Huanan (Frederick) Shi

1699 Hermann Dr, Houston, TX 77004

(+1) 617-378-5675 | fred.hn.shi@gmail.com | huananfshi | huananfshi

Education

Baylor College of Medicine — *Houston, TX*
Ph.D. in Molecular Physiology and Biophysics — *2016 - Expected in 2022*

Renmin University of China — *Beijing, China*
B.S. in Physics — *2012 - 2016*

Skills

Python	Pandas, SciPy, Scikit-learn, Statsmodels, Matplotlib, Seaborn
Machine Learning	Supervised & Unsupervised Learning, Dimensional Deduction, Clustering & Classification
Others	R (Bioconductor, Vegan), MATLAB, LINUX, SQL, Next Generation Sequencing analysis

Experience

Baylor College of Medicine — *Houston, TX*
Ph.D. Candidate — *2016 - 2022*

- Analyzed ~2Gb microbial rRNA sequencing data for taxonomic profiling and functional prediction.
- Pioneered the analysis of ~700Gb metagenomic sequences and prediction in a hypertensive rat model of microbial whole genome shotgun sequencing.
- Achieved 100% and 88% accuracy for metabolomics functional prediction using random forest models and analyzed omics sample sets using PCA, MDA, and PLS-DA.
- Performed integrated multi-omics analysis.
- Developed autonomic analysis and visualization of respiratory plethysmography experiments with FileMaker database communication.
- Processed experimental biosignal with animal motion detection and removal function and achieved similar results of manual selection.
- Established a computational neuroscience model of respiratory pacemaker neurons and network.
- Initiated the project to build setup for MRI in awake mice.
- Routinely summarized and reported project development; organized and generated contents such as data figures; performed statistical analysis; and catalogued references.
- Presented complex concepts of projects in a clear, concise and scientifically accurate manner to audiences with different background.
- Wrote and edited abstracts and manuscripts, and prepared poster talks for scientific journals and local and national conferences.
- Evaluated and reviewed manuscripts for scientific journals and presentations in national conference.

Ion Channel & Reproductive Physiology Lab|Yale School of Medicine — *New Haven, CT*
Undergraduate Researcher — *2015 - 2016*

- Performed general lab setup and management; data analysis and visualization; reproductive physiology experiments; and super-resolution and confocal microscopy imaging.

University of California, Berkeley — *Berkeley, CA*
Visiting Student — *2014*

- Class in Introduction to Biostatistics.

DataCamp — *Online*
July. 2016 - present

- Finished Data Scientist track, Data Analyst track, Python Programmer Track, and Data Visualization track.(Python)
- Currently in progress with Machine Learning Scientist Track (including big data with PySpark; deep learning with Tensorflow and Keras)

Honors & Awards

2020 **New Investigator Travel Awards**, American Heart Association Hypertension Scientific Sessions

2020 **2nd Place Award for Outstanding Poster Presentation**, Frontiers in Digestive Diseases Symposium

2015 **Honorable Mention**, COMAP Mathematical Contest in Modeling

2014 **Second Prize in Province** , China Undergraduate Mathematical Contest in Modeling

Publications

Journal Articles

Restructuring the Gut Microbiota by Intermittent Fasting Lowers Blood Pressure

Huanan Shi, Bojun Zhang, Abo-Hamzy Taylor, James W. Nelson, Chandra Shekar R. Ambati, Joseph F. Petrosino, Bryan M. Bryan, David J. Durgan

Circulation Research (2021). Am Heart Assoc, 2021

3D in situ Imaging of Female Reproductive Tract Reveals Molecular Signatures of Fertilizing Spermatozoa in Mice

Lukas Ded, Jae Yeon Hwang, Kiyoshi Miki, Huanan F Shi, Jean-Ju Chung

Elife 9 (2020) e62043. eLife Sciences Publications Limited, 2020

Young Versus Aged Microbiota Transplants to Germ-free Mice: Increased Short-chain Fatty Acids and Improved Cognitive Performance

Juneyoung Lee, Venugopal R Venna, David J Durgan, Huanan Shi, Jacob Hudobenko, Nagireddy Putluri, Joseph Petrosino, Louise D McCullough, Robert M Bryan

Gut microbes (2020) pp. 1–14. Taylor & Francis, 2020

CatSperζ Regulates the Structural Continuity of Sperm Ca2+ Signaling Domains and Is Required for Normal Fertility

Jean-Ju Chung, Kiyoshi Miki, Doory Kim, Sang-Hee Shim, Huanan F Shi, Jae Yeon Hwang, Xinjiang Cai, Yusuf Iseri, Xiaowei Zhuang, David E Clapham

Elife 6 (2017) e23082. eLife Sciences Publications Limited, 2017

Conference Abstract

Abstract P241: Intermittent Fasting Lowers Blood Pressure In A Rat Model Of Hypertension By Modulating The Gut Microbiota

Huanan Shi, Taylor Abo-Hamzy, Robert M Bryan, David J Durgan

Hypertension 76.Suppl_1 (2020) AP241–AP241. Am Heart Assoc, 2020

Mapping Neural Circuits Critical to Upper Airway Function and Breathing-swallowing Coordination

Huanan Shi, Russell Scott Ray

The FASEB Journal 33.1_supplement (2019) lb584–lb584. The Federation of American Societies for Experimental Biology, 2019

Forebrain Alzheimer's Disease Pathology Does Not Result in Disordered Breathing in Mice

Huanan Shi, Fatima Beatriz Saldana Morales, Vena Kay Martinez, Joanna Louisa Jankowsky, Russell Scott Ray

The FASEB Journal 33.1_supplement (2019) lb583–lb583. The Federation of American Societies for Experimental Biology, 2019