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

- Developed chronic recoverable high-yield electrode implants in mice
- Investigating dynamics of nonlocal coding in entorhinal cortex and hippocampus over learning

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

- Part of an 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 IN PROGRESS

Aery Jones, E.A., Low, I.I.C., Cho, F.S., Giocomo, L.M. Entorhinal cortex represents task-relevant remote locations independent of CA1. Will be posted to bioRxiv by July 31.

PUBLICATIONS

Taubena, D.R.*, Jang, S.-S.*, Grone, B.*, Yip, O., **Aery Jones, E.A.**, Blumenfeld, J., Liang, Z., Koutsodendris, N., Rao, A., Ding, L., Zhang, A.R., Hao, Y., Xu, Q., Yoon, S.Y., Huang, Y. (June, 2024). Neuronal APOE4-induced Early Hippocampal Network Hyperexcitability in Alzheimer's Disease Pathogenesis. *bioRxiv* doi: 10.1101/2023.08.28.555153 and under review. (*equal contribution)

Santiago, R.M.M., Lopes-dos-Santos, V., **Aery Jones, E.A.**, Huang, Y., Dupret, D., Tort, A.B.L. (2024, February). Waveform-based classification of dentate spikes. *Scientific Reports* 14, 2989.

Masuda, F. K., **Aery Jones, E.A.***, Sun, Y.*, & Giocomo, L. M. (2023, October) Ketamine evoked disruption of entorhinal and hippocampal spatial maps. *Nature Communications* 14, 6285. (*equal contribution)

Wen, J.H.*, Sorscher, B.*, **Aery Jones, E.A.**, Ganguli, S., Giocomo, L.M. (2023, September). One-shot entorhinal maps enable flexible navigation in novel environments. *bioRxiv* doi: 10.1101/2023.09.07.556744 and in revision at *Nature*. (*equal contribution) (note: authorship changed during revision process).

Aery Jones, E.A. (2023, February). Chronic Recoverable Neuropixels in Mice. *protocols.io* doi:10.17504/protocols.io.e6nvwjo87lmk/v2

Aery Jones, E.A., Giocomo, L.M. (2023, February) Neural ensembles in navigation: from single cells to population codes. *Current Opinion in Neurobiology* 78, 102665.

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

Dynamics of Hippocampal Inputs in Learning and Alzheimer's Disease. Invited talk at Yale University Department of Neuroscience as part of SYNAPSES seminar series, New Haven, CT. (2024, April).

Dynamics of Hippocampal Inputs in Learning and Alzheimer's Disease. Invited talk at Stony Brook University Department of Neurobiology and Behavior as part of BRITE seminar series, Stony Brook, NY. (2023, December).

Dynamics of Hippocampal Inputs in Learning and Alzheimer's Disease. Invited talk at Georgetown University Department of Pharmacology and Physiology, Washington, DC. (2023, November).

Dynamics of Entorhinal Reactivations over Learning. Invited talk at the Inhibition in the CNS Gordon Research Conference in Les Diablerets, Switzerland. (2023, July).

Hippocampal GABAergic Interneurons Bidirectionally Modulate Sharp-Wave Ripples. Invited talk at the Inhibition in the CNS Gordon Research Seminar in Newry, MA. (2019, July).

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. (2019, April).

Optogenetic Study of ApoE4-Related Alzheimer's Disease. Invited talk at the NIA Optogenetics RFA Annual Investigators Meeting in Bethesda, MD. (2018, August).

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. (2017, September).

Optogenetic Study of ApoE4-Related Alzheimer's Disease. Invited talk at the NIA Optogenetics RFA Annual Investigators Meeting in Bethesda, MD. (2017, August).

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. (2017, June).

POSTER PRESENTATIONS

Aery Jones, E.A., Low, I.I.C, Giocomo, L.M. (2023, November). Dynamics of Entorhinal Reactivations over Learning. Poster session at the Society for Neuroscience Annual Meeting in Washington, DC.

Aery Jones, E.A., Low, I.I.C, Giocomo, L.M. (2023, July). Dynamics of Entorhinal Reactivations over Learning. Poster session at the Inhibition in the CNS Gordon Research Seminar and Conference in Les Diablerets, Switzerland.

Aery Jones, E.A., Low, I.I.C, Giocomo, L.M. (2022, November). Investigating How Medial Entorhinal Cortical Sequences Support Spatial Navigation and Learning. Poster session at the Society for Neuroscience Annual Meeting in San Diego, CA.

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 and Conference 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 in 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 in 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 Acitivity in Medial Prefrontal Cortex. Poster session presented at the Society for Neuroscience Annual Meeting in 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 in 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 in College Park, MD.

GRANTS AND FELLOWSHIPS

NINDS K99/R00 Career Transition Award	Sept 2023 – Aug 2028
A.P. Giannini Foundation Postdoctoral Research Fellowship	July 2022 – Sept 2023
School of Medicine Dean's Postdoctoral Fellowship	July 2021 – June 2022
National Institute of Aging F31 Predoctoral Fellowship	Jan 2018 – Oct 2019
Genentech Foundation Fellowship	Sept 2017 – Dec 2018
Mortiz-Heyman Discovery Fellowship	Sept 2016 – Oct 2019
National Science Foundation Graduate Research Fellowship	Sept 2014 – Aug 2017

AWARDS

Stanford Jump Start Award	Sept 2022 – May 2023
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

Postdoc Mentor Coach	Aug 2023 – Present
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
University Honors Program Organic Chemistry Tutor	Jan 2011 – May 2012

MENTORSHIP

Disabled in STEM Mentor	Jan 2023 – Oct 2023
Rotation Student Mentor	Winter 2022
Project SHORT Pre-Grad Mentor	July 2020 – Present
Co-authored proposal that created the Simons Foundation Undergraduate Research Fellowship	June 2020 – Oct 2020
Promoting Underrepresented Minority Advancement in Science Volunteer and Mentor	June 2016 – Aug 2019 Summer 2016
High School Intern Mentor	Summers 2015, 2016, 2020

ACADEMIC SERVICE

Cosyne Conference Reviewer	Dec 2023
Ad hoc reviewer: Nature Neuroscience, Science Advances, Neuron, Journal of Neuroscience, Neurobiology of Disease	Mar 2020 – Present
Stanford Postdocs Better Ally Co-Organizer	Sept 2022 – Sept 2023
Inhibition in the CNS Gordon Research Seminar Co-Chair	July 2019 – July 2023
Neuromatch Conference Moderator	Nov 2020
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
Undergraduate Research Journal Web Design and Graphics Co-Chair	Sept 2010 – Sept 2013