

William J. Wright, Ph.D.

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EDUCATION

University of Pittsburgh , Pittsburgh PA	2015-2021
Ph.D. Neuroscience <i>Thesis: Interrogating the role of cocaine-generated silent synapses in the regulation of cocaine-associated memory dynamics</i>	
Wofford College , Spartanburg SC	2011-2015
B.S. Biology, <i>Magna Cum Laude</i>	

RESEARCH EXPERIENCE

Postdoctoral Fellow , University of California, San Diego	2021-present
Advisor: Dr. Takaki Komiyama	
<ul style="list-style-type: none">- Investigating how natural activity patterns shape various forms of synaptic plasticity over the course of learning.- Probing the functional role of synaptic plasticity in the reorganization of neural circuit activity dynamics underlying learning	
This work is funded by the NIH and Schmidt Sciences Foundation.	
Graduate Research Fellow , University of Pittsburgh	2015-2021
Advisor: Dr. Yan Dong	
<ul style="list-style-type: none">- Demonstrated that the natural dynamics of cocaine-associated memories can be governed by the functional state of a select population of synapses.- Characterized a novel inhibitory microcircuit with the Nucleus Accumbens composed of CB1-expressing fast-spiking interneurons.- Contributed to characterization of the novel transcription factor <i>Zfp-189</i> and its regulation of depression and addiction.	
This work was funded by the NIH and the University of Pittsburgh.	

RESEARCH SUPPORT

<u>Pending Support</u>	
Dissecting the Computational Functions of Distinct Dendritic Compartments During Learning	04/2025-03/2027
Identifier: Warren Alpert Distinguished Scholars Award	Total funds: \$400,000
Role: Principal Investigator	Status: UCSD nominee, pending council review
Compartment-Specific Synaptic Organization and Plasticity During Learning	04/2025-03/2030
Identifier: K99/R00 MH140060	Total funds: \$990,866
Role: Principal Investigator	Status: Pending council review (<i>Impact Score: 16</i>)

Current Support

Eric and Wendy Schmidt AI in Science Fellowship 02/2023-01/2025
Total funds - \$184,000 Role: Principal Investigator

Previous Support

Neural Circuits Postdoctoral Training Program T32 11/2021-09/2022
Identifier: T32 NS007220 Total funds - \$63,665
PI: Nicholas Spitzer Role: Trainee

Fast-Spiking Interneurons in the Nucleus Accumbens and Cue-Induced Cocaine Seeking 05/2018-08/2021
Identifier: F31 DA043940 Total funds - \$160,874
Role: Principal Investigator

Mellon Fellowship 09/2017-04/2018
Total funds - \$22,752 Role: Principal Investigator

Predoctoral Training in Basic Neuroscience 09/2016-08/2017
Identifier: T32 NS007433 Total funds - \$30,000
PI: Alan Sved Role: Trainee

Basic and Applied Summer Training in Alcohol Research 05/2014-07/2014
Identifier: R25 AA022823 Total funds - \$4,000
PI: Kimberly Nixon Role: Trainee

HONORS, AWARDS, AND FELLOWSHIPS

Eric and Wendy Schmidt AI in Science Postdoctoral Fellowship	2023
BRAIN Initiative F32 Fellowship (declined due to concurrent funding)	2023
Neural Circuits T32 Training Grant Fellow	2021
NRSA F31 Predoctoral Fellowship	2018
Mellon Fellowship	2017
Program for Excellence in Science (AAAS)	2016
Predoctoral Training in Neuroscience T32 Fellow	2016
Phi Beta Kappa Honor Society Inductee	2016
REU Summer Training in Alcohol Research Fellow	2014

PUBLICATIONS

Asterisks (*) denote equal contributions. Daggers (†) denote corresponding author.

Research articles as first or corresponding author

Wright, W.J.[†], Hedrick, N.G., & Komiyama, T.[†] (2025) Distinct synaptic plasticity rules operate across dendritic compartments *in vivo* during learning. **Science, in press**

Hedrick, NG*, **Wright, WJ***, & Komiyama, T.[†] (2024) Local and global predictors of synapse elimination during motor learning. **Science Advances**, 15;10(11). PMID: 38489360.

Wright, W.J.*, Graziane, N.M.*, Neumann, P.A., Hamilton, P.J., Cates, H.M., Fuerst, L., Spenceley, A., Mackinnon-Booth, N., Iyer, K., Huang, Y.H., Shaham, Y., Schlüter, O.M., Nestler, E.J., & Dong, Y.[†] (2020) Silent synapses dictate cocaine memory destabilization and reconsolidation. **Nature Neuroscience**, 23(1); 32-46.

Wright, W.J., Schlüter, O.M., & Dong, Y.[†] (2017) A feedforward inhibitory circuit mediated by CB1-expression fast-spiking interneurons in the nucleus accumbens. **Neuropsychopharmacology**, 42(5); 1146-1156.

Research articles as a contributing author

Schall, T.A.*., Li, K.L.*., Qi, X.*., Lee, B., **Wright, W.J.**, Alpaugh, E.E., Zhao, R.J., Liu, J., Li, Q., Zeng, B., Wang, L., Huang, Y.H., Schlüter, O.M., Nestler, E.J., Nieh, E., & Dong, Y.[†] (2024) Temporal Dynamics of Nucleus Accumbens Neurons Launch Reward Seeking. **Nature Communications** (in press)

Teague, C*., Picone, J*., **Wright, W.J.**, Browne, C., Silva, G., Futamura, R., Minier-Toribio, A., Estil, M., Ramakrishnan, A., Martinez-Rivera, F., Godino, A., Parise, E., Lorsch, Z., Hyun Kim, J., Shen, L., Neve, R., Dong, Y., Nestler, E., Hamilton, P.J.[†] (2023) CREB binding at the Zfp189 promoter within medium spiny neuron subtypes differentially regulates behavioral and physiological adaptations over the course of cocaine use. **Biological Psychiatry**, 93(6); 502-511.

Lorsch, Z.S.*., Hamilton, P.J.*., Ramakrishnan, A., Parise, E.M., Salery, M., **Wright, W.J.**, Lepack, A., Mews, P., Issler, O., McKenzie, A., Zhou, X., Parise, L.F., Pirpinias, S.T., Torres, I.O., Kronman, H.G., Montgomery, S., Loh, Y-H.E., Labonte, B., Conkey, A., Symonds, A.E. Neve, R., Turecki, G., Maze I., Dong, Y., Zhang, B., Shen, L., Bagot, R.C., & Nestler, E.J.[†] (2019) Stress resilience is promoted by a Zfp 189-driven transcriptional network in prefrontal cortex. **Nature Neuroscience**, 22(9); 1413-1423.

Graziane, N.M., Sun, S.*., **Wright, W.J.*.**, Jang, D., Zheng, L., Huang, Y.H., Nestler, E.J., Wang, Y.T., Schlüter, O.M., & Dong, Y.[†] (2016) Opposing mechanisms mediate morphine- and cocaine-induced generation of silent synapses. **Nature Neuroscience**, 19(7); 915-925.

Reviews and Commentaries

Wright, W.J. & Dong, Y (2021) Silent synapses in addiction memory and beyond. **Journal of Neuroscience**, 41(5); 9275-9285 (Review)

Schall, T.*., **Wright, W.J.*.**, & Dong, Y. (2021) Nucleus accumbens fast-spiking interneurons in motivational and addictive behaviors. **Molecular Psychiatry**, 26(1); 234-246. (Review)

Wright, W.J. & Dong Y. (2020) Psychostimulant-induced adaptations in nucleus accumbens glutamatergic transmission. **CSHL Perspectives in Medicine**, in press. (Invited review/book chapter)

Wright, W.J. & Dong, Y. (2018) Intrinsic excitability of cocaine-associated memories **Neuropsychopharmacology**, 43(4); 675-676. (Commentary)

Wright, W.J. & Dong, Y. (2017) Tipping the scales towards addiction. **Biological Psychiatry**, 81(11); 903-904. (Commentary)

Wright, W.J. & Dong, Y. (2016) NMDA receptors: “C”ing the culprits behind cocaine-induced metaplasticity, **Biological Psychiatry**, 80(9); 644-646. (Commentary)

CONFERENCE AND DEPARTMENT TALKS

Max Planck Florida Institute NeuroMEETS. Jupiter, FL. Oct 2024

SfN Annual Meeting Nanosymposium. Chicago, IL. Oct 2024

NIDA Intramural Research Program. Virtual. Jun 2021

University of Pittsburgh Hearing Research Center. Pittsburgh, PA. Jan 2018

Neurobiology of Addiction GRC. Hong Kong. Jul 2017

CONFERENCE POSTERS

Wright, W.J., Hedrick, N.G., & Komiyama, T. (2024) Compartment-specific functional synaptic organization and plasticity rules during learning. Synaptic Transmission Gordon Research Conference. Presented in Il Ciocco, Italy, July 2024

Hedrick, N.G., **Wright, W.J.**, Lu, Z., & Komiyama, T. (2022) Local and global functional determinants of spine elimination during learning. Society for Neuroscience Annual meeting. San Diego, CA, November 2022.

Wright, W.J., Graziane, N.M., Neumann, P.A., Hamilton, P.J., Cates, H.M., Fuerst, L., Spenceley, A., Mackinnon-Booth, N., Iyer, K., Huang, H.Y., Shaham, Y., Schlüter, O.M., Nestler, E.J., & Dong, Y. (2019) Silent synapses dictate cocaine memory destabilization and reconsolidation. American College of Neuropsychopharmacology Annual meeting. Orland, FL, December 2019.

Wright, W.J., Graziane, N.M., Neumann, P.A., Hamilton, P.J., Cates, H.M., Fuerst, L., Huang, Y.H., Shaham, Y., Schlüter, O.M., Nestler, E.J., & Dong, Y. (2018) Destabilization of a synaptic engram underlying drug-associated memories. Society of Neuroscience Annual meeting. San Diego, CA, November 2018.

Wright, W.J., Yu, J., Yan, Y., Li, K-L., Wang, Y., Huang, Y.H., Urban, N.N., Nestler, E.J., Schlüter, O.M., & Dong, Y. (2017) Accumbens CB1-expressing fast-spiking interneurons promote cocaine seeking. Neurobiology of Addiction Gordon Research Conference. Hong Kong, July 2017.

Van Skike, C.E., **Wright, W.J.**, & Nixon, K. (2015) Effects of TSPO-ligand Ro5-4864 on hippocampal cell proliferation in a rate model of alcoholism. Research Society on Alcoholism. San Antonio, TX, June 2015.

Wright, W.J., Davenport, M., & Hettes, S. (2014). Lateral hypothalamic glutamate receptors mediate predation of crickets by Sprague-Dawley Rats. Association of Southeastern Biologists, Spartanburg, SC, April 2014.

TEACHING EXPERIENCE

Guest lecturer, University of Pittsburgh 2019-2020
Course: *Neural Plasticity*
Responsibilities: Developed and delivered two 90-minute lectures covering classical hippocampal long-term potentiation and long-term depression, with detailed discussion of seminal papers

Guest lecturer, University of Pittsburgh 2017
Course: *Brain and Behavior*
Responsibilities: Developed and delivered two 50-minute lectures introducing classical and operant conditioning and the neurobiological mechanisms underlying these forms of learning.

Graduate Teaching Assistant, University of Pittsburgh 2017
Course: *Brain and Behavior*
Responsibilities: Held office hours and led review sessions for students on material covered in previous lectures.

PROFESSIONAL and COMMUNITY SERVICE

SfN Annual Meeting Nano Symposium Chair	2024
Ad-Hoc Peer Reviewer (Independent) <i>International Journal of Neuropsychopharmacology</i>	2023-present
Biology Undergraduate and Master's Mentorship Program (BUMMP) Mentor	2023-present
CNUP Annual Retreat Committee Member	2019
Pittsburgh Regional Science and Engineering Fair Judge	2016-2018
CNUP School Brain Program Presenter	2016-2018

MENTORING

Zheyuan Liu, University of California, San Diego <i>Current:</i> Masters student, UCSD	2024-present
Bobbie Morales, University of California, San Diego <i>Current:</i> Research assistant, UCSD	2023-present
Boyang (Sophia) Zhou, University of California San Diego <i>Current:</i> Undergraduate student researcher UCSD	2022-present
Jiaru (May) Wang, University of California, San Diego <i>Current:</i> Undergraduate student researcher, UCSD	2022-2023
Emma Chen, University of California, San Diego <i>Current:</i> Undergraduate student research, UCSD	2022-2024
Terra Schall, Ph.D., University of Pittsburgh <i>Current:</i> Scientific Consultant	2018-2021
Kartik Iyer, University of Pittsburgh <i>Current:</i> Medical student, University of Pittsburgh	2018-2020
Natalie Mackinnon-Booth, University of Pittsburgh <i>Current:</i> Research assistant II, Boston Children's Hospital	2018-2020
Alexander Spenceley, University of Pittsburgh <i>Current:</i> Research technician, UCSD	2017-2019