science discussion	UBC Coordinated Science Program	2023
Drosophila Neurogenetics Demo	RI Brain Fair	2023
Brain Talk: A Lunchtime Series	RI Brain Week Events	2022
Frontier School Division, Manitoba, Canada	Virtual Lab Tours and Demos	2021
Tumbler Ridge Secondary School, BC, Canada	Alumni Speaker	2020,22
Bryant University Perspectives on Addiction Panel	Panelist	2019
Hamden Meadows School Grade 4 outreach	Human brain activity leader	2018,22,23
Brown University Big Bang Waterfire	Invited Public Lecture Speaker	2018
STEAM Connections (BEF Science Outreach Event)	Exhibitor, Mentor	2015

MEDIA-RELATED SCIENCE COMMUNICATION:

Scientific Sense podcast with Dr. Karla Kaun	2024
Can we train our brains to avoid addiction? Mornings with Simi, Radio Show	2024

Alcohol and Drugs Rewire Your Brain by Changing How Your Genes Work 2024
Article in The Conversation.

Carney Conversations: "What can drunk flies tell us about addiction". 2020
Public Outreach Conversation about my research with Drs. Diane Lipscombe and Chris Moore

Quoted as an expert Scientist in 'Wired' Magazine 2020
"The most complete brain map ever is here: A fly's 'connectome'"

Rhode Island The Public's Radio (NPR), 2019
"Researchers Study Alcohol's Effects with Drunk Fruit Flies" by Shane McKeon

News Features Based on Petruccelli *et al* Neuron 100:1-15. 2018
"Alcohol activates Scabrous-Notch to influence associated memories"
Newsweek, The Independent, Forbes, Inverse, DailyMail, News-Medical.net, Earth.com, Science Daily, Infosurhoy, Medical Xpress, Futurity, WILX-TV, TheFix.com, The University Network, Interesting Engineering, Global News Radio, Yahoo News, Wine Spectator, Tribune India, Sun Star Times, CBS News Radio, VICE, MSN, Economic Times, Financial Express, Business Standard, Technology Networks, Outlook India, Neuroscience News, Lab Manager, Midibulletin, NDTV, The Boar, Science Trends, The Spirits Business, Inquirer.net, Devdiscourse, Daily Pioneer, the fix, Reddit

Quoted as an expert scientist in The Atlantic 2018
"Scientists Genetically Engineered Flies to Ejaculate Under Red Light" by Ed Yong

Podcast Interview: People Behind the Science with Dr. Marie McNeely 2014
"Taking a shot at understanding the neural and molecular mechanisms of alcohol addiction"

TEACHING EXPERIENCE

International Post-Graduate Teaching

CAJAL Advanced Neuroscience Training, Lisbon, Portugal
Quantitative Approaches to Behavior and Virtual Reality (Seminar speaker) 2024
MBL Neurobiology: Mechanisms & Advances, Cape Cod, MA
Ed Kravitz Special Lecture 2017
Cold Spring Harbor Laboratory, NY
Drosophila Neurobiology: Genes, Circuits Behavior Course Instructor 2014-17
Drosophila Neurobiology: Genes, Circuits Behavior Course Lecturer 2013-18

University Course Teaching

Brown University Course Instructor
NEUR 1640: *Behavioral Neurogenetics Laboratory* 2022-present
NEUR 1040: *Introduction to Neurogenetics* 2015-present
NEUROPRACTICUM 2020
Neuroscience Graduate Program Intensive 8-day laboratory training course

University Course Guest Lectures

Brown University, RI,
NEUR Grad Student Seminar: How to incorporate feedback into your writing 2023
NEUR 2030: Advances in Cellular and Molecular Neurobiology I 2015-23
NEUR 2040: Advances in Cellular and Molecular Neurobiology II 2014-23
NEUR 1740: The Diseased Brain 2014,15,18
Biomed Responsible Conduct of Research: Rigor and Reproducibility 2018
NEUR 1020: Principles of Neurobiology 2019
NEUR Grad Student Seminar: How to give a chalk-talk 2019

University of San Francisco, CA, *Introduction to Animal Biology* 2009

San Francisco State University, CA, *Honors Biology* 2009

MENTORING EXPERIENCE

Brown University: Kaun Lab Mentees

* Under-represented minority in STEM (Native American, Hispanic or African American)
¶ First generation college student
BLUE represents current position

Post-doctoral Associates:

Dr. Rebecca Oramas (Neuroscience) 2024-present
Dr. Lewis Sherer (Neuroscience) 2023-present
Dr. John Hernandez* (Neuroscience) 2019-present
Dr. Natalie D'Silva¶ (Neuroscience), Research Scientist, Providence VA Medical Center 2018-21
Dr. Kristin Scaplen (Neuroscience), Assistant Professor, Bryant University 2014-20
Dr. Emily Petruccelli (Neuroscience), Assistant Professor, S. Illinois Univ. Edwardsville 2015-18

Graduate students:

Tariq Brown* (Neuroscience) 2019-present
Katie McCullar* (Neuroscience), M.Sc. Research Tech, Sleep for Science Program 2018-21
Jamie Catalano (Molec. Pharmacol. & Physiol.), M.Sc. Biostatistician, PA 2018-21
Kavin Nunez*¶ (Molec. Pharmacol. & Physiol.), Ph.D., Postdoc, Nagel Lab NYU 2016-21
Nicolas Mei (Neuroscience), M.Sc., Software developer, Allen Institute 2014-17

Undergraduate students:

Liliana Cunha (Neuroscience) 2024
Megan Wang (Neuroscience) 2023-present
Brian Lee (Neuroscience) 2023-present
Miauaxochitl Haskie* (Biology, Neurobiology), Awarded Viewer's Choice Poster Award at Biology Senior Poster Symposium 2022-24
Imaad Said (Neuroscience), Awarded Dept James T. McIlwain Award for Excellence Senior Thesis Prize, Medical School, University of Wisconsin Milwaukee 2022-24
Owen Wogmon (Neuroscience), Awarded Dept Neuroscience Senior Thesis Prize Fulbright Scholar 2021-23
Rohan Freedman (Neuroscience) 2021-23
Eve Glenn* (Neuroscience), Awarded CLPS Whalen Senior Thesis Prize MD Candidate, Yale University 2020-22
Raffee Wright* (Behavioral Genetics), PhD Candidate, University of Edinburgh 2019-21
Vaishnavi Sankar (Neuroscience and Music) 2019-21
Awarded Department of Neuroscience Senior Thesis Prize and Whalen Senior Thesis Prize
MD Candidate, Baylor University
Mariel Magditis (Neuroscience), MD Candidate, UCSF 2018-21
Mara Kessler (Middle East Studies) 2020
Anthony Walley*¶ (Neuroscience), Research Associate, UMass Medical School 2019
Destinee Semidey¶ (BP-Endure student), PhD Candidate, OHSU 2019
Keanu Hunter*¶ (Biology) 2019
Breanna Demestichas (Binghamton University, Biochemistry) 2018
PhD Candidate, Brown University
Fahim Mahmud¶ (Biology) 2017
Sydney Gang (Biology, Neurobiology) 2017-19
Ryan Cohen (Biology, Neurobiology), Software Development Engineer, Adobe 2017-19

Tyler Blackwater*¶ (Computational Biology)	2016-19
Sophia Song (PLME, Neuroscience), Awarded John P. Donoghue Senior Thesis Prize, MD Candidate, Brown University	2016-19
Yanabah Jacques* (Cognitive, Linguistic & Psychological Sciences), PhD Candidate, UC Berkeley Neuroscience	2016-18
Jack Martin*¶ (Chemistry, Indigenous Studies)	2016-17
Gina Chieffallo¶ (Cognitive, Linguistic & Psychological Sciences)	2016-17
Jaclyn Dell¶ (Leadership Alliance student), MSc USF, Fulbright Scholar U. Birmingham	2016
David Miller* (Neuroscience)	2016
Nicolas Ledru (Biology), Awarded Senior Thesis Kidwell Prize in Genetics, MD/PhD Candidate, Washington University,	2015-17
Samantha Huynh¶ (Neuroscience)	2015-16
Dharsan Chandrakumar (Neuroscience)	2015
Helen Ding (Neuroscience)	2015
Rachel Muster (Neuroscience), MD candidate, UCSF	2014-16
Minjae Kwon (Biology), Dentistry candidate, South Korea	2014-15
Hayley Bounds (Neuroscience), PhD candidate, UC Berkeley Neuroscience	2014-15
Sophie Yan (Public Health), Associate, Bank of America Merrill Lynch	2014-15
Alex Chen¶ (BP-Endure student), PhD candidate, University of Michigan Neuroscience	2014
Edward Lee (Biology), MD candidate, Loma Linda Medical School	2014

Postbaccalaureate Research Education Program students:

Nelson Le¶, Data Analyst, Nationwide Insurance	2022-23
Yanabah Jaques*, PhD Candidate, UC Berkeley Neuroscience	2018-19
Nishell Savory*¶**,** PhD Candidate, Drexel University	2016-17

Research Assistants:

Dr. Edward Anderson, Research Scientist, UNC Catalyst for Rare Disease	2017-18
Michael Feyder¶ (Technician), PhD Candidate, UMass Med School Biochemistry	2015-17
Amanda Waterman (Technician)	2017-present
Reza Azanchi¶ (Lab Manager)	2013-present

High School Students

Aroosa Chima (New Orleans)	2014-15
Harry Kuperstein (Southborough, MA)	2016-17

Brown University: Thesis Committee Mentees

Krishna Amin (Neuroscience)	2024-present
Adam Frieburg (Neuroscience)	2023-present
Angel Okoro (Neuroscience)	2022-present
Rares Mosneau (Neuroscience)	2022-present
James Kentro (Molecular Biology, Cell Biology and Biochemistry)	2021-present
Pablo Iturralde (Neuroscience)	2020-present
Max Seppo (Neuroscience)	2020-23
Kimberly Madhwani (Neuroscience)	2019-24
Jessica Scales (Molecular Pharmacology and Physiology)	2019-23
Simon Daste (Neuroscience)	2019-24
Doruk Savas (Neuroscience)	2018-24
Sinda Fekir (Neuroscience)	2018-24
Kathryn Russo (Neuroscience)	2018-21
Katie Yanagi (Neuroscience)	2017-21
Belinda Mahama (Neuroscience)	2018-20
Nate Snell (Neuroscience)	2015-20

Arjun Mathur (Molecular Biology, Cell Biology and Biochemistry)	2016-18
Jennifer Johnson (Molecular Biology, Cell Biology and Biochemistry)	2013-17
Altar Sorkac (Neuroscience)	2013-15
Heather Bennett (Molecular Biology, Cell Biology and Biochemistry)	2013-15

PROFESSIONAL MEMBERSHIPS

National Association of Biology Teachers	2023-present
Genetics Society of America	2015-present
International Behavioral and Neural Genetics Society	2015-present
Society for Neuroscience	2015-present
Research Society on Alcoholism	2015-present

PROFESSIONAL DEVELOPMENT

Teaching Advancement Courses and Workshops

Decolonize STEM at Brown Reading Group
- *Teaching Critical Thinking: Practical Wisdom* *2023*
- *Community as Rebellion: A syllabus for surviving academia as a woman of color* *2023*
- *Braiding Sweetgrass: Indigenous Wisdom, Scientific Knowledge …* *2022*
- *Decolonizing Methodologies: Research and Indigenous Peoples* 2022

Using Technology for Inclusive Teaching 2021
Incorporating writing into your course, Brown University 2015
Reflective Teaching Certificate I, Brown University 2014-15
Gender in the classroom, Brown University 2014
Classroom communication, Brown University 2014
Syllabus design, Brown University 2013
Feedback on teaching, Brown University 2013
Grading Strategies, Brown University 2013
Interactive Classrooms, Brown University 2013
Preparing Future Faculty Seminar Series, UCSF 2009-10
Publishing in Science Education Journals, UCSF 2009
Science & Health Education Partnership Teaching Workshop, UCSF 2007-8

Mentoring Workshops

NIH OITE *Raising a Resilient Scientist* 2022
DEI STEMM Faculty Workshop Series 2020-21
SfN Mitigating Implicit Bias: Tools for the Neuroscientist Webinar 2018
HHMI Gilliam Mentor Training:
- *Improving communications with your mentee webinar* 2018
- *Sharing mentoring challenges and solutions online workshop* 2018
- *Culturally aware mentoring online module* 2018
- *Culturally aware mentoring: Enhancing your skills 2-day workshop*, HHMI 2018
- *The science of mentoring webinar* 2017
- *Optimizing the practice of mentoring webinar* 2017
- *Leveling the playing field by articulating expectations webinar* 2017
- *Navigating implicit bias and optimizing mentor relationships 2 day workshop,* Janelia 2017

Finding the mentoring you need, Brown University 2013
How to have a difficult conversation, Brown University 2013
Mentorship Faculty Roundtable, Brown University 2013
Science Education Program Mentoring Workshops, UCSF 2009

Grant Writing Workshops

Grant Finding at Brown and Beyond, Brown University	2013
Grant Writing Workshop, Janelia Research Campus	2011
Navigating the Grant, Janelia Research Campus	2011
Professional & Academic Success Skills: Funding your research, UCSF	2010

RESEARCH COMMUNICATIONS

Invited seminars: International

Champalimaud Center, CAJAL Course on Quantitative Approaches to Behaviour and Virtual Reality, Lisbon, Portugal	2024
University of British Columbia, Dept. Zoology, Vancouver, Canada	2024
Ankara University Neuroscience Community, Virtual	2024
University of Alberta, Department of Biology, Edmonton, Canada	2020
University of St. Andrews, School of Psychology and Neuroscience, Scotland UK	2019
University of Tel Aviv, Dept. Physiology and Pharmacology, Israel	2018
Bar-Ilan University, Min and Everard Goodman Faculty of Life Sciences, Israel	2018
University of Sydney, School of Life and Environmental Sciences, Australia	2018
University of Sydney, Charles Perkins Center, Australia	2018
University of British Columbia, Dept. Cell and Physiol. Sciences, Vancouver, Canada	2018
Center of Advanced European Studies and Research, Bonn, Germany	2016
University of Cologne, Flies on Drugs symposium, Cologne, Germany	2016

Invited seminars: National

University of Washington, Department of Physiology and Biophysics	2024
Texas A&M, Genes to Behavior; Time, Love and Memory Symposium, College Station, TX	2024
University of Texas Southwestern, Neuroscience Department	2023
University of New Mexico, Biology Days Keynote Speaker	2023
Indiana University, Bloomington, Gill Center for Biomedical Excellence	2023
Virginia Tech, Life Science Seminar Series	2023
University of Puerto Rico, Medical Campus, NIGMS-RISE Program	2023
Vanderbilt University, Department of Biological Sciences	2022
University of Rhode Island, Interdisciplinary Neuroscience Program Seminar Series	2021
University of Virginia, Biology Seminar Series	2021
Baylor School of Medicine, Neuroscience Seminar Series	2021
University of New Mexico, 'Meet a Scientist', Neurobiology course	2020
University of Puerto Rico, Rio Piedras, RISE Program	2020
Wake Forest School of Medicine, Physiology & Pharmacology Seminar Series	2019
Stonehill College, Biology Research Seminar Series	2019
University of Indiana Bloomington, Neuroscience Graduate Program	2019
Brandeis University, Neuroscience Graduate Program Retreat	2019
Thomas Jefferson University, Department of Neuroscience	2019
Haverford College, Department of Biology, Neuroscience Program	2019
University of Massachusetts Amhurst, Neuroscience and Behavior Program	2019
Bryant University, Women in Science Research Seminar	2019
University of Oregon, Institute of Neuroscience	2019
University of Michigan, Neuroscience Graduate Program Symposium	2018
National Institutes of Health, NICHD	2017
University of New Hampshire, Dept. Biological Sciences	2017
University of West Virginia, Dept. Biology	2017
Marine Biological Laboratory, Neurobiology Summer Course Kravitz Lecture	2017
University of Wisconsin-Madison, Dept. Genetics	2016

Connecticut College, Biology Student Advisory Board Invited Speaker 2016
Syracuse University, Dept. Biology 2016
Brandeis University, Dept. Biology 2014
Yale University, Dept. Physiology 2014
Florida Atlantic University / Max-Plank, Integrative Biology and Neuroscience 2013

Invited seminars: Internal (Brown University)
Carney Institute for Brain Science, Carney Conversations 2020
Center for Alcohol and Addiction Studies 2016
NSGP/GPP Graduate Program Retreat, Woodshole, MA 2015
Molecular Biology, Cell Biology and Biochemistry Retreat 2015
Advisory Council on Biology and Medicine 2015
Neurology Grand Rounds 2015
Brown University FlyClub 2014
Brown Institute for Brain Science Seminar 2013
Brown Institute for Brain Science, Bench-to-Bedside 2013
Brown Institute for Brain Science Symposium 2013
Dept. Molecular Biology, Cell Biology and Biochemistry 2013

International Conferences
Winter Conference in Developmental Psychobiology (short talk) Oahu, Hawaii, US 2024
2023 Mushroom Body Meeting, (Invited speaker) Gottingen, Germany 2023
International Behaviour and Neural Genetics Society, (Invited Speaker) Virtual 2022
Insect Biotechnology Conference, (Invited speaker) Virtual, *via* Ontario, Canada 2021
2021 Mushroom Body Meeting, (Invited speaker) Virtual, *via* Bonn, Germany 2021
Winter Conference in Developmental Psychobiology 2017
Providenciales, Turks & Caicos Islands (Invited speaker)
ISBRA/ESBRA World Congress on Alcohol and Alcoholism, Berlin, Germany (Invited speaker) 2016
The Notch Meeting, Athens, Greece (Symposium speaker) 2015
Genetic Approaches to Studying the Neurobiology of Learning and Memory, Royal Society, 2014
London UK (Symposium speaker)
PKG Fest 2013, Toronto ON (Invited speaker)

National Conferences
64th Annual *Drosophila* Research Conference, Chicago, IL (Plenary Speaker) 2023
Research Society on Alcoholism Annual Meeting, (Session Chair and Speaker), Bellevue WA 2023
Alcohol and the Nervous System Gordon Research Conference, Galveston, TX 2020
(Invited Speaker)
J.B. Johnston Club Karger Workshop, Chicago, IL (Invited Speaker) 2019
Genetic and Molecular Mechanisms Underlying Complex Behavior, Janelia Research 2019
Campus, Ashburn, VA, (Co-organizer and Speaker)
Research Society on Alcoholism Annual Meeting, (Session Chair and Speaker) 2019
Center for Learning and Memory Symposium, University of Texas, Austin, TX 2019
Comparative Learning and Memory Session (Invited Speaker)
Columbia Workshop on Brain Circuits, Memory and Computation, Columbia University, NY, 2019
(Invited Speaker)
Genetic Manipulation of Neural Activity V, Janelia Research Campus, Ashburn, VA 2018
(Invited Speaker)
Rhode Island NIH IDeA Symposium, Warren Alpert Medical School, Providence, RI 2018
IBANGS Genes, Brain & Behavior Meeting, Rochester, MN (Young Investigator Award) 2018
Neuro-evo II: A comparative approach to cracking circuit function, Janelia Research Campus, 2018
Ashburn, VA (Invited speaker)
Modulation of Neural Circuits and Behavior GRC, Newry, ME 2017
(Invited keynote symposium speaker)

Neuro-evo: A comparative approach to cracking circuit function Janelia Research Campus, Ashburn, VA (Invited speaker and symposium chair) 2016
IBANGS Genes, Brain & Behavior Meeting, Bar Harbor, ME (Invited featured speaker) 2016
Neurobiology of Drosophila Conference, CSHL, NY (Poster) 2015
Motivational Circuits in Natural and Learned Behaviors, Janelia Research Campus Ashburn, VA (Poster and poster teaser) 2015
Structure and Function of the Insect Mushroom Body, Janelia Research Campus Ashburn, VA (Invited speaker) 2014
Alcohol in the Nervous System Gordon Research Conference, Galveston, TX (Poster) 2014

Conferences Attended Without Presenting

IBANGS Genes, Brain & Behavior Meeting, London, ON 2024
NIDA Genetics and Epigenetics Cross-Cutting Research Team Meeting, Bethesda, MD 2024
National Association of Biology Teachers Annual Conference, Baltimore, MD 2023
IBANGS Genes, Brain & Behavior Meeting, Galway, Ireland 2023
Society for Neuroscience Annual Meeting, San Diego, CA 2022
Smith Family Awards Program 20th Anniversary, Boston, MA 2022
Boston Area Drosophila Meeting, Boston, MA 2022
New England SACNAS, Providence, RI 2022
IBANGS Genes, Brain & Behavior Meeting, Memphis, TN 2022
Annual *Drosophila* Research Conference, San Diego, CA 2022
Society for Neuroscience Annual Meeting, Virtual 2021
Society for Neuroscience Global Connectome, Virtual 2021
IBANGS Genes, Brain & Behavior Meeting, Virtual 2021
Society for Neuroscience, Chicago IL 2019
CSHL Neurobiology of *Drosophila* 2019
IBANGS Genes, Brain & Behavior Meeting, Edinburgh, Scotland 2019
Sackler Winter Conference in Developmental Psychobiology Providenciales, Turks & Caicos Islands 2019
Society for Neuroscience, San Diego, CA 2018
NSGP/GPP Graduate Program Retreat, Woodshole, MA 2018
HHMI Gilliam Annual Fellows Meeting, Janelia Research Campus, Ashburn, VA 2018
HHMI Gilliam Mentor Workshop, HHMI Headquarters, Bethesda, MD 2017
Society for Neuroscience, Washington, DC 2017
CSHL Neurobiology of Drosophila, CSHL, NY 2017
Boston Area *Drosophila* Meeting, UMass Boston, MA 2016
Society for Neuroscience, Washington, DC 2014

PERSONAL INTERESTS

My early life was spent in a remote Native American community in northern Saskatchewan and a remote coal-mining town in northern British Columbia. My motivation to understand the neural and molecular mechanisms of behavior stems from spending much of my childhood watching the behavior of insects, birds and other animals in an unfettered Boreal forest setting. I have extensive training in a number of martial arts including TaeKwonDo, Judo and kickboxing, and I enjoy spending as much time as possible with my spouse and two children hiking in the woods, walking on the beach and sailing on the Bay.