Ilenna S. Jones

Current Education

University of Pennsylvania, Philadelphia, Pennsylvania
Neuroscience Predoctoral Graduate Student in Dr. Konrad Kording's Laboratory, Neuroscience Graduate
Group, Biomedical Graduate Studies
June 2017 – Present

Past Employment

Johns Hopkins University, Baltimore, Maryland
Laboratory Research Technician in Dr. Zachary Kaminsky's Laboratory, Department of Psychiatry and
Behavioral Sciences
September 2015 – May 2017

Education

Dartmouth College, Hanover, New Hampshire.
B.A. Neuroscience
September 2011 – June 2015

Publications

Ilenna Jones and Konrad Kording, "Do Biological Constraints Impair Dendritic Computation?". **Neuroscience,**
August 2021.

Ilenna Jones and Konrad Kording, "Might a Single Neuron Solve Interesting Machine Learning Problems
Through Successive Computations on Its Dendritic Tree?". **Neural Computation**, May 2021. (Previously
entitled: "Can single neurons solve MNIST? The computational power of biological dendritic trees" in ArXiv
2020.)

Jennifer Payne, LM Osbourne, O Cox, … **Ilenna Jones**, (et al), Zachary Kaminsky, "DNA methylation
biomarkers prospectively predict both antenatal and postpartum depression". Psychiatry Research, March 2021.

Zachary Kaminsky, LM Osborne, V Guglielmi, **Ilenna Jones**, (et al), "Postpartum depression biomarkers predict
exacerbation of OCD symptoms during pregnancy". **Psychiatry Research**, July 2020.

Ilenna Jones, Konrad Kording. "Quantifying the role of neurons for behavior is a mediation question".
Behavioral and Brain Sciences, November 2019.

JL Payne, LM Osborne, O Cox, J Kelly, S Meilman, **Ilenna Jones**, (et al), and Zackary Kaminsky. "DNA
Methylation Biomarkers Prospectively Predict Both Antenatal and Postpartum Depression". **Psychiatry
Research**, November 2019.

Roozbeh Farhoodi, Kashayar Filom, **Ilenna Jones**, and Konrad Kording. "On functions computed on trees".
Neural Computation. September 2019.

Falk Lohoff, Jill Sorcher, Allison Rosen, …, **Ilenna Jones**, …, (et al) and Zachary Kaminsky. "Methylomic
profiling and replication implicates deregulation of PCSK9 in alcohol use disorder". **Molecular Psychiatry**.
August 2017.

Zachary Kaminsky, **Ilenna Jones**, Arnold Bakker, (et al), and Jennifer Payne. "Discovery, Replication, and Application of an Epigenetic Bioarker Model to the Prediction of Postpartum Depression and Neuroimaging Endophenotypes". **Biological Psychiatry**. May 2017.

Makena Clive, **Ilenna Jones**, Holly Wilcox, William Eaton, (et al) and Zachary Kaminsky. "Stress Vulnerability and Epigenetic Variation of a Suicide Biomarker Gene, Molecular Regulation and Neuroimaging Consequences of SKA2". **Biological Psychiatry**. May 2017.

Ilenna Jones, Makena Clive, Holly Wilcox, William Eaton, (et al) and Zachary Kaminsky. "Stress vulnerability and epigenetic variation of SKA2, potential causes and consequences". **Psychoneuroendocrinology**. September 2016.

Zachary Kaminsky, **Ilenna Jones**, Ranjana Verma, Lena Saleh, Hersh Trivedi, Jerry Guintivano, Ryan Akman, Peter Zandi, Richard S Lee and James Potash, "DNA methylation and expression of KCNQ3 in bipolar disorder". **Bipolar Disorders**. July 2014.

Posters and Presentations

"Can single neurons solve MNIST? The computational power of biological dendritic trees" at Computational and Systems Neuroscience (Cosyne), Virtual, on February 23-26 2021

"Can single neurons solve MNIST? The computational power of biological dendritic trees" at Cognitive and Systems Neuroscience HHMI Science meeting, Virtual, Howard Hughes Medical Institute, Washington DC, on December 1-2, 2020

"Can single neurons solve MNIST? The computational power of biological dendritic trees" at NeuroMatch Conference 3.0, Virtual, on October 30 2020

"Can single neurons solve MNIST? The computational power of biological dendritic trees" at Student Interest Group In Neuroscience (SIGN, now Project Encephalon), Virtual, India, on August 30 2020

"Can single neurons solve MNIST? The computational power of biological dendritic trees" at Brains@Bay, Virtual, Numenta, California, on August 26 2020

"Which computational problems could a single neuron potentially solve in its dendritic tree?" at the Year of Brain Science Technology Conference, Virtual, Mahoney Institute of Neurosciences, **University of Pennsylvania**, Pennsylvania, on April 28, 2020

"Investigating Mechanisms Mediating Apolipoprotein E4 Induced Synaptogenesis in Human Embryonic Stem Cell Derived Induced Neurons" at the Stanford Summer Research Program Research Symposium, Beckman Center For Molecular and Genetic Medicine, **Stanford School of Medicine**, California, on June 20-21, 2014

"Spatial progression of perceptual learning in visual feature conjunction search" at the Karen E. Wetterhahn Science Symposium, Class of 1978 Life Sciences Center, **Dartmouth College**, New Hampshire, on May 23, 2013

 "The Role of Gene-Gene Interactions in Determining Alzheimer's Disease" at the Karen E. Wetterhahn Science Symposium, Class of 1978 Life Sciences Center, **Dartmouth College**, New Hampshire, on May 24, 2012

Honors and Awards

Awarded the **Howard Hughes Medical Institute Gilliam Fellowship Grant** – August 2020 – Fellowship for minorities in STEM with potential to be leaders in science, **University of Pennsylvania**

Awarded the **Center for Talented Youth Distinguished Alumni Award** - October 2016 - Recognition of CTY's most accomplished alumni, **Johns Hopkins University**

Awarded a **Dean of Faculty Undergraduate Research Grant** – Fall 2013 – Research Assistantship with Dr. Mark Israel on "Investigating the Regulation of Anti-Invasive Transcription Factor Id4 in Brain Tumors", **Dartmouth College**

Selected as a **James O. Freedman Presidential Scholar** – Summer 2013 and Winter 2014 – Research Assistantship with Dr. Mark Israel on "Investigating the Regulation of Anti-Invasive Transcription Factor Id4 in Brain Tumors", **Dartmouth College**

Selected as a **Sophomore Science Scholar** – Fall 2012 and Winter 2013 – Internship working with Dr. Peter Tse on "Influences of Brain Structure and Function on Cognitive Abilities", **Dartmouth College**

Awarded a **Women In Science Project Internship** – Winter and Spring 2012 – Internship working with Dr. Jason Moore on "Genetic Analysis of Complex Human Diseases", **Dartmouth College**

Intel Science Talent Search Semifinalist – 2011 – Society for Science and the Public - Research project "Gene Expression and DNA Methylation of KCNQ2 and KCNQ3 in Bipolar Disorder" was 1 of 300 selected in this national competition

Coursework

Cajal Course in Computational Neuroscience – August 11-31st, 2019 – A hands-on summer course in the ideas, methods, and practice of modern computational neuroscience – **Champalimaud Center for the Unknown**, Lisbon, Portugal

Deep Learning – January-May 2019 – An introductory course on Deep Learning – **University of Pennsylvania**

Theoretical and Computational Neuroscience – January-May 2018 – A course developing theoretical and computational approaches to structural and functional organization in the brain – **University of Pennsylvania**

Teaching

TA for ENGR 344: Answering Questions with Data – January-May 2022 – A question- and project-oriented data science course – **University of Pennsylvania**

TA for **NeuroMatch Academy: Deep Learning** – August 2-20th, 2021 – A deep learning online summer school focused on projects and coding tutorials – **University of Pennsylvania**

TA for **NeuroMatch Academy** – July 13-30th, 2020 – The first international computational neuroscience online summer school with over 1700 interactive students – **University of Pennsylvania**

TA for **BBB 109: Introduction to Brain and Behavior** – January-May 2020 – **University of Pennsylvania**

Community Activities

Serving on the Academic Review Committee (ARC) – August 2021 – Present – A committee to provide guidance and feedback for 1st and 2nd year students in the Neuroscience Graduate Group – **University of Pennsylvania**

Serving on the Computational Neuroscience Initiative (CNI) Committee – July 2021 – Present – A committee to determine the speakers and other logistics for the CNI seminars – **University of Pennsylvania**

Serving on the Cognitive Computational Neuroscience (CCN) Programming Committee – November 2020 – August 2021– A committee to decide the programming of the CCN conference – **Virtual**

Serving on the Combatting Racial Inequities Committee – July 2020 – April 2021 – A committee formed to address diversity and inclusion issues in BGS and BPP at the Penn School of Medicine – **University of Pennsylvania**

Co-chair of the E.E. Just Seminar and Workshop Committee – July 2020 – Present – A committee to organize workshops, discussions, and seminars for Black student community in Biomedical Graduate Studies (BGS) as well as the BGS community – **University of Pennsylvania**

Elementary School Outreach - 2017-2020 - Neuroscience Graduate Group Graduate Led Initiatives and Activities, **University of Pennsylvania**

Questbridge Ambassador - 2014-2019 - Informing high-school educators and students about the Questbridge college scholarship program targeting low-income, first-generation students

Student Mentor, Treasurer, Network Liaison, and Co-Director of the Dartmouth Quest Scholars – 2011-2015 – Dartmouth Chapter of Quest Scholars Network guiding First-Generation Low-Income students, **Dartmouth College**

Research Experiences

Stanford University – Howard Hughes Medical Institute Exceptional Research Opportunities Program Capstone Project – Dr. Thomas Sudhof – 2015 – "Optimization of Neuralbasal A Neuronal Cell Growth Medium"

Dartmouth College – Senior Honors Research Thesis – Dr. Mark Israel – 2014-2015 – "Id4 Suppresses the Expression of Other Id Genes by Antagonistically Binding to Twist1"

Stanford University – Stanford Summer Research Program and Howard Hughes Medical Institute Exceptional Research Opportunities Program – Dr. Thomas Sudhof – 2014 – "Investigating Mechanisms Mediating Apolipoprotein E4 Induced Synaptogenesis in Human Embryonic Stem Cell Derived Induced Neurons"

Dartmouth College – Presidential Scholars Program and Undergraduate Research Grant/Norris Cotton Cancer Center – Dr. Mark Israel – 2013-2014 – "Investigating the Regulation Anti-Invasive Transcription Factor Id4 in Brain Tumors"

Dartmouth College – Sophomore Science Scholars/Department of Psychological and Brain Sciences – Dr. Peter Tse – 2012-2013 – "Spatial progression of perceptual learning in visual feature conjunction search"

Dartmouth College - Women in Science Program/Institute for Quantitative Biomedical Sciences – Dr. Jason Moore – 2012 – "The Role of Gene-Gene Interactions in Determining Alzheimer's Disease"

Johns Hopkins University - Stanley Summer Scholars Program / Stanley Division of Developmental Neurovirology – Dr. Sarven Sabunciyan / Dr. Robert Yolken – 2012 – "DNA Methylation in the Mitochondrial Genome"

Johns Hopkins University - Center Scholars Program/Stanley Division of Developmental Neurovirology - Dr. Sarven Sabunciyan / Dr. Robert Yolken – 2011 – "Developing a Protocol Investigating mRNA Methylation Using High Throughput Sequencing"

Johns Hopkins University - Center Scholars Program/Mood Disorders Center – Dr. Zachary Kaminsky / Dr. James Potash – 2010-2011 – "Gene Expression and DNA Methylation of KCNQ2 and KCNQ3 in Bipolar Disorder"