

BING-XING HUO, Ph.D.

Broad Institute

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ACADEMIC POSITIONS

2022.5 – present	Principal Investigator, Associate Director of Data Strategy and Alliances Data Sciences Platform, Broad Institute
2019.1 – 2022.4	Computational Science Manager, Cold Spring Harbor Laboratory
2015.7 – 2019.1	Research Scientist, Brain Science Institute, RIKEN, Japan (<i>Joint appointment</i>) Collaborative Scientist, Cold Spring Harbor Laboratory
2015.2 – 2015.6	Postdoctoral Scholar, Center for Neural Engineering, Pennsylvania State University

EDUCATION

Ph.D., Engineering Sciences and Mechanics (<i>Neural Engineering track</i>), Pennsylvania State University, 2010-2014
M.S., Biology (<i>Computational Neuroscience</i>), New York University, 2008-2010
M.A., Economics, Boston University, 2006-2007
B.Sc., Mathematics and Physics (<i>double major</i>), The University of Hong Kong, 2003-2006 (<i>Joint program</i>) Software Engineering, Tsinghua University, 2002-2003

ACTIVE AND COMPLETED RESEARCH SUPPORT

Active Research Support

Funding Agency	Project Title	Dates	Role
NIH/NIMH RF1MH133777	A scalable cloud-based framework for multi-modal mapping across single neuron omics, morphology and electrophysiology	08/2023 – 08/2026	PI (20%)
NIH/NIDA UM1DA052244	NeMO Archive: SCORCH Support, Coordination and Outreach	07/2025 – 06/2030	Site PI (8%)
NIH/NINDS U24NS139927	Integrative Connectomics Coordination Center (IC3)	12/2024 – 11/2029	Site PI (15%)
NIH/NHLBI U24HL148865	LungMAP Phase 3 – Data Coordinating Center	09/2024 – 07/2029	Site PI (10%)
NIH/NIMH R24MH114788	Neuroscience Multi-omic Data Archive (NeMO)	07/2024 – 06/2027	Site PI (8%)

Completed Research Projects

Funding Agency	Project Title	Dates	Role
NIH/NCI (via Leidos/FNLRCR)	Cancer Data Aggregator (CDA)	07/2023 – 08/2025	PI (10%)
NIH/NCI (via Leidos/FNLRCR)	Cancer Research Data Commons – Cloud Resources	08/2023 – 02/2025	PI (3%)

Funding Agency	Project Title	Dates	Role
NIH/NHLBI U24HL148865	LungMAP Phase 2 – Data Coordinating Center	08/2022 – 07/2024	Site PI (15%)
NIH/NIDA UM1DA052244	NeMO Archive: SCORCH Support, Coordination and Outreach	07/2024 – 06/2025	Site PI (8%)

TEACHING & MENTORSHIP

- Faculty, *Integrative Lung Bioinformatics: from Data to Discovery*, American Thoracic Society Postgraduate Course, San Francisco, May 2025
- Invited Panelist, *Successful Strategies for Collaboration*, May 2025
- Lecturer, *Registration and Data Mining Workshop*, Cold Spring Harbor Asia Summer School, 2019
- Mentor: high school, undergraduate, doctoral, and postdoctoral trainees, early-stage scientists in computational biology and data science (2015–present)

PROFESSIONAL SERVICE & LEADERSHIP

NIH Review Invited Reviewer, MCST E-52, MCST U-70

Conference & Workshop Organization

- Co-Chair, Nanosymposium, “*AI-Driven Integration and Analysis across Neuroscience Datasets*.” Society for Neuroscience, Nov. 16, 2025, San Diego, CA.
- Co-Chair, INCF Workshop *Streamlining Cross-Platform Data Integration* Neuroinformatics Assembly 2023, virtual.

PUBLICATIONS

- Xu Y, Fleming SJ, Wang B, Schoenbeck EG, Babadi M, **Huo B-X**[#]. “multiVIB: A unified probabilistic contrastive learning framework for atlas-scale integration of single-cell multi-omics data.” *Under Review*.
- BRAIN CONNECTS Consortium. “BRAIN Connectivity Across Scales.” *Under Review*.
- Savoia S, Jayakumar J, Bota M, Mezas C, **Huo B-X**, Mitra PP. “Establishing neuroanatomical correspondences across mouse and marmoset brain structures.” *Under Review*.
- Tward DJ, Gray BDP, Li X, **Huo B-X**, Banerjee S, Savoia S, Mezas C, Das S, Miller MI, Mitra PP. (2025) “Solving the where problem and quantifying geometric variation in neuroanatomy using generative diffeomorphic mapping.” *Nat Commun* 16, 10398.
- Gaddis N, *et al.* (2024) “LungMAP Portal Ecosystem: Systems-Level Exploration of the Lung.” *Am J Respir Cell Mol Biol*. 70 (2), 129-139.
- Hawrylycz M, *et al.* (2023) “A guide to the BRAIN Initiative Cell Census Network data ecosystem.” *PLOS Biol*. 21(6):e3002133.
- Ascoli GA, **Huo B-X**[#], Mitra PP. (2022) “Sizing up whole-brain neuronal tracing.” *Science Bulletin* 67(9):883-884.
- BRAIN Initiative Cell Census Network (BICCN). (2021) “A multimodal cell census and atlas of the mammalian primary motor cortex.” *Nature* 598, 86–102.
- Muñoz-Castaneda R, *et al.* (2021) “Cellular anatomy of the mouse primary motor cortex.” *Nature*. 598:159–66.
- Wang D, Magee L, **Huo B-X**, Banerjee S, Li X, Wang Y, Mitra PP. (2020) “Detection and Skeletonization of tracer injections using topological methods.”. *arxiv*: 2004.02755

[#] Corresponding author.

- Banerjee S, Wang D, Magee L, Li X, **Huo B-X**, Mathos K, Jayakumar J, Lin MK, Huang JZ, Wang Y, Mitra PP. (2020) “Semantic segmentation of microscopic neuroanatomical data by combining topological priors with encoder-decoder deep networks.” *Nature Machine Intelligence* **2**, 585–594.
- Tward DJ, Lee BC, Li X, **Huo B-X**, Mitra PP, Miller M. (2019). “3D mapping of serial histology sections with anomalies using a novel robust deformable registration algorithm.” *MICCAI MFCA 2019* pp. 162-173.
- Huo B-X**^{*}, Zeater N^{*}, Lin MK, Takahashi YS, Hanada M, Nagashima J, Lee BC, Grünert U, Miller MI, Rosa MGP, Okano H, Martin PR, Mitra PP. (2019) “Relation of koniocellular layers of dorsal lateral geniculate to inferior pulvinar nuclei in common marmosets.” *Eur J Neurosci* 2019; 00: 1– 14.
- Lin MK, Takahashi YS, **Huo B-X**, Hanada M, Nagashima J, Hata J, Tolpygo AS, Ram K, Lee BC, Miller MI, Rosa MGP, Sasaki E, Iriki A, Okano H, Mitra PP. (2019). “A High-throughput neurohistological pipeline for brain-wide mesoscale connectivity mapping of the common marmoset.” *eLife* **8**: 72.
- Majka P, Rosa MGP, Bai S, Chan JM, **Huo B-X**, Jermakow N, Lin MK, Takahashi YS, Wolkowicz IH, Worthy KH, Rajan R, Reser DH, Wójcik DK, Okano H, Mitra PP. (2018). “Unidirectional monosynaptic connections from auditory areas to the primary visual cortex in the marmoset monkey.” *Brain Structure and Function*, 1-21.
- Huo B-X**, Greene SE & Drew PJ. (2015) “Venous cerebral blood volume increase during voluntary locomotion reflects cardiovascular changes.” *NeuroImage* **118**: 301-12.
- Huo B-X**, Gao Y-R & Drew, PJ. (2015) “Quantitative separation of arterial and venous cerebral blood volume increases during voluntary locomotion.” *NeuroImage* **105**: 369-79.
- Shirey MJ, Smith JB, Kudlik DE, **Huo B-X**, Greene SE & Drew PJ. (2015) “Brief anesthesia, but not voluntary locomotion, significantly alters cortical temperature.” *J Neurophys* **114**(1): 309-22.
- Huo B-X**, Smith JB & Drew PJ. (2014). “Neurovascular coupling and decoupling in the cortex during voluntary locomotion.” *J Neurosci* **34** (33): 10975-81.

Complete List of Published Work in MyBibliography:

<https://www.ncbi.nlm.nih.gov/myncbi/bingxing.huo.1/bibliography/public/>

SELECTED PRESENTATIONS

2025

- Oral presentation at Nanosymposium, “*AI-Driven Integration and Analysis across Neuroscience Datasets*.” Society for Neuroscience (SfN), Nov. 16, 2025, San Diego, CA.
- Charbonneau A, Brady A, Coon T, Kutner R, Saha S, Thayer K, Baumann A, Phil T, Schaefer H, Creasy H, DiGiovanna J, Pot D, **Huo B-X**. “Cancer data aggregator: a new cancer data discovery tool.” Poster presentation, American Association for Cancer Research (AACR) Annual Meeting, Apr. 25-30, 2025, Chicago, IL. DOI: 10.1158/1538-7445.AM2025-1064.

2024

- Wang B, Xu Y, Velasquez S, Chang J, Lewis M, Weitz E, Haessly A, Bistline J, Hill B, Fleming S, Ordabayev Y, Kitonyo J, Babadi M, **Huo B-X**. “A scalable cloud-based framework for multi-modal neuronal cell type mapping.” Poster presentation, 2024 Biological Data Science, Nov. 14, 2024, Cold Spring Harbor, NY.
- LaPlante E, Baumann A, Thangudu RR, Mani DR, **Huo B-X**. “Optimizing proteomic data access and analysis in the cloud: Leveraging Terra's integration with the Proteomic Data Commons.” Poster presentation, American Association for Cancer Research (AACR) Annual Meeting, Apr. 5-10, 2024, San Diego, CA. DOI: 10.1158/1538-7445.AM2024-7420.
- Invited speaker at International Neuroimmune Consortium Meeting, May 1-2, 2024, London, UK.

Before 2022

Huo B-X, Savoia S, Rallapalli H, Li X, Latour L, Koretsky A, Tward D, Mitra PP. “Toward a next-generation mouse brain reference atlas.” Poster presentation, National Cooperative Reprogrammed Cell Research Groups (NCRCRG) & Convergent Neuroscience (CN): Annual Consortium Meeting / Cross Species Analysis & Combined Data Pipelines, Nov. 5, 2021, virtual.

Huo B-X, Matrov D, Chen C-Y, Lin MK, Hanada M, Nagashima J, Savoia S, Li X, Banerjee S, Tward D, Sasaki E, Isa T, Mitra PP. “A comparative study of tectal projection in marmoset and mouse.” Poster presentation, Marmoset Bioscience Symposium, Oct. 22, 2020, virtual.

Oral presentation at the Nanosymposium, “*Single-Cell Analysis of Cortical Cell Type Diversity*.” Society for Neuroscience (SfN), Oct. 21, 2019, Chicago, IL.

Oral presentation at the Nanosymposium, “*The Marmoset Brain: Brain Mapping and Circuit Tracing*.” Society for Neuroscience (SfN), Nov. 5, 2018, San Diego, CA.

Invited speaker at the Panel, “*Mesoscopic Circuit Architecture at the Whole-Brain Level: How Structural Connectome Can Be Used for Functional Studies and for Disease Mechanisms*.” Winter Conference on Brain Research (WCBR), Jan. 18, 2018, Whistler, BC, Canada.