Vivek Kumar
Curriculum Vitae (Nov 2021)

The Jackson Laboratory
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Research Appointment

The Jackson Laboratory, Bar Harbor, 2021 - Present
Associate Professor, Mammalian Genetics.

The Jackson Laboratory, Bar Harbor, 2015 - 2021
Assistant Professor, Mammalian Genetics.

University of Texas Southwestern Medical Center 2009-2014
2011-2014 Instructor, Dept. of Neuroscience.
2009-2011 - Post doctoral fellow, Dept. of Neuroscience, **Joseph S. Takahashi** Lab.

Northwestern University 2004-2009
Post Doctoral fellow, Dept. of Neuroscience, **Joseph S. Takahashi** Lab.

Education

University of California, San Diego, La Jolla, CA 1997-2003.
Ph.D, Department of Biology, Section of Cell and Developmental Biology.
Functional and Structural Characterization of the Transcriptional Corepressor *C-terminal Binding Protein (CtBP).*
Advisor: **Michael G. Rosenfeld, Ph.D.**

University of Chicago, Chicago, IL 1991-1995.
A.B. Biology
Studied the molecular genetics of the photosynthetic bacterium *Rhodobacter capsulatus.*
Advisor: **Robert Haselkorn, Ph.D.**

Research Summary

My lab consists of geneticists, neuroscientists, and computer scientists. We are passionate about discovering novel targets and models for mental illness through innovation at the confluence of computational, genetic, and genomic methods. Broadly, we are interested in development of better animal models and animal phenotyping methods for human psychiatric illnesses. We use computer vision approaches to quantitate behavior and functional approaches to understand its underlying neuronal and genetic architecture. We have developed high-throughput computer vision based methods for ethologically relevant animal phenotyping. In functional genomics work, we use QTL and mutagenesis approaches to discover novel pathway that can be targeted for addiction therapeutics. Our approaches are flexible and can be applied towards many psychiatric phenotypes. In sum, we are a leading research group using genetics as its foundation, and a combination of biochemistry, physiology, imaging, and computer vision techniques to dissect complex behavior in mammals.

Publications

Vivek Kumar

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Hession LE, Sabnis G, Churchill GA, **Kumar V**. A machine vision based frailty index for mice. ***Nature Aging*** (under revision).

Geuther B, Chen M, Galante R, Han O, George J, Pack A, **Kumar V**. High-throughput visual assessment of sleep stages in mice using machine learning. ***Sleep*** October 2021. 10.1093/sleep/zsab260.

Sheppard K, Gardin J, Sabnis G, Peer A, Darrell M, Deats S, Geuther B, Lutz CM, **Kumar V**. Gait-level analysis of mouse open field behavior using deep learning-based pose estimation. ***Cell Reports*** (under revision) https://doi.org/10.1101/2020.12.29.424780

Geuther BQ, Peer A, He H, Sabnis G, Philip VM, **Kumar V**. Action detection using a neural network elucidates the genetics of mouse grooming behavior. ***eLife*** March 2021. DOI: 10.7554/eLife.63207.

Wotton JM, Peterson E, Anderson L, Murray SA, Braun RE, Chesler EJ, White JK, **Kumar V**. Machine learning-based automated phenotyping of inflammatory nocifensive behavior in mice. ***Molecular Pain***: 16: 1744806920958596 (2020)

Hartmann MC, Haney MM, Smith CG, **Kumar V**, Rosenwasser AM. Affective Disruption During Forced Ethanol Abstinence in C57BL/6J and C57BL/6NJ Mice. ***Alcoholism: Clinical and Experimental Research***: 44(10):2019-2030 (2020)

Sigmon JS et. al Content and Performance of the MiniMUGA Genotyping Array: A New Tool To Improve Rigor and Reproducibility in Mouse Research. ***Genetics***: 216(4): 905-930 (2020)

Haselimashhadi H, Mason JC, Munoz-Fuentes V, López-Gómez F, Babalola K, Acar EF, **Kumar V**, White J, Flenniken AM, King R, Straiton E, Seavitt JR, Gaspero A, Garza A, Christianson AE, Hsu CW, Reynolds CL, Lanza DG, Lorenzo I, et. al. Soft Windowing Application to Improve Analysis of High-throughput Phenotyping Data. Bioinformatics. 2020:36(5):1492-1500. doi: 10.1093/bioinformatics/btz744

Akinola LS, Mckiver B, Toma W, Zhu AZX, Tyndale RF, **Kumar V**, Damaj IM. C57BL/6 substrain differences in pharmacological effects after acute and repeated nicotine administration. ***Brain sciences***: 9(10): 244 (2019)

Hartmann, MC; Kumar, V; Rosenwasser, AM. Ethanol-related phenotypic differences between C57BL/6J and C57BL/6NJ substrains: role of Cyfip2? ***Alcoholism-Clinical And Experimental Research***: 43, 85A (2019)

De Groot HMM, Castorena CM, Cox KH, **Kumar V**, Mohawk JA, Ahmed NI, Takahashi JS. A novel mutation in Slc2a4 as a mouse model of fatigue. ***Genes, Brain and Behavior***: 18(8), e12578 (2019)

Yang S, Siepka SS, Cox KH, **Kumar V**, De Groot M, Chelliah Y, Chen J, Tu B, Takahashi JS. Tissue-specific FAH deficiency alters sleep–wake patterns and results in chronic tyrosinemia in mice. ***PNAS***: 116(44): 22229-22236 (2019).

Babbs RK, Beierle JA, Ruan QT, Kelliher JC, Chen MM, Feng AX, Kirkpatrick SL, Benitez FA, Rodriguez FA, Pierre JJ, Anandakumar J, **Kumar V**, Mulligan MK, Bryant CD. Cyfip1 Haploinsufficiency Increases Compulsive-Like Behavior and Modulates Palatable Food Intake in Mice: Dependence on Cyfip2 Genetic Background, Parent-of Origin, and Sex. G3: Genes, Genomes, Genetics: 9(9): 3009-3022 (2019).

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Geuther BQ, Deats SP, Fox KJ, Murray SA, Braun RE, White JK, Chesler EJ, Lutz CM, **Kumar V**. Robust mouse tracking in complex environments using neural networks. Nature Communications biology. 2(1): 1-11 (2019).

Joshi SS, Sethi M, Striz M, Cole N, Denegre JM, Ryan J, Lhamon ME, Agarwal A, Murray SA, Braun RE, Fardo DW, **Kumar V**, Donohue KD, Sunderam S, Chesler EJ, Svenson KL, O'Hara BF. Noninvasive sleep monitoring in large-scale screening of knock-out mice reveals novel sleep-related genes. bioRxiv. (2019)

Goodwin LO, Splinter E, Davis TL, Urban R, He H, Braun RE, Chesler EJ, **Kumar V**, Van Min M, Ndukum J, Philip VM, Reinholdt LG, Svenson K, White JK, Sasner M, Lutz C, Murray SA. Large-scale discovery of mouse transgenic integration sites reveals frequent structural variation and insertional mutagenesis. ***Genome Research***: gr. 233866.17 (2019)

Corty RW, **Kumar V**, Tarantino LM, Takahashi JS, Valdar W. Mean-Variance QTL Mapping Identifies Novel QTL for Circadian Activity and Exploratory Behavior in Mice. ***G3: Genes, Genomes, Genetics:*** 8 (12), 3783-3790. 2018. doi: /10.1534/g3.118.200194

Kirkpatrick SL, Goldberg LR, Yazdani N, Babbs RK, Wu J, Reed ER, Jenkins DF, Bolgioni AF, Landaverde KI, Luttik KP, Mitchell KS, **Kumar V**, Johnson WE, Mulligan MK, Cottone P, Bryant CD. Cytoplasmic FMR1-Interacting Protein 2 Is a Major Genetic Factor Underlying Binge Eating. ***Biol Psychiatry***: 81(9):757-769. doi: 10.1016/j.biopsych.2016.10.021. PubMed PMID: 27914629; PubMed Central PMCID: PMC5386810. 2017.

Wang H, van Spyk E, Liu Q, Geyfman M, Salmans ML, **Kumar V**, Ihler A, Li N, Takahashi JS, Andersen B. Time-Restricted Feeding Shifts the Skin Circadian Clock and Alters UVB-Induced DNA Damage. ***Cell Rep***.: 20(5):1061-1072. doi: 10.1016/j.celrep.2017.07.022. PMID: 28768192. 2017.

Hossain MS, Asano F, Fujiyama T, Miyoshi C, Sato M, Ikkyu A, Kanno S, Hotta N, Kakizaki M, Honda T, Kim SJ, Komiya H, Miura I, Suzuki T, Kobayashi K, Kaneda H, **Kumar V**, Takahashi JS, Wakana S, Funato H, Yanagisawa M. Identification of mutations through dominant screening for obesity using C57BL/6 substrains. ***Sci Rep.:*** 2;6:32453. doi: 10.1038/srep32453. 2016.

Funato H, Miyoshi C, Fujiyama T, Kanda T, Sato M, Wang Z, Ma J, Nakane S, Tomita J, Ikkyu A, Kakizaki M, Hotta-Hirashima N, Kanno S, Komiya H, Asano F, Honda T, Kim SJ, Harano K, Muramoto H, Yonezawa T, Mizuno S, Miyazaki S, Connor L, **Kumar V**, Miura I, Suzuki T, Watanabe A, Abe M, Sugiyama F, Takahashi S, Sakimura K, Hayashi Y, Liu Q, Kume K, Wakana S, Takahashi JS, Yanagisawa M. Forward-genetics analysis of sleep in randomly mutagenized mice. ***Nature***: 17;539(7629):378-383. doi: 10.1038/nature20142. 2016.

Plikus MV, Van Spyk EN, Pham K, Geyfman M, **Kumar V**, Takahashi JS, Andersen B. The Circadian Clock in Skin: Implications for Adult Stem Cells, Tissue Regeneration, Cancer, Aging, and Immunity. ***Journal of Biological Rhythms*** 30(3):163-82. 2015.

Stringari C, Wang H, Geyfman M, Crosignani V, **Kumar V**, Takahashi JS, Andersen, B, Gratton E. *In Vivo* single-cell detection of metabolic oscillations in stem cells. ***Cell Reports*** 10: 1-7. 2015.

Takahashi JS, **Kumar V**, Nakashe P, Koike N, Huang HC, Green CB, Kim TK. ChIP-seq and RNA-seq methods to study circaidan control of transcription in mammals. ***Methods in Enzymology*** 551:285-321. 2015.

Kumar V, Kim K, Joseph C, Kourrich S, Yoo SH, Huang HC, Vitaterna MH, Pardo-

Manuel de Villena F, Churchill G, Bonci A, Takahashi JS. C57BL/6N mutation in *Cytoplasmic FMRP interacting protein 2 (Cyfip2)* regulates cocaine response. ***Science*** 342: 1508-1512. 2013.

News Coverage
https://www.sciencenews.org/blog/scicurious/all-mice-are-same-until-theyre-not
http://www.utsouthwestern.edu/newsroom/news-releases/year-2013/dec/takahashi-gene.html
http://www.jax.org/news/archives/2013/addiction-research.html

Kumar V, Andersen B, Takahashi JS. Epidermal stem cells ride the circadian wave. ***Genome Biology*** 14: 140-143, 2013.

Shimomura K, **Kumar V**, Koike N, Kim TK, Chong J, Buhr ED, Whiteley AR, Low SS, Omura C, Fenner D, Owens JR, Richards M, Yoo SH, Hong HK, Vitaterna MH, Bass J, Pletcher MT, Wiltshire T, Hogenesch JB, Lowrey PL, Takahashi JS. *Usf1*, a suppressor of the circadian clock mutant, reveals the nature of the DNA-binding of the CLOCK:BMAL1 complex in mice. ***E-Life*** 2:e00426. 2013.

Yoo SH, Mohawk JA, Siepka SM, Shan Y, Huh SK, Hong HK, Kornblum I, **Kumar V**, Koike N, Xu M, Nussbaum J, Liu X, Chen Z, Chen ZJ, Green CB, and Takahashi JS. Competing E3 Ubiquitin Ligases Govern Circadian Periodicity by Degradation of CRY in Nucleus and Cytoplasm. ***Cell*** 152(5): 1091-1105. 2013.

Koike N, Yoo SH, Huang HC, **Kumar V**, Lee C, Kim TK, Takahashi JS. Transcriptional Architecture and Chromatin Landscape of the Core Circadian Clock in Mammals. ***Science*** 338(6105): 349-354. 2012.

Geyfman M, **Kumar V**, Liu Q, Ruiz R, Gordon W, Espitia F, Cam E, Millar SE, Smyth P, Ihler A, Takahashi JS, Andersen B. Brain and muscle Arnt-like protein-1 (BMAL1) controls circadian cell proliferation and susceptibility to UVB-induced DNA damage in the epidermis. ***PNAS*** 109(29):11758-63, 2012.

Kumar V, Kim K, Joseph C, Thomas LC, Hong HK, and Takahashi JS. A Second Generation High Throughput Forward Genetic Screen in Mice to Isolate Subtle Behavioral Mutants. ***PNAS*** 108: Sup 3 15557-15564. 2011.

Kumar V and Takahashi JS. PARP around the Clock. ***Cell*** 142(6): 841-843. 2010.

Shimomura K, Lowrey PL, Vitaterna MH, Buhr ED, **Kumar V**, Hanna P, Omura C, Izumo M, Low SS, Barrett, RK, LaRue SI, Green CB, Takahashi JS. Genetic suppression of the circadian Clock mutation by the melatonin biosynthesis pathway. ***PNAS*** 107(18): 8399-8403. 2010.

Chen R, Schirmer A, Lee Y, Lee H, **Kumar V**, Yoo SH, Takahashi JS, Lee C. Rhythmic PER abundance defines a critical nodal point for negative feedback within the circadian clock mechanism. ***Molecular Cell*** 36(3):417-30. 2009.

Lin KK, **Kumar V**, Geyfman M, Chudova D, Ihler AT, Smyth P, Paus R, Takahashi JS, Andersen B. Circadian clock genes contribute to the regulation of hair follicle cycling. ***PLoS Genetics*** Jul;5(7):e1000573. 2009.

Takahashi J.S., Shimomura K., **Kumar V**. Searching for genes underlying behavior: lessons from circadian rhythms. ***Science*** 322(5903):909-12. 2008.

Siepka SM, Yoo, SH, Park J, Song W, **Kumar V**, Hu Y, Lee C, Takahashi JS. Circadian mutant Overtime reveals F-box protein FBXL3 regulation of Cryptochrome and Period gene expression. ***Cell*** 129(5): 1011-1023. 2007.

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Kumar V, Carlson JE, Ohgi KA, Edwards TA, Rose DW, Escalante CR, Rosenfeld MG, Aggarwal AK. Transcriptional corepressor CtBP is an NAD(+)-regulated dehydrogenase. *Molecular Cell* 10(4):857-69. 2002.

Sugihara TM, Kudryavtseva EL, **Kumar V**, Horridge JJ, Andersen B. The POU domain factor Skin-1a represses the keratin 14 promoter independent of DNA binding. A possible role for interactions between Skn-1a and CREB-binding protein/p300. *Journal of Biological Chemistry* 276(35): 33036-44. 2001.

Jepsen K, Hermanson O, Onami TM, Gleiberman AS, Lunyak V, McEvilly RJ, Kurokawa R, **Kumar V**, Liu F, Seto E, Hedrick SM, Mandel G, Glass CK, Rowe DW, Rosenfeld MG. Combinatorial roles of the nuclear receptor corepressor in transcription and development. *Cell* 102(6):653-63. 2000.

Fonstein M, Koshy EG, **Kumar V**, Mourachov P, Nikolskaya T, Tsifansky M, Zheng S, Haselkorn R. Rhodobacter capsulatus SB1003. In *Bacterial Genomes*: Physical Structure and Analysis, de Bruijn, Lupski, and Weinstock (eds) 1998.

Kumar V, Fonstein M, Haselkorn R. Bacterium genome sequence. *Nature* 381:653-4. 1996.

Talks

Walter Reed Medical Center, Virtual. Host: Emily Lowery-Gionta. May 2021

MaineHealth Costas T. Lambrew Keynote Address. May 2021.

Dartmouth Univeristy, Dec. 2019. Host Giovanni Bosco.

Complext Trait Consortium, June 2019, Univeristy of California, San Diego.

MDI Biolabs, 46th Maine Biological and Medical Sciences Symposium. April, 2019.

Complex Trait Consortium, May 2017, Memphis, TN. Quantitative genetics of serial action coding by the mammalian nervous system.

Boston University, Department of Pharmacology, 2017. Host: Camron Bryant.

Rosenfeld Symposium, Aug. 2016, UCSD, San Diego, CA. Forward genetic dissection of reward pathways.

International Brain and Behavioral Neural Genetics Society, May 2016, Bar Harbor, ME. Integrated analysis if KOMP data.

International Mouse Phenotyping Consorium (IMPC) Annual Meeting, Apr. 2015, Bar Harbor, ME. Multivariate and multidimensional analysis of behavioral phenotypes from the KOMP2 pipeline.

Complex Trait Consortium, May 2015, Portland, OR. Oral Presentation. C57BL/6 substrain for mapping phenotypic traits. Panel Organizer.

Winter Conference on Brain Research, Jan. 2015, Big Sky, MO. CYFIP2 is a key regulator of cocaine response. In session: Genomic and neurobiological studies of RNA binding proteins in complex traits relevant to psychiatric disorders.

Society for Neuroscience, Nov. 2014, Washington DC. CYFIP2 is a key regulator of cocaine response. Session 387: Cocaine: New Findings on Neural Mechanisms.

Complex Trait Consortium Meeting. 2013 Madison, WI. 'QTL analysis utilizing closely related mouse substrains identifies Cytoplasmic FMRP Interacting Protein 2 (CYFIP2) as a regulator of cocaine response.'

Automated Imaging and High-Throughput Phenotyping. Cold Spring Harbor Laboratory Conferences. April 2012. 'A Second Generation High Throughput Forward Genetic Screen in Mice to Isolate Subtle Behavioral Mutants'.

Sackler Symposium on Quantification of Behavior. 2010, Washington, DC. Organized by Donald Pfaff and Alan Leshner. 'Circadian biology'.

Complex Trait Consortium Meeting. 2008 Montreal Canada. 'ENU screen identifies Mice with Altered response to Psychostimulants'.

Argonne National Laboratory. Postdoctoral Symposium. Sept. 2008. 'A high Throughput, Forward Genetics Behavioral Screen Identifies Mice with Altered Response to Psychostimulants'.

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Ad hoc Reviewer

Genes Brain and Behavior, PLoSOne, Mammalian Genome, Genetics, PLoS Genetics, BMC Genomics, Genome Biology, Nature, Biological Psychiatry, Nature Machine Intelligence, eLife, Nature Communications

Grant Review Panels

NIH Genetics of Health and Disease (GHD). June 2021.

NIH Brain Initiative RFA-DA-18-018 "BRAIN Initiative: Tools to target, identify and characterize non-neuronal cells in the brain (R01)" Dec 2018

NIH CEBRA Grants, Nov 2020

NIH NIDA Rat Opioid Genome Project. RFA-DA-20-010. March 2020

NIH NHLBI Circadian Patterns of Gene Expression Associated with Disease. RFA-HL-20-016. March 2020.

DARPA Fragle X Study Section, Nov 2019.

Courses Attended

Leadership in Bioscience. Cold Spring Harbor Laboratory, NY. March 13-16, 2015. Taught by Carl M. Cohen and Dannielle Kennedy.

Statistical Learning and Data Mining. Stanford University, Palo Alto, CA. March 16-18 2009. Taught by Trevor Hastie and Robert Tibshirani.

Summer Institute in Statistical Genetics. University of Washington, Seattle, 2009. June 22 to July 1. Attended three modules on quantitative genetics, QTL mapping I and QTL mapping II. Taught by Bill Muir, Bruce Walsh, Rebecca Doerge, Zhao-Bang Zeng, and Brian Yandell .

Complex Trait Analysis Course. The Jackson Laboratory, Bar Harbor Maine. 2006. Organized by Gary Churchill.

Conferences

KOMP Data Analysis Working Group Meeting, July 2017, London, UK.

International

International Mouse Phenotyping Consortium (IMPC) Annual Meeting, Apr. 2016, University of Strasbourg, Strasbourg, France.

CO-ORGANIZER – **International Brain and Behavioral Neural Genetics Society**. Meeting with 150 participants. May 2016.

Society for Neuroscience, Oct. 2015, Chicago, IL.

Society for Research on Biological Rhythms Annual Meeting, 2014, Big Sky, MT. Poster Presentation.

79th Cold Spring Harbor Symposium on Quantitative Biology: Cognition, 2014, Cold Spring Harbor, NY, Poster Presentation.

American College of Neuropsychopharmachology (ACNP), Dec. 2013, Hollywood, FL.

Society for Neuroscience, Nov. 2013, San Diego, CA.

Cell Symposia on Genes, Circuits and Behavior, June 2013, Toronto, CA. Poster Presentation.

Complex Trait Community 12th Annual Meeting. May, 2013. Madison, WI. *Oral Presentation*.

Mouse Molecular Genetics Meeting, Oct. 2012, Asilomar, CA. Poster Presentation.

Society for Research on Biological Rhythms Annual Meeting 2012, San Destin, FL. Poster Presentation.

Automated Imaging and High-Throughput Phenotyping. Cold Spring Harbor Laboratory Conferences. April 2012. Selected for *oral presentation*.

CO-ORGANIZER – **Complex Trait Consortium Meeting** Chicago, 2010. www.ctc2010.org. One of four co-organizer for meeting with 200 participants.

Society for Neuroscience 2008. Poster presentation.

Chicago Mouse Genetics Annual Meeting 2008. Poster Presentation:

Keystone Symposia: Neurobiology of Addiction 2007. Santa Fe, NM.

Complex Trait Consortium Meeting 2006. Chapel Hill, NC. Poster Presentation.

Mechanisms and Regulation of Eukaryotic Transcription, FASEB Summer Conference 2002. Saxton River, VT. Poster Presentation.

Mechanisms of Eukaryotic Transcription, Keystone Symposia 2001, Santa Fe, NM. Poster Presentation.

European Developmental Biology Conference 1999, Oslo, Norway. Poster Presentation.

International Society of Plant Microbe Interaction 1992, Seattle, WA. Poster Presentation.

Teaching

Frontiers in Addiction Research and Pregnancy. Morehouse School of Medicine (MSM). Atlanta, GA, October 12-18, 2018

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College of the Atlantic. Guest Lecture in Biochemistry Course. Biochemistry of Addiction. May 25, 2018.

McKusick Mammalian Genetics Short Course, Jackson Laboratory**,** 2017 - 2018.

21st Century Mouse Genetics. Jackson Laboratory**,** 2016.

Addiction Genetics Short Course The Jackson Laboratory. Aug. 2015 - 2019.

Drug Abuse and Society (RX462) Husson University, Guest Lecturer, The genetics of addiction, March 2015, course organizer Dr. Brian J. Piper.

Developmental Neurobiology (BIPN 144). Teaching Assistant, UCSD, Spring 2002. Taught by Dr. Ethan Bier.

Endocrinology. Teaching Assistant, UCSD, Fall 2001. Taught by Dr. Chris Armour.

Microbiology Laboratory (BIMM 121). Teaching Assistant, UCSD, Summer 1994. Taught by Drs. Willie Brown and Stuart Brody.

Experimental Molecular Biology Lab (BioSci 321). Lab Assistant, University of Chicago, Summer 1994. Taught by Dr. Malcolm Casadaban.

Academic Mentoring

Kyungin Kim, PhD - postdoctral trainee. 2019-current.

Justin M. Gardin, PhD- Postdoctoral trainee 2017 - 2019. Biotechnology computation position.

Arojit Mitra, PhD - Postdoctoral trainee. 2017 - present.

Vinit Mehta, Indian Institute of Technology, Madras, visiting student from B. Ravindran's lab.

Leinani Hession - Research Intern 2019-present

Yehya Barakat - Graduate Student Predoc from Tufts University Neuroscience Program. 2021-present.

M Howard, High School Intern, Bucksport High School, 2020-2021.

Ryan Guardado, Brown Univeristy, JAX-SSP, 2021

Massimo Daul, Mt. Desert High School Intern, 2019-2021.

Elaina Cote, Mt. Desert High School Intern, 2019-2021.

Megan Darrell, 2019 JAX SSP, Wheaton College, MA.

Avery Lopez, Middlebury College. 2018 SSP.

Chris Allen - Mt. Desert High School Intern 2017 - 2018.

Kai Fox - Mt. Desert High School Intern 2015-2017. Currently undergraduate at Stanford.

Molly Herman - JAX summer scholar 2016. American University graduate, working at non profit in Washington DC.

Stephen Price - JAX summer scholar 2016. Currently undergraduate at Carnegie Mellon Univ.

Gabrielle Cohn - JAX summer scholar 2017. Currently undergraduate at Stanford.

Luke Gehman - JAX summer scholar 2015. Macalester College graduate, currently in

Bioinformatics graduate school in University of Montana.

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Leadership

Co-organizer of **Machine learning for animal social behavior workshop** at IBANGS 2021. Virtual meeting. 30 students attended a 1-day workshop with lecture and virtual components.

CO-ORGANIZER – **Complex Trait Consortium Meeting** Chicago, 2010. www.ctc2010.org. One of four co-organizer for meeting with 200 participants

CO-ORGANIZER – **18th Annual Genes, Brain & Behavior Meeting for the International Behavioral and Neural Genetics Society**, May 2016. www.ibngs.org One of four co-organizer for meeting with 140 participants

Professional Organizations

Society for Neuroscience, 2010 - present

American Society for Human Genetics, 2015 - present

American Society for Cell Biology, 2015 - present

International Behavioral and Neural Genetics Society, 2014 - present

Genetics Society of America, 2015-present

Community Outreach

Causeway Club, MDI April 2019. On behalf of Acadia Family Center.

Maine Engineering Expo, March 2019. Keynote address on addiction genetics.

The Voice of Maine Radio Show, Bangor, ME. July 2019.

Discovery Museum, Bridgeport, CT April 2019. Neuroscience and Genetics of Addiction.

Op-Ed: **Portland Press Herald**, Feb. 2, 2016. "Maine Voices: The key to addressing the addiction epidemic begins with science." http://www.pressherald.com/2016/02/02/maine-voices-the-key-to-addressing-the-addiction-epidemic-begins-with-science/

Op-Ed: **Bangor Daily News**, Mar 5, 2016. "Why drugs are so much more dangerous for young people than they are for adult." http://bangordailynews.com/2016/03/05/the-point/why-drugs-are-so-much-more-dangerous-for-young-people-than-adults/

Five Minute Genius Talk, Maine Science Festival. Mar. 2016. "Modeling Addiction in Mice"

Acadia Night Sky Festival keynote address on the "Biology of Light" Sept. 2015. Community celebration to promote the protection and enjoyment of Downeast/Acadia's stellar night sky as a valuable natural resource through education, science and the arts.

Service

The Jackson Laboratory: Computational Sciences Retreat Planning 2019-pesent.

The Jackson Laboratory: Scientific Services Faculty Advisor (monoclonal antibody core) 2019-pesent.

The Jackson Laboratory: Scientific Advisory Committee (SAC) 2016. Faculty elected committee serves to interface between the faculty Board of Scientific Counselors.

The Jackson Laboratory: Scientific Advisor to Center for Biometric Analysis 2016-2017. One of five faculty advisor on a $21 million project to construct the a new mouse phenotyping facility.

The Jackson Laboratory: Faculty Retreat Planning Committee 2015-2016. Group of six faculty that plan the annual retreat.

The Jackson Laboratory: Branding Committee 2015 - present. One of two faculty advisors that interface with the JAX communication group to increase visibility and brand recognition of JAX. The mission is to increase scientific recognition, graduate student and postdoc recruitment.

Research Animal Facility Advisory Committee 2017 -present. Charged with recommendation of JAX animal research space use.

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Miscellaneous

Acadia Family Center, Board of Trustees 2016 - present. AFC is a non-profit addiction treatment and family counseling facility on Mt. Desert Island.

Many road to recovery. Keynote speaker. October 20, 2018. Bryant E. Moore Community Center. Day long probram focused on providing the community resources for recovery.

TedX Dirigo Nov. 2016. Neuroscience of Addiction. https://www.youtube.com/watch?v=3OD4ifmC3M4

Op-ed Outreach

Portland Press Herald. 2016 http://www.pressherald.com/2016/02/02/maine-voices-the-key-to-addressing-the-addiction-epidemic-begins-with-science/

Bangor Daily News. 2016 http://bangordailynews.com/2016/03/05/the-point/why-drugs-are-so-much-more-dangerous-for-young-people-than-adults/

Ellsworth American. 2016 Herald http://www.ellsworthamerican.com/maine-news/treating-drug-addiction-disease/

Ellsworth American. 2016 http://www.ellsworthamerican.com/opinions/former-opioid-users-greater-risk-overdosing/

Destination Imagination Coach 2012. Coach for a group of eight fourth grade students.

Robotics Co-Coach 2015-2017. Coach for the Conners Emerson Elementary School Robotics team which placed 8th in the state of Maine.

Scientific Review Committee of the Maine State Science Fair. Review science fair proposals that involve human subjects, hazardous materials, vertebrate animals, or pathogens

Research Support