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

2022 McKnight Foundation Doupe Fellow
2022 Mount Sinai Neuroscience Outstanding Citizen Award
2018-2019 NIDA T32 Postdoctoral Fellowship: Mount Sinai Interdisciplinary Training in Drug Abuse
2017-2018 UCLA Dissertation Year Fellowship
2017 UCLA Teaching Practicum Program Fellow
2016 UCLA Teaching Practicum Program Fellow
2015-17 F31 Ruth L. Kirschstein National Research Service Award (NRSA), Individual Predoctoral Fellowship. Awarded by National Institute of Mental Health

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***, Covel 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,** Greenfield VY, Wassum KW (2017). Basolateral amygdala to orbitofrontal cortex projections enable cue-triggered reward expectations. Journal of Neuroscience, 37(35): 8374-8384.

- Helped set up chemogenetic silencing of axon terminals. Edited manuscript.

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, Ashenhurst 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

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-present Alexa LaBanca, Research Associate in Cai Lab
*Author on Pennington et al. Current Protocols in Neuroscience, 2021

2019-2021 Taylor Francisco, Neuroscience and Behavior Student at Columbia
*Author on Pennington et al. Current Protocols in Neuroscience, 2021

Senior Thesis Mentor at UCLA

2018-2018 Kevin Li, Psychobiology

*Author on Pennington et al. Neuropsychopharmacology, 2020

2017-2018 Dimyana Hana, Neuroscience

2015-2016 Austin Anderson, Psychobiology,

*Author on Pennington et al. Learning & Memory, 2017

2013-2014 Patricia Stan, Neuroscience

2012-2013 Kyra Phillips, Psychology

2012-2013 Taylor Clark, Psychology

Press and Media

2021 *Neuropsychopharmacology* Press Release

2017 *Society for Neuroscience* Press Release