

Emily A. Aery Jones
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EDUCATION

PhD in Biomedical Sciences

Oct 2019

University of California, San Francisco (UCSF)

Thesis Title: *Sharp-Wave Ripple Alterations Mark Memory Decline and Interneuron Drive*

Thesis Advisor: Dr. Yadong Huang; co-mentor: Dr. Loren Frank

Cumulative GPA: 3.76

BS in Biological Sciences: Physiology and Neurobiology; cum laude

May 2014

BS in Computer Science; cum laude

University of Maryland, College Park

Honor College Citation: University Honors and Gemstone Program

Cumulative GPA: 3.92

RESEARCH EXPERIENCE

Postdoctoral Research Fellow

Nov 2019 – Present

Stanford University; Dr. Lisa Giocomo, mentor

Planned projects:

- Dissecting the role of medial septal HCN in driving theta in entorhinal cortex
- Assessing offline reactivation of MEC ensembles as a substrate for consolidation to support learning over days

Graduate Research Assistant

Aug 2014 – Oct 2019

Gladstone Institutes & University of California, San Francisco; Dr. Yadong Huang, mentor and

Dr. Loren Frank, co-mentor

- Measured hippocampal sharp-wave ripples in Alzheimer's disease models to predict future memory impairment
- Assessed the role of hippocampal interneuron populations in gating signatures of entorhinal and CA3 drive to CA1

Undergraduate Research Assistant

May 2013 – Aug 2014

University of Maryland, Center for Bioinformatics and Computational Biology;

Dr. Sridhar Hannenhalli, mentor

- Developed an algorithm to measure selection for intrinsic disorder in protein structure
- Examined how the location of enhancers relative to the promoter affects the regulation in which that enhancer participates

Gemstone Honors Program: Team RITALIN

Apr 2011 – May 2014

University of Maryland, Department of Psychology; Dr. Matthew Roesch, mentor

- Eleven-person undergraduate research team which studied the effects of fetal nicotine exposure on inhibition of impulsive action by measuring single neuron activity during stop-signal task performance

PUBLICATIONS

Aery Jones, E. A., Rao, A., Zilberter, M., Djukic, B., Bant, J. S., Gillespie, A. K., Koutsodendris, N., Nelson, M., Yoon, S. Y., Huang, K., Yuan, H., Gill, T. M., Huang, Y., & Frank, L. M. (2021, December) Dentate Gyrus and CA3 GABAergic Interneurons Bidirectionally Modulate Signatures of Internal and External Drive to CA1. *Cell Reports* 37(13), 110159.

Taubes, A.T., Nova, P., Zalocusky, K.A., Kosti, I., Bicak, M., Zilberter, M., Hao, Y., Yoon, S.Y., Oskotsky, T., Pineda, S., Chen, B., **Aery Jones, E.A.**, Choudhary, K., Grone, B., Balestra, M.E., Chaudhry, F., Paranjpe, I., De Frietas, J., Koutsodendris, N., Chen, N., Wang, C., Chang, W., An, A., Glicksberg, B., Sirota, M., Huang, Y. (2021, October) Experimental and real-world evidence supporting the computational repurposing of bumetanide for *APOE4*-related Alzheimer's disease. *Nature Aging* 1, 932-947.

Najm, R., Zalocusky, K.A., Zilberter, M., Yoon, S.Y., Hao, Y., Taubes, A., **Jones, E.A.**, Koutsodendris, N., Nelson, M., Rao, A., Huang, Y. (2020, July) *In Vivo* Chimeric Alzheimer's Disease Modeling of Apolipoprotein E4 Toxicity in Human Neurons. *Cell Reports* 32(4), 107962.

Jones, E. A., Gillespie, A. K., Yoon, S. Y., Frank, L. M., Huang, Y. (2019, November). Early Hippocampal Sharp-Wave Ripple Deficits Predict Later Learning and Memory Impairments in an Alzheimer's Disease Mouse Model. *Cell Reports* 29(8), 2123-2133.e4.

Jones, E.A. (2019, October) Sharp-wave Ripple Alternations Mark Memory Decline and Interneuron Drive (Doctoral Dissertation). Retrieved from Dissertations & Theses at the University of California (Accession No. 27541368).

Najm, R.*, **Jones, E. A.***, Huang, Y. (2019, June). Apolipoprotein E4, Inhibitory Network Dysfunction, and Alzheimer's Disease. *Molecular Neurodegeneration*. 14(1), 24. (*equal contribution)

Gillespie, A. K., **Jones, E. A.** & Huang, Y. (2017, February) Approaching Alzheimer's Disease from a Network Level. *Oncotarget* 8(6), 9003-9004.

Gillespie, A. K., **Jones, E. A.**, Lin, Y.-H., Karlsson, M. P., Kay, K., Yoon, S. Y., Tong, L. M., Nova, P., Carr, J. S., Frank, L. M., Huang, Y. (2016, May). Apolipoprotein E4 causes age-dependent disruption of slow gamma oscillations during hippocampal sharp-wave ripples. *Neuron* 90, 740-751.

Bryden, D. W., Burton, A. C., Barnett, B. R., Cohen, V. J., Hearn, T. N., **Jones, E. A.**, Kariyil, R. J., Kunin, A., Kwak, S. I., Lee, J., Lubinski, B. L., Rao, G. K., Zhan, A., Roesch, M. R. (2016, February). Prenatal Nicotine Exposure Impairs Executive Control Signals in Medial Prefrontal Cortex. *Neuropsychopharmacology* 41, 716-725.

Barnett, B. R., Cohen, V. J., Hearn, T. N., **Jones, E. A.**, Kariyil, R. J., Kunin, A., Kwak, S. I., Lee, J., Lubinski, B. L., Rao, G. K., Zhan, A. (2014, May). The Impact of Prenatal Nicotine Exposure on Impulsivity and Neural Firing in the Medial Prefrontal Cortex (Honors thesis). Retrieved from Digital Repository at the University of Maryland. (Accession No. 1903/15539)

INVITED TALKS

Jones, E.A., Rao, A.T., Zilberter, M., Djukic, B., Gillespie, A.K., Koutsodendris, N., Nelson, M.R., Yoon, S.Y., Huang, K.Z.Y., Yuan, H., Gill, T.M., Huang, Y., Frank, L.M. (2019, July). Hippocampal GABAergic Interneurons Bidirectionally Modulate Sharp-Wave Ripples. Invited talk at the Inhibition in the CNS Gordon Research Seminar in Newry, MA.

Jones, E.A., Gillespie, A.K., Yoon, S.Y., Frank, L.M., Huang, Y. (2019, April). Ripple Deficits Predict Memory Impairments in an Alzheimer's Disease Mouse Model. Invited talk at the Discovery Fellows Michael Page Research Symposium in San Francisco, CA.

Jones, E.A., Frank, L.M., Kreitzer, A.K., Huang, Y. (2018, August). Optogenetic Study of ApoE4-Related Alzheimer's Disease. Invited talk at the NIA Optogenetics RFA Annual Investigators Meeting in Bethesda, MD.

Jones, E.A., Gillespie, A.K., Lin, Y.H., Yoon, S.Y., Frank, L.M., Huang, Y. (2017, September). Apolipoprotein E4-induced Hippocampal Network Activity Deficits Reflect Cell-Type-Specific Gains of Toxic Function. Invited talk at the Alzheimer's Researcher Symposium in San Francisco, CA.

Jones, E.A., Frank, L.M., Kreitzer, A.K., Huang, Y. (2017, August). Optogenetic Study of ApoE4-Related Alzheimer's Disease. Invited talk at the NIA Optogenetics RFA Annual Investigators Meeting in Bethesda, MD.

Jones, E.A., Gillespie, A.K., Lin, Y.H., Yoon, S.Y., Frank, L.M., Huang, Y. (2017, June). Apolipoprotein E4-induced Hippocampal Network Activity Deficits Reflect Cell-Type-Specific Gains of Toxic Function. Invited talk presented at the Gladstone Institutes Scientific Retreat, Asilomar, CA.

POSTER PRESENTATIONS

Jones, E.A., Rao, A.T., Zilberter, M., Djukic, B., Gillespie, A.K., Koutsodendris, N., Nelson, M.R., Yoon, S.Y., Huang, K.Z.Y., Yuan, H., Gill, T.M., Huang, Y., Frank, L.M. (2019, July). Hippocampal GABAergic Interneurons Bidirectionally Modulate Sharp-Wave Ripples. Poster session at the Inhibition in the CNS Gordon Research Seminar in Newry, MA.

Jones, E.A., Gillespie, A.K., Yoon, S.Y., Frank, L.M., Huang, Y. (2018, November). Apolipoprotein E4-induced Hippocampal Network Activity Deficits Correlate with Learning and Memory Impairments. Poster session at the Society for Neuroscience Annual Meeting in San Diego, CA.

Jones, E.A., Gillespie, A.K., Yoon, S.Y., Frank, L.M., Huang, Y. (2018, June). Apolipoprotein E4-induced Hippocampal Network Activity Deficits Correlate with Learning and Memory Impairments. Poster session at the Advances in Neurodegenerative Research and Therapies Keystone Symposium in Keystone, CO.

Jones, E.A., Gillespie, A.K., Lin, Y.H., Yoon, S.Y., Frank, L.M., Huang, Y. (2017, November). Apolipoprotein E4-induced Hippocampal Network Activity Deficits Reflect Cell-Type-Specific Gains of Toxic Function. Poster session at the Society for Neuroscience Annual Meeting in Washington, DC.

Jones, E.A., Gillespie, A.K., Lin, Y.H., Yoon, S.Y., Frank, L.M., Huang, Y. (2017, June). Apolipoprotein E4-induced Hippocampal Network Activity Deficits Reflect Cell-Type-Specific Gains of Toxic Function. Poster session presented at the Inhibition in the CNS Gordon Research Conference, Les Diablerets, Switzerland.

Jones, E. A., Alemu, E., Hannenhalli, S. (2013, November). Natural Selection of Intrinsic Disorder Characteristic of Proteins. Poster session presented at the University of Maryland Bioscience Research Day, College Park, MD.

Barnett, B. R., Cohen, V. J., Hearn, T. N., **Jones, E. A.**, Kariyil, R. J., Kunin, A., Kwak, S. I., Lee, J., Lubinski, B. L., Rao, G. K., Zhan, A., Bryden, D. W., Burton, A. C., Roesch, M. R. (2013, November). Impact of Prenatal Nicotine Exposure on Impulsivity and Neural Activity in Medial Prefrontal Cortex. Poster session presented at the Society for Neuroscience Annual Meeting, San Diego, CA.

Barnett, B. R., Cohen, V. J., Hearn, T. N., **Jones, E. A.**, Kariyil, R. J., Kunin, A., Kwak, S. I., Lee, J., Lubinski, B. L., Rao, G. K., Zhan, A., Bryden, D. W., Burton, A. C., Roesch, M. R. (2013, May). Validating an Animal Model of Attention Deficit Hyperactivity Disorder: Neural and Behavioral Correlates of Impulsivity in Rats Prenatally Exposed to Nicotine. Poster session presented at the University of Maryland Undergraduate Research Day, College Park, MD.

Barnett, B. R., Cohen, V. J., Hearn, T. N., **Jones, E. A.**, Kariyil, R. J., Kunin, A., Kwak, S. I., Lee, J., Lubinski, B. L., Rao, G. K., Zhan, A., Bryden, D. W., Burton, A. C., Roesch, M. R. (2013, March). Validating an Animal Model of Attention Deficit Hyperactivity Disorder: Neural and Behavioral Correlates of Impulsivity in Rats Prenatally Exposed to Nicotine. Poster session presented at the Howard Hughes Medical Institute (HHMI) Undergraduate Research Symposium, College Park, MD.

FELLOWSHIPS

A.P. Giannini Foundation Postdoctoral Research Fellowship	July 2022 – June 2025
School of Medicine Dean's Postdoctoral Fellowship	July 2021 – June 2022
National Institute of Aging F31 Predoctoral Fellowship	Sept 2017 – Oct 2019
Genentech Foundation Fellowship	Sept 2017 – Aug 2018
Mortiz-Heyman Discovery Fellowship	Sept 2016 – Oct 2019
National Science Foundation Graduate Research Fellowship	Sept 2014 – Aug 2017

AWARDS

UCSF Career Development Award	Apr 2019
Gladstone Institutes Career Advancement Award	Jan 2019
UCSF Graduate Division Travel Award	Oct 2018
Alzheimer's Association Young Scientist Award	Sept 2017
Gladstone Institute of Neurological Disease Student of the Year	May 2017
University of Maryland CS Dept Teaching Excellence Award	May 2013
HHMI Gemstone Undergraduate Research Award	Sept 2012 – May 2014
National Merit Scholarship	Sept 2010 – May 2014
Maryland Distinguished Scholarship	Sept 2010 – May 2014
Banneker-Key Scholarship	Sept 2010 – May 2014
Dr. Michael Vacarro Research Award	Sept 2010 – May 2011
Washington Academy of Sciences Isaac Newton Award	Apr 2010

TEACHING EXPERIENCE

BMS255: Basic Genetics & Genomics	Jan 2016 – Mar 2016
Biomedical Sciences Incoming Student Bootcamp: Coding for Biologists	June 2015 – Sept 2018
BSCI440: Mammalian Physiology	Jan 2014 – May 2014
CMSC423: Bioinformatic Algorithms, Databases, & Tools	Sept 2013 – Dec 2013
CMSC351: Algorithms	Aug 2012 – Dec 2012

MENTORSHIP

Rotation Student Mentor	Winter 2022
Project SHORT Pre-Grad Mentor	July 2020 – Present
Promoting Underrepresented Minority Advancement in Science Mentor	Summer 2016
High School Intern Mentor	Summers 2015, 2016, 2020

ACADEMIC SERVICE

Neuromatch Conference Moderator	November 2020
Inhibition in the CNS Gordon Research Seminar Co-Chair	July 2019 – July 2023
Graduate Organization Co-Chair	Oct 2018 – Sept 2019
Education and Outreach Committee Chair	July 2016 – Oct 2018
Undergraduate Research Journal Editor-in-chief	Sept 2012 – Sept 2013
Unite for Sight Global Impact Corps Volunteer	Summer 2012
Association for Women in Computing Webmaster	June 2011 – Sept 2014
University Honors Program Organic Chemistry Tutor	Jan 2011 – May 2012
Undergraduate Research Journal Web Design and Graphics Co-Chair	Sept 2010 – Sept 2013