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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
- Discovered that entorhinal cortex represents remote task-relevant locations independent of CA1

### **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

Wen, J.H.\*, Sorscher, B.\*, **Aery Jones, E.A.**, Ganguli, S., Giocomo, L.M. (2024, October). One-shot entorhinal maps enable flexible navigation in novel environments. *Nature* doi:10.1038/s41586-024-08034-3 (\*equal contribution)

**Aery Jones, E.A.**, Low, I.I.C., Cho, F.S., Giocomo, L.M. (2024, July). Entorhinal cortex represents task-relevant remote locations independent of CA1. *bioRxiv* doi:10.1101/2024.07.23.604815 and in revision at *Nature Neuroscience*.

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. (2024, June). Neuronal APOE4-induced Early Hippocampal Network Hyperexcitability in Alzheimer's Disease Pathogenesis. *bioRxiv* doi: 10.1101/2023.08.28.555153. (\*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)

**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)

#### 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
NIA 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

Winter Brain Panel Travel Fellow Award	Jan 2025
Stanford Postdoc Justice, Equity, Diversity, and Inclusion Champion Award	Aug 2024
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

## INVITED TALKS

Entorhinal cortex represents task-relevant remote locations independent of CA1. Winter Conference on Brain Research, Lake Tahoe, CA. (2025, January).

Dynamics of Hippocampal Inputs in Learning and Alzheimer's Disease. Rutgers University Brain Health Institute, New Brunswick, NJ. (2024, October).

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

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

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

Ripple Deficits Predict Memory Impairments in an Alzheimer's Disease Mouse Model. Discovery Fellows Michael Page Research Symposium in San Francisco, CA. (2019, April).

Optogenetic Study of ApoE4-Related Alzheimer's Disease. 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. Alzheimer's Researcher Symposium in San Francisco, CA. (2017, September).

Optogenetic Study of ApoE4-Related Alzheimer's Disease. 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. Gladstone Institutes Scientific Retreat, Asilomar, CA. (2017, June).

## POSTER PRESENTATIONS

**Aery Jones, E.A.**, Low, I.I.C, Cho, F.S., Giocomo, L.M. (2024, November). Entorhinal cortex represents task-relevant remote locations independent of CA1. Society for Neuroscience Annual Meeting in Chicago, IL.

**Aery Jones, E.A.**, Low, I.I.C, Giocomo, L.M. (2023, November). Dynamics of Entorhinal Reactivations over Learning. 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. 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. 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. 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. 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. 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. 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. 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. 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 Activity in Medial Prefrontal Cortex. 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. 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. Howard Hughes Medical Institute (HHMI) Undergraduate Research Symposium in College Park, MD.

## TEACHING EXPERIENCE

### *Stanford University*

Postdoc Mentor Coach: design and teach workshops for postdocs, Aug 2023 – Present

### *University of California, San Francisco*

Basic Genetics & Genomics TA: led office hours for PhD students, Winter 2016

Coding for Biologists: designed and taught workshop at bootcamp for incoming PhD students, Summers 2015, 2016, 2017, and 2018

### *University of Maryland, College Park*

Mammalian Physiology TA: designed and taught weekly 3-hour discussion sections for post-baccalaureate students, Spring 2014

Mammalian Physiology TA: graded and guest lectured for undergraduate students, Fall 2013

Bioinformatic Algorithms, Databases, & Tools TA: graded for undergraduate students, Fall 2013

Algorithms TA: led 3-hour weekly office hours for undergraduate students, Fall 2012

Organic Chemistry Tutor: tutored individual undergraduate students, 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