

Zhe Zhao Ph.D.

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EDUCATION

- Oct. 2015 - Mar. 2020 **Ph.D. student** in Neuroscience, University of Bordeaux, France
“Endocannabinoids and Neuroadaptation” Group,
Supervisor: Giovanni Marsicano D.V.M., Ph.D.
Neurocentre Magendie, Inserm 1215, Bordeaux Neurocampus.
- Sep. 2007 - Jun. 2011 **Undergraduate** in Biological Engineering, College of food science and technology, Agricultural University of Hebei, China.

WORK EXPERIENCE

- Jan. 2021 - Present **Postdoc** at Max Planck Florida Institute for Neuroscience, Jupiter, FL
- Mar. 2020 - Dec. 2020 **Postdoc** in “Neural circuits of anxiety” Group and “Endocannabinoids and Neuroadaptation” Group,
Supervisors: Anna Beyeler Ph.D. and Giovanni Marsicano Ph.D.
NeuroCentre Magendie, Inserm 1215, University of Bordeaux.
- Dec. 2011 - Oct. 2015 **Technician** in Imaging Facility, supervised by Prof. Cheng Zhan, National institute of biological sciences, Beijing.

EXPERTISE

Neuroanatomy:

Neural circuit mapping, single neuron morphology analysis.

Neural dynamics and perturbations:

Chemogenetics	Drug or virus delivery	<i>In/ex vivo</i> calcium imaging
Optogenetics	Fiber photometry	<i>In/ex vivo</i> electrophysiology

Endocannabinoid system and Leptin receptor:

Pharmacological and genetic manipulation of CB1 and Leptin receptors in mice from specific cell types to neuronal circuits; leptin/cannabinoid modulation of synaptic plasticity.

Animal behavioral essays:

Feeding/drinking behavior, anxiety-like behavior, nose poke/auditory cue-associated operant behavior, context/cue-induced overconsumption, restraint stress.

Data analysis:

Matlab programming to analyze animal behavior (eat, drink, animal posture, etc.) and neural activity (calcium imaging and single-unit electrophysiological recording).

Electrical engineering:

Using microprocessors (Arduino, Teensy, Bpod) to build specific behavioral chambers, e.g. feeding/drinking behavioral chamber (INGEsT, Zhao, et al. bioRxiv 2024).

RESEARCH INTEREST

Neuronal/molecular/circuit mechanisms of internal body states, e.g. hunger, thirst, stress, fear, and these states together with external stimuli (novel context, sound/light cues, tastes, odors, etc.) in the regulation of ingestive behavior. Ultimately our research may lead to new modes of therapy for obesity and eating disorders.

PUBLICATIONS

- **Zhao Z.**, Anthony A. S., Xu B., Srigiriraju A., Kidd M., Holford T., Bolton M., Stern A. S. (in preparation). Leptin provides interoceptive inputs to the insular cortex to control feeding.
- **Zhao Z.***, Xu B.*, Loomis L. C., Anthony A. S., McKie I., Srigiriraju A., Bolton M., Stern A. S. (2024). INGEsT: An Open-Source Behavioral Setup for Studying Self-motivated Ingestive Behavior and Learned Operant Behavior. **bioRxiv** 584229 [preprint]. March 10, 2024. Available from: doi.org/10.1101/2024.03.10.584229v1.
- **Zhao Z.**, Covelo A., Mitra A., Varilh M., Wu Y., Jacky D., Cannich A., Bellocchio L., Marsicano G. Beyeler A. Cannabinoids regulate an insular circuit controlling water intake in. (bioRxiv, 2022; accepted on March 14th 2024 by **Current Biology**).
- **Zhao Z.**, Soria-Gómez E., Varilh M., Julio-Kalajzic F., Cannich A., Castiglione A., Vanhoutte L., Dubeau A., Zizzari F., Beyeler A., Cota D., Bellocchio L., Busquets-Garcia A., Marsicano G. A novel mechanism for top-down control of water intake. **Current Biology**, 2020 (IF: 9.601).
- Soria-Gómez E., Zottola P.C.A., Mariani, Y., Desprez, T.,...Varilh M., Cannich A., Redon B., **Zhao Z.**,...Marsicano G., Bellocchio L., Subcellular specificity of cannabinoid effects in striatonigral circuits. **Neuron**, 2020 (IF: 17.173).
- Oliveira da Cruz J. F., Busquets-Garcia A., **Zhao Z.**, Varilh M., Bellocchio L., Robin L., Marsicano G., Soria-Gómez E. Specific hippocampal interneurons shape consolidation of recognition memory. **Cell Reports**, 2020 (IF: 8.109).
- Martin-Fernandez M., Jamison S., Robin L., **Zhao Z.**, Martin D., Aguilar J., Benneyworth M., Marsicano G., Araque A. Synapse-specific astrocyte gating of amygdala-related behavior. **Nature Neuroscience**, 2017 (IF:17.839).
- **Zhao Z.***, Wang L.*, Gao W.*, Hu F., Zhang J., Ren Y., Lin R., Feng Q., Cheng M., Ju D., Chi Q., Wang D., Song S., Luo M., Zhan C. A central catecholaminergic circuit controls blood glucose levels during stress. **Neuron**, Volume 95, Issue 1, p138–152.e5, 5 July 2017 (IF: 14.024, **Featured article**).
- Wang D., He X., **Zhao Z.**, Feng Q., Lin R., Sun Y., Ding T., Xu F., Luo M., Zhan C. Whole-brain mapping of the direct inputs and axonal projections of POMC and AgRP neurons. **Frontiers in Neuroanatomy** 9:40, 2015 (IF: 3.26).

ORAL PRESENTATIONS

- The Florida Consortium on the Neurology of Cognition, Annual Meeting 2023, May 11-8 2023, Jupiter, Florida, US. (**Data Blitz Presentation**)
- Top-down control of water intake by the endocannabinoid system. NeuroCentre Magendie Symposium, Boredeaux, France, September 26th 2019.
- Top-down control of water intake by the endocannabinoid system. 17th Synapse Day Meeting, Boredeaux, France, September 17th 2019.

ORAL PRESENTATIONS

- Role of the cortical cannabinoid receptor type 1 in the control of water intake. Xi'an, China, September 29th 2018.
- Cannabinoids, the relevance to central nervous system and pain. Modena, Italy, January 20th 2018.

CONFERENCE/SCHOOL ATTENDE

2024

- 88th CSHL Symposium: Brain Body Physiology, May 29-June 2 2024, NY, US.

2023

- SSIB the 30th Annual Meeting, July 11-15 2023, Portland, Oregon, US.
- The Florida Consortium on the Neurology of Cognition, Annual Meeting 2023, May 11-8 2023, Jupiter, Florida, US. (**Data Blitz Presentation**)
- MPFI Sunposium 2023, March 6-8 2023, West Palm Beach, Florida, US.

2022

- Neuromatch Academy-Deep Learning (online course), July 11-29 2022

2021

- Neuromatch Academy-Computational Neuroscience (online course), July 5-23 2021

2019

- NeuroCentre Magendie Symposium, September 26th 2019, Boredeaux, France.
- 17th Synapse Day Meeting, September 17th 2019, Boredeaux, France.

2018

- Society for neuroscience 48th annual meeting, November 3-7 2018, San Diego, CA
- New therapeutic strategies for chronic pain: from Botulinum Toxin to Medical Cannabis, January 20th 2018, Modena, Italy.

2017

- Frontier in Neurophotonics, October 15-18, 2017, Bordeaux, France.
- 4th Bordeaux neurocampus conference, September 27-29, 2017, Bordeaux, France.
- Super-resolution in photonic microscopy, May 30-June 1, 2017, Bordeaux, France.
- NeuroFrance, May 17-19, 2017, Bordeaux, France.

2016

- 3rd Bordeaux neurocampus conference, September 28-30, 2016, Bordeaux, France.
- The Catania international school in neuroscience "Cannabinoid receptors: their role on physiology and pathology", Noto, Italy, July 11-15 2016 (**Travel grant award**).