# Emily A. Aery Jones

290 Jane Stanford Way, Stanford, CA 94305
(301) 917-7877 • emily.aery.jones@stanford.edu


## 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 Acitivity 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

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| 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

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| 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 |
| Dr. Michael Vacarro Research Award | Sept 2010 – May 2011 |
| National Merit Scholarship | Sept 2010 – May 2014 |
| Maryland Distinguished Scholarship | Sept 2010 – May 2014 |
| Banneker-Key Scholarship | Sept 2010 – May 2014 |
| Washington Academy of Sciences Isaac Newton Award | Apr 2010 |

TEACHING EXPERIENCE

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|---|---|
| BMS255: Basic Genetics & Genomics | Jan 2016 – Mar 2016 |
| BSCI440: Mammalian Physiology | Jan 2014 – May 2014 |
| CMSC423: Bioinformatic Algorithms, Databases, & Tools | Sept 2013 – Dec 2013 |
| CMSC351: Algorithms | Aug 2012 – Dec 2012 |

ACADEMIC SERVICE

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| Inhibition in the CNS Gordon Research Seminar Co-Chair | July 2019 – July 2023 |
| Project SHORT Pre-Grad Mentor | July 2020 – Present |
| High School Intern Mentor | Summer 2020 |
| Graduate Organization Co-Chair | Oct 2018 – Sept 2019 |
| Education and Outreach Committee Chair | July 2016 – Oct 2018 |
| Promoting Underrepresented Minority Advancement in Science Mentor | Summer 2016 |
| High School Intern Mentor | Summer 2015, 2016, 2020 |
| Biomedical Sciences Incoming Student Bootcamp Instructor | June 2015 – Sept 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 |