

Curriculum Vitae – Alex Kwan

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Education

1998 – 2003 B.A.Sc., Engineering Physics, Simon Fraser University
2003 – 2009 Ph.D., Applied Physics, Cornell University (Advisor: Watt W. Webb)
2009 – 2013 Postdoc, Neurobiology, University of California, Berkeley (Advisor: Yang Dan)

Positions

2013 – 2022 Assistant / Associate Professor, Department of Psychiatry, Yale University
2022 – 2025 Associate Professor, Meinig School of Biomedical Engineering, Cornell University
2023 – present Associate Professor, Dept. of Psychiatry, Weill Cornell Medicine (secondary)
2025 – present Professor, Meinig School of Biomedical Engineering, Cornell University

Research interests and selected publications

1) Drug action on synapses and dendrites

Phoumthippavong V, Barthas F, Hassett S, and Kwan AC. Longitudinal effects of ketamine on dendritic architecture in vivo in the mouse medial frontal cortex. *eNeuro* (2016).

Shao LX, Liao C, Gregg I, Davoudian PA, Savalia NK, Delagarza K, and Kwan AC. Psilocybin induces rapid and persistent growth of dendritic spines in frontal cortex in vivo. *Neuron* (2021).

Jefferson SJ, Gregg I, Dibbs M, Liao C, Wu H, Davoudian PA, Woodburn SC, Wehrle PH, Sprouse JS, Sherwood AM, Kaye AP, Pittenger C, and Kwan AC. 5-MeO-DMT modifies innate behaviors and promotes structural neural plasticity in mice. *Neuropsychopharmacology* (2023).

Liao C, Dua A, Wojtasiewicz C, Liston C, and Kwan AC. Structural neural plasticity evoked by rapid-acting antidepressant interventions. *Nature Reviews Neuroscience* (2025).

2) Drug action on neural circuit dynamics

Ali F, Gerhard DM, Sweasy K, Pothula S, Pittenger C, Duman RS, and Kwan AC. Ketamine disinhibits dendrites and enhances calcium signals in prefrontal dendritic spines. *Nature Communications* (2020).

Kwan AC, Olson DE, Preller KH, and Roth BL. The neural basis of psychedelic action. *Nature Neuroscience* (2022).

Shao LX, Liao C, Davoudian PA, Savalia NK, Jiang Q, Wojtasiewicz C, Tan D, Nothnagel JD, Liu RJ, Woodburn SC, Bilash OM, Kim H, Che A, and Kwan AC. Psilocybin's lasting action requires pyramidal cell types and 5-HT_{2A} receptors. *Nature* (2025).

Jiang Q, Shao LX, Yao S, Savalia NK, Davoudian PA, Nothnagel JD, Tian G, Hung TS, Lai HM, Beier KT, Zeng H, and Kwan AC. Psilocybin triggers an activity-dependent rewiring of large-scale cortical networks. *Cell* (2026).

3) Novel screening methods for drug discovery

Davoudian PA, Shao LX, and Kwan AC. Shared and distinct brain regions targeted for immediate early gene expression by ketamine and psilocybin. **ACS Chemical Neuroscience** (2023).

Aboharb F, Davoudian PA, Shao LX, Liao C, Rzepka GN, Wojtasiewicz C, Indajang J, Dibbs M, Rondeau J, Sherwood AM, Kaye AP, and Kwan AC. Classification of psychedelics and psychoactive drugs based on brain-wide imaging of cellular c-Fos expression. **Nature Communications** (2025).

Kwan AC, Mantsch JR, and McCorvy JD. The ABCs of psychedelics: a preclinical roadmap for drug discovery. **Trends in Pharmacological Sciences** (2025).

4) Public writing

Kwan AC. How basic neuroscience has paved the path to new drugs. **The Transmitter** (2025).

Awards and honors

Croucher Fellowship (2009)

NARSAD Young Investigator (2014)

One Mind – Compass Rising Star Award (2022)

American College of Neuropsychopharmacology Member (2026)

Grants

NIH R01 MH128217 (PI: Kwan, 2022 – 2027)

NIH R01 MH137047 (PI: Kwan, 2024 – 2029)

NIH U01 NS128660 (PI: Xu, co-I: Kwan, 2022 – 2026)

Cornell SPROUT Award (PI: Kwan and Li, 2025 – 2026)

Recent talks (* scheduled)

2024: UCSF, ISRP, Johns Hopkins, NEURON conference, UCSB, PsychedelX, Delix Therapeutics, BU, EBPS workshop, UW Madison, Univ. Buffalo, ACNP, MCW

2025: UAB, UIC, UBC, Carnegie Mellon, Maryland SOM, Eli Lilly, Univ. Calgary, Tulane

2026: Binghamton, CU Anschutz, CU Boulder, Weizmann, Hebrew University, Stanford, Duke, MUSC*, Albert Einstein*, FMI Basel*, Bordeaux Neurocampus*, Oxford*

2027: GRC Modulation of Neural Circuits*

Teaching

2023 – present BME 3310/5310: Medical and Preclinical Imaging

2023 – present BME 6350: Introduction to Neurotechnology

2024 – present BME 7900: Biomedical Engineering Graduate Colloquium

Professional service

2025 – 2029 Member, MCNP Molecular and Cellular Neuropharmacology study section

2023 – present Editorial Board, Neuropsychopharmacology - Digital Psychiatry and Neuroscience

2023 – present Scientific advisor or consultant: Boehringer Ingelheim, Eli Lilly, Empyrean Neuroscience, Freedom Biosciences, Otsuka, Xylo Bio

2023 Lead organizer, 4th Annual Rising Stars in Engineering in Health Workshop

2025 Founding co-chair, Gordon Research Conference *Neurobiology of Psychedelics*