

Shan Meltzer, Ph.D.

HHMI Hanna Gray Faculty Fellow

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Appointments

- 2024 - Present Assistant Professor, HHMI Hanna H. Gray Faculty Fellow, Department of Pharmacology Vanderbilt University, Vanderbilt Brain Institute.
- 2017 - 2024 HHMI Hanna H. Gray Fellow, Department of Neurobiology, Harvard Medical School & Howard Hughes Medical Institute. Laboratory of David Ginty, Ph.D.
Project: Molecular mechanisms of somatosensory circuit assembly
- 2011 - 2017 Graduate Researcher, Neuroscience Graduate Program, University of California, San Francisco & Howard Hughes Medical Institute. Laboratory of Yuh Nung Jan, Ph.D.
Thesis: Molecular mechanisms of dendrite development
Other thesis committee members: John Rubenstein, M.D., Ph.D., Graeme Davis, Ph.D., Eric Huang, M.D., Ph.D., and Liqun Luo, Ph.D. (Stanford University)
- 2009 - 2010 Undergraduate Thesis Research, Peking University. Laboratory of Yi Rao, Ph.D.
Project: Investigating the molecular mechanisms of social behaviors.

Education

- 2012-2017 Ph.D. in Neuroscience. University of California, San Francisco
- 2010-2011 Ph.D. program in Genetics and Development. Columbia University
(transferred to UCSF)
- 2006-2010 *B.S., Life Sciences, Magna Cum Laude. B. Phil., Philosophy*, Peking University

Fellowships and Grants

- 2023-2024 Leonard and Isabelle Goldenson Fellowship, Harvard Medical School
- 2023 William Randolph Hearst Fund Award, Harvard Medical School
- 2019-2027 **HHMI Hanna H. Gray Fellowship**
Postdoctoral Phase: \$90,000/year for 4 years
Faculty Phase: **\$270,000 direct cost/year for 4 years**
- 2018-2019 **NIH NRSA Postdoctoral Fellowship**: F32NS108507
- 2016-2017 Dissertation Fellowship, American Association of University Women
- 2013-2016 **National Science Foundation Graduate Research Fellowship**
- 2012-2013 NIH NRSA Institutional Research Training Grant (T32)
- 2008-2009 Chun-Tsung Fellowship, Peking University

Publications

1. **Meltzer, S.**, Boulanger, K.C., Chirila, A., Osei-Asante, E., DeLisle, M., Zhang, Q., Kalish, B.T., Tasnim, A., Huey, E., Fuller, L.C., Flaherty, E.K., Lefebvre, J.L., Maniatis, T., Garrett, A.M., Weiner, J.A., and Ginty, D.D. (2023). γ -Protocadherins Control Synapse Formation and Peripheral Branching of Touch Sensory Neurons. *Neuron* 111, 1–19.
2. **Meltzer, S.**, Boulanger, K. C., Osei-Asante, E., Handler, A., Zhang, Q., Sano, C., Itohara, S., and Ginty, D. D. (2022). A role for axon–glial interactions and Netrin-G1 signaling in the formation of low-threshold mechanoreceptor end organs. *Proceedings of the National Academy of Sciences* 119(43), e2210421119.
3. **Meltzer, S.**, Santiago, C., Sharma, N., and Ginty, D.D. (2021). The Cellular and Molecular Basis of Somatosensory Neuron Development. *Neuron* 109, 1–22.
4. Kuehn, E.D.*, **Meltzer, S.***, Abraira V.E., Ho C., and Ginty D.D. (2019). Tiling and Somatotopic Alignment of Mammalian Low-Threshold Mechanoreceptors. *Proceedings of the National Academy of Sciences* 116, 9168–9177. (*co-first authors)
5. **Meltzer, S.**, Bagley, J.A., Perez, G.L., O'Brien, C.E., DeVault, L., Guo, Y., Jan, L.Y., and Jan, Y.N. (2017). Phospholipid Homeostasis Regulates Dendrite Morphogenesis in *Drosophila* Sensory Neurons. *Cell Reports* 21, 859–866.
6. Jin, P., Bulkley, D., Guo, Y., Zhang, W., Guo, Z., Huynh, W., Wu, S., **Meltzer, S.**, Cheng, T., Jan, L.Y., Jan, Y.N., Cheng, Y. (2017). Electron cryo-microscopy structure of the mechanotransduction channel NOMPC. *Nature* 547, 118–122.
7. **Meltzer, S.***, and Chen, C.* (2016). Balancing Dendrite Morphogenesis and Neuronal Migration during Cortical Development. *J. Neurosci.* 36, 10726–10728. (*co-first authors)
8. Guo, Y.*, Wang, Y.*, Zhang, W.*, **Meltzer, S.***, Zanini, D.*, Yu, Y., Li, J., Cheng, T., Guo, Z., Wang, Q., Jacobs, J.S., Sharma, Y., Eberl, D.F., Göpfert, M.C., Jan, L.Y., Jan, Y.N., Wang, Z. (2016). Transmembrane channel-like (tmc) gene regulates *Drosophila* larval locomotion. *Proceedings of the National Academy of Sciences* 113, 7243–7248. (*co-first authors)
9. Ori-McKenney, K.M., McKenney, R.J., Huang, H.H., Li, T., **Meltzer, S.**, Jan, L.Y., Vale, R.D., Wiita, A.P., and Jan, Y.N. (2016). Phosphorylation of β -Tubulin by the Down Syndrome Kinase, Minibrain/DYRK1a, Regulates Microtubule Dynamics and Dendrite Morphogenesis. *Neuron* 90, 1–14.
10. **Meltzer, S.**, Yadav, S., Lee, J., Soba, P., Younger, S.H., Jin, P., Zhang, W., Parrish, J., Jan, L.Y., and Jan, Y.N. (2016). Epidermis-Derived Semaphorin Promotes Dendrite Self-Avoidance by Regulating Dendrite-Substrate Adhesion in *Drosophila* Sensory Neurons. *Neuron* 89, 741–755.
11. Song, Y., Sretavan, D., Salegio, E.A., Berg, J., Huang, X., Cheng, T., Xiong, X., **Meltzer, S.**, Han, C., Nguyen, T.-T., Bresnahan JC, Beattie, M.S., Jan, L.Y., Jan, Y.N. (2015). Regulation of axon regeneration by the RNA repair and splicing pathway. *Nature Neuroscience* 18, 817–825.
12. Gorczyca, D.A., Younger, S., **Meltzer, S.**, Kim, S.E., Cheng, L., Song, W., Lee, H.Y., Jan, L.Y., and Jan, Y.N. (2014). Identification of Ppk26, a DEG/ENaC Channel Functioning with Ppk1 in a Mutually Dependent Manner to Guide Locomotion Behavior in *Drosophila*. *Cell Reports* 9, 1446–1458.
13. Yan, Z., Zhang, W., He, Y., Gorczyca, D., Xiang, Y., Cheng, L.E., **Meltzer, S.**, Jan, L.Y., and Jan, Y.N. (2013). *Drosophila* NOMPC is a mechanotransduction channel subunit for gentle-touch sensation. *Nature* 493, 221–225.

14. Wu, C.-S., Zhu, J., Wager-Miller, J., **Wang, S.**, O'Leary, D., Monory, K., Lutz, B., Mackie, K., and Lu, H.-C. (2010). Requirement of cannabinoid CB(1) receptors in cortical pyramidal neurons for appropriate development of corticothalamic and thalamocortical projections. *European Journal of Neuroscience* 32, 693–706. (cover)

Honors and Awards

- 2023 Intersections Science Fellow
 2023 MIT Biology Catalyst Fellow, Massachusetts Institute of Technology
 2022 **Grass Foundation Trustee Recognition Award**
 2022 Future of Science Fund scholarship, Keystone Symposia
 2021 The Stanford.Berkeley.UCSF Next Generation Faculty Symposium Honorable Mention
 2021 Women in Science Travel Fund, WIST Fund, Rockefeller University
 2020 NINDS Scholarship, Keystone Symposia
 2019 Harvard Brain Science Initiative Young Scientist Travel Award
 2016 Chinese Government Award for Outstanding Students Abroad
 2016 **Chancellor Diversity Award for the Advancement of Women, UCSF**
 2016 1st Place, UCSF Chalk Art Contest
 2015 ASGD Conference Travel Award, UCSF
 2014 Earle C. Anthony Travel Award, UCSF
 2014 Graduate Student Research Award, UCSF
 2013 Poster Award, UCSF Neuroscience Retreat
 2010 Graduated *magna cum laude*, Peking University
 2008,2009 National Scholarship, Chinese Ministry of Education
 2009 Chun-Tsung Scholar, Peking University
 2008-2009 Chun-Tsung Fellowship, Peking University
 2007-2009 Triple-A student, Peking University

Invited Talks

- 2024 Molecular and Cellular Neurobiology. Gordon Research Conference.
 2023 IRM Stem Cell Club. University of Pennsylvania.
 2023 GPCR Seminar. Department of Pharmacology. Vanderbilt University.
 2023 MIT Biology Catalyst Symposium. Massachusetts Institute of Technology.
 2023 Developmental and Stem Cell Biology Colloquium. Duke University.
 2023 Department of Neurobiology Friday Pizza Talk. Harvard Medical School.
 2022 Molecular Mechanisms of Neuronal Connectivity. CSHL Meeting.
 2022 Neuro Zoom. <https://www.neurozoom.bio/>
 2022 Molecular and Cellular Neurobiology. Gordon Research Conference.
 2022 UCSF Neuroscience Formal Seminar (EPSP).
 2022 UCLA Integrated Center for Neural Repair Seminar.
 2019 Genetics Society of America Early Career Scientist Seminar.

- 2017 Department of Molecular Biology and Genetics, Cornell University.
- 2016 Second Not-Quite-Annual Bay Area Colossal Drosophila Joint Group Meeting.
- 2015 UCSF Research in Progress Seminar.
- 2014 UCSF Annual Neuroscience Retreat.
- 2014 UCSF Neuroscience Research in Progress Seminar.
- 2009 Peking University Summer Research Symposium.
- 2009 Chun-Tsung Fellowship Final Presentation. Peking University.

Poster presentations

- 2023 HHMI Science Meeting. Chevy Chase, MD
- 2022 Keystone Symposia: Vertebrate Sensory Systems. Tahoe City, CA USA
- 2022 HHMI Science Meeting on Cellular and Molecular Neuroscience
- 2021 HHMI Science Meeting on Cellular and Molecular Neuroscience
- 2020 Somatosensation: From Detection to Perception. Keystone, CO, USA
- 2019 Cell Biology of Neurons and Circuits II. Janelia Research Campus, Ashburn, VA
- 2019 HHMI Science Meeting. Chevy Chase, MD
- 2018 HHMI Science Meeting. Janelia Research Campus, Ashburn, VA
- 2016 Breakthrough Prize Symposium. San Francisco, CA
- 2016 Gordon Research Conference: Cell Biology of the Neuron. Waterville Valley, NH
- 2015 Neurobiology of Drosophila. Cold Spring Harbor, NY
- 2015 HHMI Scientific Meeting. Ashburn, VA
- 2014 Gordon Research Conference: Cell Biology of the Neuron. Waterville Valley, NH
- 2013 Breakthrough Prize in Life Sciences Special Symposium. San Francisco, CA
- 2012 UCSF Annual Neuroscience Retreat. Pacific Grove, CA

Diversity Outreach and Public Service

- 2022 Co-organizer of the GRC Power Hour (Molecular and Cellular Neurobiology).
- 2020-2022 Member, Neurobiology Postdoc Club. Harvard University.
- 2019-2022 Member, Equity & Inclusion Committee. Genetics Society of America.
- 2018-2019 Reviewer, Journal of Emerging Investigators.
- 2017-2020 Member, The Joint Committee on the Status of Women, Harvard Medical School.
- 2014-2016 Co-chair, Gordon Research Seminar (GRS). Cell Biology of the Neuron.
- 2016-2017 Translator, Principles of Neurobiology by Liqun Luo (English to Chinese).
- 2014-2017 Member, Chancellor's Advisory Committee on the Status of Women, UCSF.
- 2012-2017 Associate Faculty Member, Faculty of F1000.
- 2015-2016 Co-founder, Asian Women in Science at UCSF.
- 2012-2015 Formal Seminar Chair, Women in Life Sciences at UCSF

Teaching and Mentorship

Technician Mentor: 2021-2024: Emmanuella Asante. 2019-2021: Katelyn Comeau (now a PhD student in the Molecules, Cells and Organisms program at Harvard University).

Undergraduate Student Mentor:

2019. Lai Wei (Peking University). 2017-2020. Annie Chen (Simmons College).

2018. Katelyn Comeau (Mount St. Mary's University). 2016-2017. Linghua Zhang (Johns Hopkins University, PhD candidate). 2014, 2015. Gerardo Lopez (HHMI EXORP program)

Rotation Student Mentor:

2021. Wangchu Xiang (Harvard Program in Neuroscience). 2016. Tina Su (UCSF Biomedical Sciences Graduate Program) 2013. David Leib (UCSF Neuroscience Graduate Program)

Teaching Assistant:

2013. Organ Systems and Human Pathophysiology. UCSF.

2011-2012. UCSF Science and Health Education Partnership Program.

2010. Immunity and Infection. Yale-Peking University Joint Undergraduate Program.

References

David Ginty, PhD (Postdoctoral research advisor)

HHMI Investigator, Professor of Neurobiology, Harvard University

david_ginty@hms.harvard.edu

Yuh Nung Jan, PhD (doctoral advisor)

HHMI Investigator, Professor of Physiology, University of California, San Francisco

yuhnung.jan@ucsf.edu

Please email Armando Martinez (Armando.Martinez2@ucsf.edu) for recommendation letter

Liqun Luo, PhD

Professor of Biology, HHMI Investigator, Stanford University

lluo@stanford.edu

Please email Mary Molacavage (mcmol1@stanford.edu) for recommendation letter