

Zachary T. Pennington, PhD

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Current Position

2018-present **Postdoctoral Fellow, Icahn School of Medicine at Mount Sinai**
Laboratory of Dr. Denise Cai

Education

2018 **UCLA**
PhD, Behavioral Neuroscience and Quantitative Psychology (GPA: 3.97)
Advisor: Dr. Michael Fanselow

2010 **UCLA**
BA, Psychology (GPA: 3.97)
Advisor: Dr. J. David Jentsch

2008 **Pasadena City College**
AA, Psychology

Professional Activities and Service

2021-present Chair, Mount Sinai Neuroscience Postdoctoral Association

2021-present Founder/Organizer, Sinai Anxiety Fear and Trauma Journal Club

2021-present Ad hoc reviewer, Neuropsychopharmacology

2021 Instructor, Virtual Miniscope Workshop

2019 Instructor, CAJAL Advanced Neuroscience Training Programme

2019-2020 Committee Member, Mount Sinai Neuroscience Postdoctoral Association

2018-2021 Committee Member, Mount Sinai Neuroscience Seminars

2015-2017 Graduate Student Mentor, UCLA *Undergraduate Research Journal of Psychology*

Fellowships, Awards and Honors

2023-2028 K99 Young Investigator Award

2023-2025 Behavior & Brain Research Foundation, Young Investigator Award

2022 McKnight Foundation Doupe Fellow

2022 Mount Sinai Neuroscience Outstanding Citizen Award

2018-2019 NIDA T32 Postdoc Fellowship: Sinai Interdisciplinary Training in Drug Abuse

2017-2018 UCLA Dissertation Year Fellowship

2017 UCLA Teaching Practicum Program Fellow

2016 UCLA Teaching Practicum Program Fellow

2015-2017	NIMH F31 Fellowship
2015	UCLA Brain Research Institute, Society for Neuroscience Travel Award
2012-2014	NIDA T32 Predoctoral Fellowship: UCLA Translational Neuroscience of Drug Abuse
2012	Travel Award to attend the BBC Translation Addiction conference
2012	UCLA Graduate Summer Research Mentorship Fellowship
2008	Opal Jones Trust Scholarship in Psychology. Pasadena City College
2008	Valedictorian of Pasadena City College

Publications:

Research Reports:

- Dong Z, Mau W, Feng Y, **Pennington ZT**, Chen L, Zaki Y, Rajan K, Shuman T, Aharoni D, Cai DJ (2022). Minian, an open-source miniscope analysis pipeline. *eLife*: 11:e70661.
- Pennington ZT**, Diego KS, Francisco TR, LaBanca AR, Lamsifer SI, Liobimova O, Shuman T, Cai DJ (2021). ezTrack – A step by step by step guide to behavior tracking. *Current Protocols in Neuroscience*, 1(10): e255.
- Blaze J, Navickas A, Phillips HL, Heissel S, Plaza-Jennings A, Miglani A, Asgharian H, Foo M, Katanski CD, Watkins CP, **Pennington ZT**, Javidfar B, Espeso-Gil S, Rostandy B, Alwaseem H, Hahn CG, Molina H, Cai DJ, Pan T, Yao WD, Goodarzi H, Haghighi F, Akbarian S (in press). Neuronal Nsun2 deficiency produces tRNA epitranscriptomic alterations and proteomic shifts impacting synaptic signaling and behavior. *Nature Communications*, 12(1): 4913.
- Lichtenberg NT, Sepe-Forrest L, **Pennington ZT**, Lamparelli AC, Greenfield VY, Wassum KM (2021). The medial orbitofrontal cortex → basolateral amygdala circuit regulates the influence of reward cues on adaptive behavior and choice. *Journal of Neuroscience*, 41(34): 7267-7277.
- Rajbhandari AK, Octeau JC, Gonzalez S, **Pennington ZT**, Mohamed F, Trott J, Chavez J, Ngyuen E, Keces N, Hong WZ, Heve RL, Waschek J, Khakh BS, Fanselow MS (2021). A basomedial amygdala to intercalated cells microcircuit expressing PACAP and its receptor PAC1 regulates contextual fear. *Journal of Neuroscience*, 41(15): 3446-61.
- Shuman T, Aharoni D, Cai DJ, Lee CR, Chavlis S, Page-Harley L, Vetere LM, Feng Y, Yang CY, Mollinedo-Gajate I, Chen L, **Pennington ZT**, Taxidis J, Flores SE, Cheng K, Javaherian M, Kaba CC, Rao N, La-Vu M, Pandi I, Shtrahman M, Bakhurin KI, Masmanidis SC, Khakh BS, Poirazi P, Silva AJ, Golshani P (2020). Breakdown of spatial coding and neural synchronization in pilocarpine-treated epileptic mice. *Nature Neuroscience*, 23(2): 229-238.
- Pennington ZT**, Trott JM, Rajbhandari AK, Li K, Walwyn WM, Evans CJ, Fanselow MS (2020). Chronic opioid pretreatment potentiates the sensitization of fear learning by trauma. *Neuropsychopharmacology*, 45(3): 482-490.
- Pennington ZT**, Dong Z, Feng Y, Vetere LM, Page-Harley L, Shuman T, Cai DJ (2019). ezTrack: An open-source video analysis pipeline for the investigation of animal behavior. *Scientific Reports*, 9(1): 19979.
- Kosarussavadi S*, **Pennington ZT***, Covell C, Schlinger BA (2017). Across sex and age: Learning and memory and patterns of avian hippocampal gene expression. *Behavioral Neuroscience*, 131(6): 483-491.
- *Joint first authors
- Pennington ZT**, Anderson AS, Fanselow MS (2017). The ventromedial prefrontal cortex in a model of traumatic stress: Fear inhibition or contextual processing? *Learning & Memory*, 24(9): 400-406.

Lichtenberg NT, **Pennington ZT**, Holley SM, Greenfield VY, Cepeda C, Levine MS, Wassum KM (2017). Basolateral amygdala to orbitofrontal cortex projections enable cue-triggered reward expectations. *Journal of Neuroscience*, 37(35): 8374-8384.

James AS, **Pennington ZT**, Tran P, Jentsch JD (2015). Compromised NMDA/glutamate receptor expression in dopaminergic neurons impairs instrumental learning, but not Pavlovian goal-tracking or sign-tracking. *eNeuro*, 2(3): e0040-14.

Reviews and Commentaries:

Pennington ZT, Cai DJ (2021). Propanolol inhibits reactivation of fear memory. *Biological Psychiatry*, 89(12):1111-12.

Fanselow MS, **Pennington ZT** (2018). A return to the dark ages of psychiatry with a two-system framework for the study of fear. *Behaviour Research and Therapy*, 100:24-29.

Pennington ZT, Fanselow MS (2018). Indirect targeting of sub-superficial brain structures with transcranial magnetic stimulation reveals a promising way forward in the treatment of fear. *Biological Psychiatry*, 84(2): 80-81.

Fanselow MS, **Pennington ZT** (2017). The Danger of LeDoux & Pine's Two System Framework for Fear. *American Journal of Psychiatry*, 174(11): 1120-1121.

Jentsch JD, Ashenurst JR, Cervantes MC, Groman SM, James AS, **Pennington ZT** (2014). Dissecting Impulsivity and its relationship to addictions. *Annals of the New York Academy of Sciences*, 1327(1): 1-26.

Jentsch JD, **Pennington ZT** (2014). Reward, interrupted: inhibitory control and its relevance to addictions. *Neuropharmacology*, 76B: 479-486.

Teaching

2022-present	Invited Lecturer at Icahn School of Medicine at Mount Sinai Courses Taught: Neuro Core Unit 3, Behavioral and Cognitive Neuroscience; Techniques and Approaches in Neuroscience.
2016-2017	Instructor at UCLA Average Overall Professor Rating: 8.4/9 (N = 70) Courses Taught: Psych 15, Introductory Psychobiology (2 school quarters)
2012-2018	Teaching Assistant at UCLA Average Overall Teaching Assistant Rating: 8/9 (N = 291) Courses Taught: Psychology 110, Fundamentals of Learning (1 school quarter); Psychology 115, Principles of Behavioral Neuroscience (3 school quarters); Psychology 116, Behavioral Neuroscience Laboratory (6 school quarters); Neuroscience M101L, Neuroscience Laboratory (1 school quarter)

Research Advising

Research Mentor at Icahn School of Medicine at Mount Sinai

2020-2022	Alexa LaBanca, Research Associate in Cai Lab <ul style="list-style-type: none">- Author on Pennington et al. Current Protocols in Neuroscience, 2021- First author poster presentations at SFN 2021, SFN 2022, Mount Sinai Neuroscience Retreat 2021, Mount Sinai Neuroscience Retreat 2022
2019-2021	Taylor Francisco, Neuroscience and Behavior Student at Columbia <ul style="list-style-type: none">- Author on Pennington et al. Current Protocols in Neuroscience, 2021- First author poster presentation at SACNAS 2021.

Senior Thesis Mentor at UCLA

2018-2018	Kevin Li, Psychobiology <ul style="list-style-type: none">- Author on Pennington et al. Neuropsychopharmacology, 2020- First author poster presentation at UCLA Psychology Undergraduate Research Conference 2018
2017-2018	Dimyana Hana, Neuroscience <ul style="list-style-type: none">- First author poster presentation at UCLA Neuroscience Undergraduate Research Conference 2018
2015-2016	Austin Anderson, Psychobiology, <ul style="list-style-type: none">- Author on Pennington et al. Learning & Memory, 2017- First author poster presentation at UCLA Psychology Undergraduate Research Conference 2016
2013-2014	Patricia Stan, Neuroscience <ul style="list-style-type: none">- First author poster presentation at UCLA Psychology Undergraduate Research Conference 2014
2012-2013	Kyra Phillips, Psychology <ul style="list-style-type: none">- First author poster presentation at UCLA Psychology Undergraduate Research Conference 2013
2012-2013	Taylor Clark, Psychology <ul style="list-style-type: none">- First author poster presentation at UCLA Psychology Undergraduate Research Conference 2013

Press and Media

2021	<i>Neuropsychopharmacology</i> Press Release
2017	<i>Society for Neuroscience</i> Press Release

Invited Talks:

2022	UT Southwestern, El Paso. Learning Technology Seminar Series (Virtual)
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