

BIOGRAPHICAL SKETCH

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NAME: Zhao, Bohan

eRA COMMONS USER NAME (credential, e.g., agency login): BOHANZHAO

POSITION TITLE: AHA Postdoctoral Fellow

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE (if applicable)	END DATE MM/YYYY	FIELD OF STUDY
Sichuan University	BS	06/2015	Biology
Tsinghua University	PHD	06/2021	Neurobiology
University of Oxford	Postdoctoral Fellow	01/2023	Neurobiology
The Scripps Research Institute	Postdoctoral Fellow	present	Neurobiology/Metabolism

A. Personal Statement

I am a postdoctoral fellow at The Scripps Research Institute (TSRI), where I work under the mentorship of Dr. Li Ye to explore the neural mechanisms connecting adipose tissue and brain function. My research focuses on how sensory neurons in adipose tissue relay metabolic information to the brain, influencing both behavior and physiology. By combining advanced imaging, molecular tracing, and optogenetic techniques, my goal is to uncover how disruptions in adipose-brain communication contribute to metabolic and psychiatric disorders, including eating disorders and anxiety.

My scientific journey has been shaped by diverse experiences across model organisms and experimental paradigms. During my Ph.D. at Tsinghua University under Dr. Yi Zhong, I studied memory systems in *Drosophila*, leading to novel findings on context-dependent memory and merged memory encoding. This work was published in Nature Communications and eLife and honed my expertise in neural circuit analysis. A brief postdoctoral fellowship at the University of Oxford allowed me to expand my research focus to homeostatic behaviors, such as sleep regulation using neural circuit manipulation. These experiences provided me with a strong foundation in neuroscience, preparing me to tackle interdisciplinary challenges at the interface of neural circuits, metabolism, and behavior.

At TSRI, I have leveraged my background to investigate the somatosensory pathways of adipose tissue, utilizing cutting-edge tools like ROOT-based retrograde tracing, functional ultrasound imaging, and molecular brain mapping. My long-term goal is to establish an independent research program focused on the neural integration of sensory signals from peripheral organs and their impact on emotional and metabolic regulation. I aim to contribute to the development of novel therapies targeting metabolic and psychiatric disorders, bridging gaps in neuroscience and physiology.

1. Zhao J, Zhang X, **Zhao B**, Hu W, Diao T, Wang L, Zhong Y, Li Q. Genetic dissection of mutual interference between two consecutive learning tasks in *Drosophila*. Elife. 2023 Mar 10;12 PubMed Central PMCID: PMC10030115.
2. **Zhao B**, Zhang X, Zhao J, Li Q. Exclusion and Co-expression of Aversive Olfactory Long-Term Memories in *Drosophila*. Neurosci Bull. 2022 Jun;38(6):657-660. PubMed Central PMCID: PMC9206058.
3. **Zhao B**, Sun J, Li Q, Zhong Y. Differential conditioning produces merged long-term memory in *Drosophila*. Elife. 2021 Jul 19;10 PubMed Central PMCID: PMC8346281.
4. **Zhao B**, Sun J, Zhang X, Mo H, Niu Y, Li Q, Wang L, Zhong Y. Long-term memory is formed immediately without the need for protein synthesis-dependent consolidation in *Drosophila*. Nat Commun. 2019 Oct 7;10(1):4550. PubMed Central PMCID: PMC6779902.

B. Positions, Scientific Appointments and Honors

Positions and Scientific Appointments

2023 -	AHA Postdoctoral Fellow, The Scripps Research Institute
2021 - 2023	EMBO Postdoctoral Fellow, University of Oxford
2015 - 2021	Graduate Student, Tsinghua University
2014 - 2015	Undergraduate Intern, Tsinghua University
2013 - 2014	Undergraduate Intern, Chengdu Institute of Biology, Chinese Academy of Sciences
2013 - 2013	Research Assistant, Sichuan University

Honors

2023	AHA Postdoctoral Fellow, American Heart Association
2023	Dorris Scholar, The Scripps Research Institute
2021	EMBO Postdoctoral Fellowship, European Molecular Biology Organization
2020	First-Class Comprehensive Scholarship/Optics Valley Scholarship, Tsinghua University
2019	National Graduate Scholarship, Ministry of Education of the People's Republic of China
2019	Award for Outstanding Research Achievement, IDG/McGovern Institute for Brain Research at Tsinghua
2013	Top Talent Scholarship, Sichuan University

C. Contribution to Science

- 1. Mechanisms of Memory Formation and Consolidation in *Drosophila*.** My Ph.D. research focused on the neural basis of memory formation and consolidation using *Drosophila* as a model. I uncovered how differential conditioning paradigms produce merged long-term memory and demonstrated that protein synthesis is not always required for long-term memory formation, challenging classical models of memory consolidation. These findings provided a novel perspective on the cellular and molecular mechanisms underlying memory systems.
 - a. Zhao J, Zhang X, **Zhao B**, Hu W, Diao T, Wang L, Zhong Y, Li Q. Genetic dissection of mutual interference between two consecutive learning tasks in *Drosophila*. *Elife*. 2023 Mar 10;12 PubMed Central PMCID: PMC10030115.
 - b. **Zhao B**, Zhang X, Zhao J, Li Q. Exclusion and Co-expression of Aversive Olfactory Long-Term Memories in *Drosophila*. *Neurosci Bull*. 2022 Jun;38(6):657-660. PubMed Central PMCID: PMC9206058.
 - c. **Zhao B**, Sun J, Li Q, Zhong Y. Differential conditioning produces merged long-term memory in *Drosophila*. *Elife*. 2021 Jul 19;10 PubMed Central PMCID: PMC8346281.
 - d. **Zhao B**, Sun J, Zhang X, Mo H, Niu Y, Li Q, Wang L, Zhong Y. Long-term memory is formed immediately without the need for protein synthesis-dependent consolidation in *Drosophila*. *Nat Commun*. 2019 Oct 7;10(1):4550. PubMed Central PMCID: PMC6779902.
- 2. Adipose-Brain Communication and Sensory Pathways.** My current postdoctoral research focuses on the somatosensory innervation of adipose tissue and its communication with the brain. I utilize ROOT-based retrograde tracing combined with functional ultrasound imaging to map adipose-brain circuits and understand their role in regulating metabolism and emotional states. These methods have revealed critical brain regions, such as the hypothalamus and insular cortex, that respond to adipose-derived signals. This research has the potential to bridge gaps in our understanding of metabolic and psychiatric disorders.

Complete List of Published Work in My Bibliography:

<https://www.ncbi.nlm.nih.gov/myncbi/bohan.zhao.1/bibliography/public/>