

ANNA K. GILLESPIE

Departments of Biological Structure and Lab Medicine & Pathology
University of Washington School of Medicine
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EDUCATION

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| 2010-2015 | PhD, Biomedical Sciences, University of California, San Francisco
<i>Thesis: Characterizing APOE4-induced Hippocampal Network Deficits in Mice</i> |
| 2006-2010 | BS, Biology, Stanford University
<i>Awarded with Honors and Distinction, Cell and Molecular concentration</i> |

RESEARCH EXPERIENCE

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| 2023-present | Assistant Professor, University of Washington School of Medicine
Departments of Biological Structure and Lab Medicine and Pathology |
| 2015-2022 | Postdoctoral Fellow, University of California, San Francisco
Laboratory of Loren Frank, Departments of Physiology and Psychiatry <ul style="list-style-type: none">– Developed a neurofeedback paradigm to modulate sharp-wave ripples– Designed a novel memory task for use with <i>in vivo</i> electrophysiology (tetrodes)– Implemented and optimized clusterless state space spatial decoding algorithms Funding: K99, SCGB postdoctoral fellowship
Publications: Neuron (first author), eLife, J. Neurosci., IEEE Trans. |
| 2010-2015 | Graduate Student, University of California, San Francisco
Laboratory of Yadong Huang, Gladstone Institute of Neurological Disease <ul style="list-style-type: none">– Simultaneous <i>in vivo</i> electrophysiology from multiple hippocampal subregions of apoE4 and apoE3 knock-in mice (silicon probes)– Optogenetic manipulation of interneuron populations during Morris water maze Funding: UCSF Hillblom Fellowship, ARCS Fellowship
Publications: Neuron (first author), Cell Reports, J. Neurosci., PLoS One |

FUNDING

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| 2020-2022 | NIH Brain Initiative K99 Pathway to Independence Award |
| 2017-2020 | Simons Collaboration on the Global Brain Postdoctoral Fellowship |
| 2013-2015 | UCSF Hillblom Center for Aging Research Graduate Fellowship |
| 2010-2012 | Kayla Grodsky Memorial Scholar, ARCS Foundation Fellowship |

AWARDS

May 2021	UCSF Dean's Award for Excellence in Mentorship, Honorable Mention
June 2016	First place postdoctoral poster prize, UCSF Neuroscience Annual Retreat
May 2015	Gladstone Institutes Graduate Student Award
June 2014	Alzheimer's Association Young Researcher Award for Excellence
May 2014	First place departmental poster prize, Gladstone Institutes Annual Retreat
June 2013	Third place overall poster prize, Bay Area Alzheimer's Symposium

PUBLICATIONS

- Gillespie AK**, Astudillo Maya DA, Denovellis EL, Desse S, Frank LM. *Neurofeedback training can modulate task-relevant memory replay in rats*. bioRxiv, Oct 17 2022 (preprint)
- Joshi A, Denovellis EL, Mankili A, Meneksedag Y, Davidson TJ, **Gillespie AK**, Guidera JA, Roumis DK, Frank LM. *Dynamic synchronization between hippocampal spatial representations and the stepping rhythm*. bioRxiv, Feb 25 2022 (preprint)
- Aery Jones EA, Rao A, Zilberter M, Djukic B, Bant JS, **Gillespie AK**, Koutsodendris N, Nelson M, Yoon SY, Huang K, Yuan H, Gill TM, Huang Y, Frank LM. *Dentate gyrus and CA3 GABAergic interneurons bidirectionally modulate signatures of internal and external drive to CA1*. Cell Reports 37(13):110159 Dec 28, 2021
- Denovellis EL, **Gillespie AK**, Coulter ME, Sosa M, Chung JE, Eden UT, Frank LM. *Hippocampal replay of experience at real-world speeds*. eLife, 10:e64505, Sept 27, 2021
- Gillespie AK**, Astudillo Maya DA, Denovellis EL, Liu DF, Kastner DB, Coulter ME, Roumis DK, Eden UT, Frank LM. *Hippocampal replay reflects specific past experiences rather than a plan for subsequent choice* Neuron, 109(19):3149-3163. Oct 6, 2021
- Previewed by:** Diba, K. *Hippocampal sharp-wave ripples in cognitive map maintenance versus episodic simulation*. Neuron 109(19):3071-3074. Oct 6, 2021
- Kastner DB, **Gillespie AK**, Dayan P, Frank LM. *Memory Alone Does Not Account for the Way Rats Learn a Simple Spatial Alternation Task*, Journal of Neuroscience, JN-RM-0972-20 Aug 4, 2020
- Jones EA, **Gillespie AK**, Yoon SY, Frank LM, Huang Y. *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 Nov. 19, 2019
- Rezaei MR, **Gillespie AK**, Guidera JA, Nazari B, Sadri S, Frank LM, Eden UT, Yousefi A. *A Comparison Study of Point-Process Filter and Deep Learning Performance in Estimating Rat Position Using an Ensemble of Place Cells*. Conference Proceedings IEEE Engineering in Medicine and Biology Society. 2018:4732-4735, 2018
- Yousefi A, **Gillespie AK**, Guidera JA, Karlsson MP, Frank LM, Eden UT. *Efficient Decoding of Multidimensional Signals from Population Spiking Activity Using a Gaussian Mixture Particle Filter* IEEE Transactions in Biomedical Engineering, 2018
- Sosa M*, **Gillespie AK***, Frank LM. *Neural Activity Patterns Underlying Spatial Coding in the Hippocampus*. Current Topics in Behavioral Neurosciences 2018;37:43-100, 2018

- Gillespie AK**, Jones EA, Lin YH, Karlsson MP, Kay K, Yoon SY, Tong LM, Nova P, Carr JS, Frank LM, Huang Y. *Apolipoprotein E4 Causes Age-Dependent Disruption of Slow Gamma Oscillations During Hippocampal Sharp-wave Ripples*. *Neuron*, 90(4): 740-51, May 18, 2016
- Knoferle J, Yoon SY, Walker D, Leung L, **Gillespie AK**, Tong L, Bien-Ly N, Huang Y. *Apolipoprotein e4 Produced in GABAergic Interneurons Causes Learning and Memory Deficits in Mice*. *Journal of Neuroscience*, 34(42):14069-78, Oct. 15, 2014
- Tong L, Djukic B, Arnold C, **Gillespie AK**, Yoon SY, Wang M, Zhang O, Knoferle J, Rubenstein JL, Alvarez-Buylla A, Huang Y. *Inhibitory Interneuron Progenitor Transplantation Restores Normal Learning and Memory in ApoE4 Knock-In Mice without or with ABeta Accumulation*. *Journal of Neuroscience*, 34(29):9506-15, July 16, 2014
- Vicent S, Sayles LC, Vaka D, Khatri P, Gevaert O, Chen R, Zheng Y, **Gillespie AK**, Clarke N, Xu Y, Shrager J, Hoang CD, Plevritis S, Butte AJ, Sweet-Cordero EA. *Cross-Species Functional Analysis of Cancer-Associated Fibroblasts Identifies a Critical Role for CLCF1 and IL-6 in Non-small Cell Lung Cancer in vivo*, *Cancer Research*, 72(22):5744-56, Nov. 15 2012
- Hunt RF, Hortopan GA, **Gillespie A**, Baraban SC. *A Novel Zebrafish Model of Hypothermia-induced Seizures Reveals a Role for TRPV4 Channels and NMDA-type Glutamate Receptors*, *Experimental Neurology*, 237(1):199-206, Sept. 2012
- Andrews-Zwilling Y, **Gillespie AK**, Kravitz AV, Nelson AB, Devidze N, Lo I, Yoon SY, Bien-Ly N, Ring K, Zwilling D, Potter GB, Rubenstein JLR, Kreitzer AC, Huang Y. *Hilar GABAergic Interneuron Activity Controls Spatial Learning and Memory Retrieval*, *PLoS One*, 7(7):e40555, July 5 2012
- Bien-Ly N, **Gillespie AK**, Walker D, Yoon SY, Huang Y. *Reducing Human Apolipoprotein E Levels Attenuates Age-dependent ABeta Accumulation in Mutant Human Amyloid Precursor Protein Transgenic Mice*. *Journal of Neuroscience*, 32(14):4803-11, Apr. 4 2012
- Vicent S, Chen R, Sayles L, Lin C, Walker R, **Gillespie AK**, Root D, Subramanian A, Hinkle G, Yang X, Huff V, Hahn W and Sweet-Cordero EA. *Wilms Tumor 1 (WT1) Regulates Kras-driven Oncogenesis and Senescence in Mouse and Human*. *Journal of Clinical Investigation*, 120(11):3940-52, Nov. 2010

*indicates equal contribution

INTELLECTUAL PROPERTY

Gillespie AK, Frank LM. *Neurofeedback Training to Promote Sharp-wave Ripples*, U.S. Patent Application No. 62/887,875, Aug 16, 2019 (pending)

INVITED PRESENTATIONS

November 2022	UC Santa Cruz Neuroclub
September 2022	Simons Collaboration on Plasticity and the Aging Brain CSHL Aging Pre-meeting
April 2022	Neurobio. of Learning and Memory, American Academy of Neurology Annual Meeting "Neuroscience in the Clinic" session co-director and speaker
December 2021	WorldWideNeuro NeuRise, international online seminar series
August 2021	Physiology and Biophysics Departmental Seminar, University of Washington
June 2021	Research Highlight Talk, BRAIN Initiative Investigator Meeting

April 2021	Frontiers in Neuropsychiatry Seminar Series (FINS), Weill Cornell Medicine
April 2021	Guest seminar, Indiana University
August 2020	Computational Neuroscience Journal Club, Stanford University (co-presented with E. Denovellis)
December 2019	Center for Neural Engineering and Protheses Annual Retreat, UC Berkeley
September 2019	Systems/Computational Neuroscience Journal Club, Brandeis University

SELECTED OTHER PRESENTATIONS

November 2022	Society for Neuroscience (poster)
September 2022	CSHL Mechanisms of Aging (poster)
June 2022	AREADNE Decoding Conference (poster)
June 2022	BRAIN Initiative Annual Meeting (virtual poster)
November 2021	Society for Neuroscience (virtual poster)
February 2020	HHMI Annual meeting (poster)
January 2020	Winter Conference on the Neurobiology of Learning and Memory (speaker)
October 2019	Society for Neuroscience (poster)
September 2019	Simons Collaboration on the Global Brain Investigator meeting (poster)
January 2017	Royal Society meeting: <i>The Offline Brain</i> (poster)
September 2016	UCSF Neuroscience Annual Retreat (poster)
November 2014	Society for Neuroscience (nanosymposium speaker)
May 2014	Gladstone Institutes Annual Retreat (poster)
October 2013	Gladstone Institutes Research in Progress seminar (speaker)
June 2013	Bay Area Alzheimer's Researchers' Symposium (poster)
May 2010	Stanford University Achauer Honors Symposium (poster)

LEADERSHIP

2020-present	Coordinate a 5-lab postdoc working group for an SCGB collaboration
2019-present	Supervise and trained two full-time technicians in the Frank lab
2017-present	Co-organize the Simons Collaboration on the Global Brain West Coast postdoc meeting series (quarterly)
2011-2013	Organized student research seminars for the Biomedical Sciences graduate program

TEACHING AND OUTREACH

October 2022	University of British Columbia, PSYC 514 Guest Speaker
2021-present	Mentor, San Francisco State University Graduate School application advising
2016-present	Advised and trained 4 rotation students, 1 intern, and 2 postdocs in the Frank lab
December 2020	Co-wrote a proposal for a new diversity-focused undergraduate funding opportunity <i>Funded in 2021: Supporting 30 students in its first year as the Simons Undergraduate Research Fellowship (\$350,000) with the expectation to expand</i>
Spring 2021	UCSF Introduction to Evidence-based Pedagogy (certificate achieved)
Winter 2020	UCSF Inclusive Mentor Training Course (certificate achieved)
2016-2017	Mentor for HHMI EXROP program intern

	<i>Initiative to match students from underrepresented groups with full-time summer research opportunities in an HHMI lab</i>
April 2016	Small group leader for UCSF Medical School Neurophysiology session
2012-2015	Advised and trained 4 rotation students and 2 high school interns in the Huang lab
Spring 2012	Teaching assistant for UCSF Medical School Neuroanatomy lab course
Fall 2012	Teaching assistant for UCSF Dental School Pathology lab course

PROFESSIONAL SERVICE

2020-present	Ad-hoc reviewer: Journal of Neuroscience, Neurobiology of Disease, Brain, European Research Council, Progress in Neurobiology
2014-present	Member, Society for Neuroscience