

Karla R. Kaun, Ph.D.

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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

President-Elect of the International Behavioural and Neural Genetics Society	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

Nunez KM, Catalano JL, Scaplen KM, **Kaun KR** (Accepted for Publication). Ethanol behavioral responses in *Drosophila*. [Cold Spring Harbor Protocols: *Drosophila* Neurobiology.](#)

- Nunez KM, Catalano JL, Scaplen KM, **Kaun KR** (Accepted for Publication). Methods for Exploring the Circuit Basis of Ethanol-Induced Changes in *Drosophila* Group Locomotor Activity. [Cold Spring Harbor Protocols: *Drosophila* Neurobiology](#).
- Hernandez J, **Kaun KR** (2020) Alcohol, neuronal plasticity, and mitochondrial trafficking. [Proc Natl Acad Sci 119: e2208744119](#).
- 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](#).
- Petrucelli 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.
- Petrucelli E, Feyder M, Ledru N, Jaques Y, Anderson E, **Kaun KR** (2018) Alcohol Activates Scabrous-Notch to Influence Associated Memories. [Neuron 100: 1-15](#).
- Petrucelli 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*. [bioRxiv 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*. [bioRxiv 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:

NIGMS R01GM115510	<u>Kaun (Co-PI)</u>	2023-27
<i>Functional role of dual neurotransmission in aggression</i>		
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 <i>in vivo</i> imaging in behaving flies. With collaborators Sarah Certel (University of Montana) and Steve Stowers (Montana State)		
Brown University Seed Funding	<u>Kaun (PI)</u>	2022-23
<i>Establishing a Drosophila model of opioid self-administration</i>		
The goal of this project is to develop a <i>Drosophila</i> model for opioid self-administration and identify the receptors associated with this response.		
Hubert & Richard Hanlon Trust Grant Award	<u>Kaun (Co-PI)</u>	2020-23
<i>The Stress Factor: Understanding the role of norepinephrine in Alcohol Use Disorder</i>		
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. <i>Drosophila</i> 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	<u>Kaun (PI)</u>	2016-26
<i>Notch-dependent microcircuit regulation of alcohol reward memory</i>		
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.		

PAST FUNDING:

NIDA R21DA042622	<u>Kaun (PI)</u>	2019-22
<i>Whole-brain mapping of opiate sensitive circuits in Drosophila</i>		
The goal of this project is to identify the <i>Drosophila</i> μ opiate receptor (μ OR), and investigate brain wide expression of μ ORs 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	<u>Kaun (Co-PI)</u>	2018-20
With Co-PI Dr. Kate O'Connor-Giles, Brown University		
<i>Understanding contributions of alternative splicing to appetitive memory</i>		

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:

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 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 post-doctoral 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**

Neuro DUG Lab Tours	<u>Host</u>	2022
Conflict of Interest Review and Management Committee	<u>Member</u>	2020-present
Native American & Indigenous Studies Steering Comm.	<u>Ad hoc member</u>	2019
CLPS Whalen Award selections	<u>Reviewer</u>	2019,20
Brown University Big Bang Waterfire	<u>Invited Public Lecture Speaker</u>	2018
Brown Staff Outreach Seminar	<u>Invited Carney Faculty Speaker</u>	2018
Mind-Brain Research Day	<u>Poster judge</u>	2017,19

Young Scholars Conference	<u>Faculty Participant</u>	2015,16,18
Living Biology First Year Science Outreach	<u>Invited Faculty Speaker</u>	2017
Smith Award applications	<u>Reviewer</u>	2016-18
UTRA applications	<u>Reviewer</u>	2016,17
BIBS graduate award applications	<u>Reviewer</u>	2016
Division of Advancement (OFR) Young Faculty Panel	<u>Panelist</u>	2016
Neuroscience convocation	<u>Faculty reader</u>	2015,19
BIBS Advanced Microscopy Symposium	<u>Co-organizer</u>	2015
International Mentoring Program Orientation	<u>Faculty Participant</u>	2015
Day of Biology	<u>Lab Tour (Host)</u>	2015
GWiSE “Women in Stem” Panel	<u>Panelist</u>	2015
Brown 250 th Anniversary “Brains at Brown”	<u>Interactive Demo Leader</u>	2014
“Women in Science and Engineering” Event	<u>Guest Speaker</u>	2013

Brown University Neuroscience Departmental Commitments

Appointments and Promotions Committee	<u>Committee Member</u>	2022-present
FTE Working Group	<u>Committee Member</u>	2021-present
Diversity and Inclusion Action Plan Committee	<u>Committee Member</u>	2019-present
Undergraduate Curriculum Committee	<u>Committee Member</u>	2019-22
Graduate Program Student ‘In House’ Seminar Series	<u>Faculty Co-ordinator</u>	2018-22
Graduate Program Admissions Committee	<u>Committee Member</u>	2016-present
Graduate Program Steering Committee	<u>Committee Member</u>	2015-2020

HHMI Janelia Farm Research Campus Service

“Transitions from Post-doc to PI”	<u>Panelist</u>	2014
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ACADEMIC SERVICE:

Academic Society Service

President-elect, International Behavioural and Neural Genetics Society		2022-present
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Editorial Service

Associate Editor, <i>Genetics</i> Neurobiology & Behavior Section		2020-present
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Conference Program Committees

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

Grant Review

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

External PhD thesis examiner

Martin Sabandal, Davis Lab, Scripps Florida	2022
Yuanyuan Li, Masek Lab, Binghamton 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 <i>Drosophila</i> : Genes, Brains & Behavior	2014-17
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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*

SYMPOSIA ORGANIZED / CHAIRED:

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

COMMUNITY OUTREACH:

Brain Talk: A Lunchtime Series	<u>RI Brain Week Events</u>	2022
Frontier School Division, Manitoba, Canada	<u>Virtual Lab Tours and Demos</u>	2021

Tumbler Ridge Secondary School, BC, Canada	<u>Alumni Speaker</u>	2020,22
Bryant University Perspectives on Addiction Panel	<u>Panelist</u>	2019
Hamden Meadows School Grade 4 outreach	<u>Human brain activity leader</u>	2018,22
Brown University Big Bang Waterfire	<u>Invited Public Lecture Speaker</u>	2018
STEAM Connections (BEF Science Outreach Event)	<u>Exhibitor, Mentor</u>	2015

MEDIA-RELATED SCIENCE COMMUNICATION:

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 <i>et al</i> 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**

Cold Spring Harbor Laboratory, NY		
<i>Drosophila Neurobiology: Genes, Circuits Behavior Course</i> Instructor		2014-17
<i>Drosophila Neurobiology: Genes, Circuits Behavior Course</i> Lecturer		2013-18

University Course Teaching

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

University Course Guest Lectures

Brown University, RI,		
NEUR 2030: <i>Advances in Cellular and Molecular Neurobiology I</i>		2015-22
NEUR 2040: <i>Advances in Cellular and Molecular Neurobiology II</i>		2014-22
NEUR 1740: <i>The Diseased Brain</i>		2014,15,18
<i>Biomed Responsible Conduct of Research: Rigor and Reproducibility</i>		2018

<i>NEUR 1020: Principles of Neurobiology</i>	2019
<i>NEUR Grad Student Seminar: How to give a chalk-talk</i>	2019
University of San Francisco, CA, <i>Introduction to Animal Biology</i>	2009
San Francisco State University, CA, <i>Honors Biology</i>	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. 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), Research Technologist, Sleep for Science Program	2018-21
Jamie Catalano (Molecular Pharmacology and Physiology), M.Sc. Biostatistician, PA	2018-21
Kavin Nunez*† (Molecular Pharmacology and Physiology), Ph.D., Nagel Lab NYU	2016-21
Nicolas Mei (Neuroscience), M.Sc., Software developer, Allen Institute	2014-17

Undergraduate students:

Miauxochitl Haskie* (Biology, Neurobiology)	2022-present
Imaad Said (Neuroscience)	2022-present
Owen Wogmon (Neuroscience)	2021-present
Rohan Freedman (Neuroscience)	2021-23
Eve Glenn* (Neuroscience)	2020-22
Awarded CLPS Whalen Senior Thesis Prize	
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)	2018-21
MSc Candidate, Columbia University	
Mara Kessler (Middle East Studies)	2020
Anthony Walley*† (Neuroscience), Research Associate, UMass Medical School	2019
Destinee Semidey† (BP-Endure student),	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,	2016-19
MD Candidate, Brown University	

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
<u>Postbaccalaureate Research Education Program students:</u>	
Nelson Le,	2022-present
Yanabah Jaques*, PhD Candidate, UC Berkeley Neuroscience	2018-19
Nishell Savory* [¶] , Lab Technician, Walter Reed Army Institute of Research	2016-17
<u>Research Assistants:</u>	
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
<u>High School Students</u>	
Aroosa Chima (New Orleans)	2014-15
Harry Kuperstein (Southborough, MA)	2016-17
Brown University: Thesis Committee Mentees	
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-present
Kimberly Madhwani (Neuroscience)	2019-present
Jessica Scales (Molecular Pharmacology and Physiology)	2019-present
Simon Daste (Neuroscience)	2019-present
Doruk Savas (Neuroscience)	2018-present
Sinda Fekir (Neuroscience)	2018-present
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

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

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

Mentoring Workshops

NIH OITE <i>Raising a Resilient Scientist</i>	2022
DEI STEMM Faculty Workshop Series	2020-21
SfN <i>Mitigating Implicit Bias: Tools for the Neuroscientist Webinar</i>	2018
HHMI Gilliam Mentor Training:	
<i>Improving communications with your mentee webinar</i>	2018
<i>Sharing mentoring challenges and solutions online workshop</i>	2018
<i>Culturally aware mentoring online module</i>	2018
<i>Culturally aware mentoring: Enhancing your skills 2 day workshop</i> , HHMI	2018
<i>The science of mentoring webinar</i>	2017
<i>Optimizing the practice of mentoring webinar</i>	2017
<i>Leveling the playing field by articulating expectations webinar</i>	2017
<i>Navigating implicit bias and optimizing mentor relationships 2 day workshop</i> , Janelia	2017
<i>Finding the mentoring you need</i> , Brown University	2013
<i>How to have a difficult conversation</i> , Brown University	2013
<i>Mentorship Faculty Roundtable</i> , Brown University	2013
<i>Science Education Program Mentoring Workshops</i> , UCSF	2009

Grant Writing Workshops

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

RESEARCH COMMUNICATIONS

Invited seminars: International

<u>International Behaviour and Neural Genetics Society</u> , (Invited Speaker) Virtual	2022
<u>University of Alberta</u> , Department of Biology, Edmonton, Canada	2020
<u>University of St. Andrews</u> , School of Psychology and Neuroscience, Scotland UK	2019
<u>University of Tel Aviv</u> , Dept. Physiology and Pharmacology, Israel	2018
<u>Bar-Ilan University</u> , Min and Everard Goodman Faculty of Life Sciences, Israel	2018
<u>University of Sydney</u> , School of Life and Environmental Sciences, Australia	2018
<u>University of Sydney</u> , Charles Perkins Center, Australia	2018
<u>University of British Columbia</u> , Dept. Cell and Physiol. Sciences, Vancouver, Canada	2018
<u>Center of Advanced European Studies and Research</u> , Bonn, Germany	2016
<u>University of Cologne</u> , Flies on Drugs symposium, Cologne, Germany	2016

Invited seminars: National

<u>University of Puerto Rico, Medical Campus</u> , NIGMS-RISE Program	2023
<u>Vanderbilt University</u> , Department of Biological Sciences	2022
<u>University of Rhode Island</u> , Interdisciplinary Neuroscience Program Seminar Series	2021
<u>University of Virginia</u> , Biology Seminar Series	2021
<u>Baylor School of Medicine</u> , Neuroscience Seminar Series	2021
<u>University of New Mexico</u> , 'Meet a Scientist', Neurobiology course	2020
<u>University of Puerto Rico, Rio Piedras</u> , RISE Program	2020
<u>Wake Forest School of Medicine</u> , Physiology & Pharmacology Seminar Series	2019
<u>Stonehill College</u> , Biology Research Seminar Series	2019
<u>University of Indiana Bloomington</u> , Neuroscience Graduate Program	2019
<u>Brandeis University</u> , Neuroscience Graduate Program Retreat	2019
<u>Thomas Jefferson University</u> , Department of Neuroscience	2019
<u>Haverford College</u> , Department of Biology, Neuroscience Program	2019
<u>University of Massachusetts Amhurst</u> , Neuroscience and Behavior Program	2019
<u>Bryant University</u> , Women in Science Research Seminar	2019
<u>University of Oregon</u> , Institute of Neuroscience	2019
<u>University of Michigan</u> , Neuroscience Graduate Program Symposium	2018
<u>National Institutes of Health</u> , NICHD	2017
<u>University of New Hampshire</u> , Dept. Biological Sciences	2017
<u>University of West Virginia</u> , Dept. Biology	2017
<u>Marine Biological Laboratory</u> , Neurobiology Summer Course Kravitz Lecture	2017
<u>University of Wisconsin-Madison</u> , Dept. Genetics	2016
<u>Connecticut College</u> , Biology Student Advisory Board Invited Speaker	2016
<u>Syracuse University</u> , Dept. Biology	2016
<u>Brandeis University</u> , Dept. Biology	2014
<u>Yale University</u> , Dept. Physiology	2014
<u>Florida Atlantic University / Max-Planck</u> , 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

<u>Insect Biotechnology Conference</u> , (Invited speaker) Virtual, <i>via</i> Ontario, Canada	2021
<u>Mushroom Body Meeting</u> , (Invited speaker) Virtual, <i>via</i> Bonn, Germany	2021
<u>Sackler Winter Conference in Developmental Psychobiology</u> Providenciales, Turks & Caicos Islands (Invited speaker)	2017
<u>ISBRA/ESBRA World Congress on Alcohol and Alcoholism</u> , Berlin, Germany (Invited speaker)	2016
<u>The Notch Meeting</u> , Athens, Greece (Symposium speaker)	2015
<u>Genetic Approaches to Studying the Neurobiology of Learning and Memory</u> , Royal Society, London UK (Symposium speaker)	2014
<u>PKG Fest 2013</u> , Toronto ON (Invited speaker)	

National Conferences

<u>Alcohol and the Nervous System Gordon Research Conference</u> , Galveston, TX (Invited Speaker)	2020
<u>J.B. Johnston Club Karger Workshop</u> , Chicago, IL (Invited Speaker)	2019
<u>Genetic and Molecular Mechanisms Underlying Complex Behavior</u> , Janelia Research Campus, Ashburn, VA, (Co-organizer and Speaker)	2019
<u>Research Society on Alcoholism Annual Meeting</u> , (Session Chair and Speaker)	2019
<u>Center for Learning and Memory Symposium</u> , University of Texas, Austin, TX Comparative Learning and Memory Session (Invited Speaker)	2019
<u>Columbia Workshop on Brain Circuits, Memory and Computation</u> , Columbia University, NY, (Invited Speaker)	2019
<u>Genetic Manipulation of Neural Activity V</u> , Janelia Research Campus, Ashburn, VA (Invited Speaker)	2018
<u>Rhode Island NIH IDeA Symposium</u> , Warren Alpert Medical School, Providence, RI	2018
<u>IBANGS Genes, Brain & Behavior Meeting</u> , Rochester, MN (Young Investigator Award)	2018
<u>Neuro-evo II: A comparative approach to cracking circuit function</u> , Janelia Research Campus, Ashburn, VA (Invited speaker)	2018
<u>Modulation of Neural Circuits and Behavior GRC</u> , Newry, ME (Invited keynote symposium speaker)	2017
<u>Neuro-evo: A comparative approach to cracking circuit function</u> Janelia Research Campus, Ashburn, VA (Invited speaker and symposium chair)	2016
<u>IBANGS Genes, Brain & Behavior Meeting</u> , Bar Harbor, ME (Invited featured speaker)	2016
<u>Neurobiology of Drosophila Conference</u> , CSHL, NY (Poster)	2015
<u>Motivational Circuits in Natural and Learned Behaviors</u> , Janelia Research Campus Ashburn, VA (Poster and poster teaser)	2015
<u>Structure and Function of the Insect Mushroom Body</u> , Janelia Research Campus Ashburn, VA (Invited speaker)	2014
<u>Alcohol in the Nervous System Gordon Research Conference</u> , Galveston, TX (Poster)	2014

Conferences Attended Without Presenting

<u>Society for Neuroscience Annual Meeting</u> , San Diego, CA	2022
<u>Smith Family Awards Program 20th Anniversary</u> , Boston, MA	2022
<u>Boston Area Drosophila Meeting</u> , Boston, MA	2022
<u>New England SACNAS</u> , Providence, RI	2022
<u>IBANGS Genes, Brain & Behavior Meeting</u> , Memphis, TN	2022
<u>Annual Drosophila Research Conference</u> , San Diego, CA	2022
<u>Society for Neuroscience Annual Meeting</u> , Virtual	2021
<u>Society for Neuroscience Global Connectome</u> , Virtual	2021
<u>IBANGS Genes, Brain & Behavior Meeting</u> , Virtual	2021
<u>Society for Neuroscience</u> , Chicago IL	2019
<u>CSHL Neurobiology of Drosophila</u>	2019
<u>IBANGS Genes, Brain & Behavior Meeting</u> , Edinburgh, Scotland	2019
<u>Sackler Winter Conference in Developmental Psychobiology</u> Providenciales, Turks & Caicos Islands	2019

<u>Society for Neuroscience</u> , San Diego, CA	2018
<u>NSGP/GPP Graduate Program Retreat</u> , Woodshole, MA	2018
<u>HHMI Gilliam Annual Fellows Meeting</u> , Janelia Research Campus, Ashburn, VA	2018
<u>HHMI Gilliam Mentor Workshop</u> , HHMI Headquarters, Bethesda, MD	2017
<u>Society for Neuroscience</u> , Washington, DC	2017
<u>CSHL Neurobiology of Drosophila</u> , CSHL, NY	2017
<u>Boston Area <i>Drosophila</i> Meeting</u> , UMass Boston, MA	2016
<u>Society for Neuroscience</u> , 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.