# Haikuo Li

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## EDUCATION

**PhD Student, Program in Molecular Genetics and Genomics**  8/2019 – present

Washington University in St. Louis, MO, United States

- Thesis mentor: Benjamin D. Humphreys, M.D., Ph.D.
- Thesis committee: Ting Wang, Samantha Morris, Jeffrey Millman, Allegra Petti, Michael Meers

**Bachelor of Science, Bioscience (Zhiyuan Honors Program)**  9/2015 – 6/2019

Shanghai Jiao Tong University, Shanghai, China

- 2019 Top 0.2% Bachelor Thesis: Rank #1 in Bioscience
- 2019 Outstanding Graduate in Bachelor Degree, Shanghai

**Visiting Student, Immunobiology**  6/2018 – 4/2019

Yale University, New Haven, CT, United States

- Research supervisor: Aaron M. Ring, M.D., Ph.D.

## PUBLICATIONS

1. **Li, H.**, Dixon, E. E., Wu, H., & Humphreys, B. D. (2022). Comprehensive single-cell transcriptional profiling defines shared and unique epithelial injury responses during kidney fibrosis. **Cell Metabolism.** (**PDF**)

2. **Li, H.**, & Humphreys, B. D. (2022). Mouse kidney nuclear isolation and transcriptional profiling with single-cell combinatorial indexing RNA sequencing. **STAR Protocols**. (in revision)

3. **Li, H.**, & Humphreys, B. D. (2022). New functions for basophils identified in kidney fibrosis. **Nature Immunology**, 23(6), 824-825. (**PDF**)

4. Muto, Y*., **Li, H.*** (equal contribution), & Humphreys, B. D. (2022). Single-cell transcriptomics. Innovations in Nephrology: Breakthrough Technologies in Kidney Disease Care (**Book Chapter**). (in press)

5. **Li, H.**, & Humphreys, B. D. (2021). Single cell technologies: Beyond microfluidics. **Kidney360**, 2(7), 1196. (**PDF**)

6. **Li, H.**, & Humphreys, B. D. (2020). Surveying the human single-cell landscape. **Kidney International**, 98(6), 1385-1387. (**PDF**)

7. Ku, X.*., **Li, H.*** (equal contribution), Wang, J.*, et al. Jin, J.#, Yan, W#. Proteomic portrait of human lymphoma revealed protein molecular fingerprint for disease specific subtypes and progression. **Phenomics.** (under review)

## RESEARCH EXPERIENCE

**PhD Student, Benjamin Humphreys Lab**  4/2020 – present

Division of Nephrology, Washington University in St. Louis

- Developing a single-cell atlas of kidney fibrosis with single-cell multimodal profiling
- Studying metabolic mechanisms that drive kidney fibrosis
- Developing single-cell combinatorial indexing (split-pool barcoding) platforms

**PhD Rotation Student, Tim Peterson, Sidharth Puram, Benjamin Humphreys Labs**    8/2019 – 4/2020

Washington University in St. Louis
- Peterson Lab: Understanding the intracellular effects of Cationic Amphipathic Drugs on organelles
- Puram Lab: Studying head and neck cancer by CITE-seq
- Humphreys Lab: Characterizing kidney injury and repair markers by RNAscope

**Visiting Student, Aaron Ring Lab**    6/2018 – 4/2019

Department of Immunobiology, Yale University
- Modulating immune cytokines by protein engineering

**Undergraduate Researcher, Wei Yan Lab**    9/2016 – 7/2018

Shanghai Center for Systems Biomedicine, Shanghai Jiao Tong University
- Identification of biomarkers of lymphoma with mass spectrometry; clinic proteomics

**Summer Intern, Manyuan Long Lab**    6/2017 – 8/2017

Department of Ecology and Evolution, The University of Chicago
- Identification of mammalian positively selected genes by polygenetic analysis

**Science Olympiad (Mathematics), Shandong Province Team, China**    7/2014 – 2/2015
- Top10 students selected to participate in the Chinese Mathematics Olympics

# SKILLS

**Wet lab experiment**
- Extensive experience in single-cell and single-nucleus library generation from diverse technologies, including 10X Genomics, sci-RNA-seq, SHARE-seq and INTACT, as well as multimodal profiling including RNA-seq, ATAC-seq, CARLIN and CITE-seq
- Extensive experience in molecular biology technologies such as cloning, vector construction, qPCR, immunohistology, and in-situ hybridization
- Extensive experience in tissue culture including primary cell isolation, immunocytochemistry and Seahorse metabolic measurement
- Strong experience in animal work such as mouse kidney disease surgery (UUO/IRI) and tumor implantation
- Strong experience in clinical sample management and processing such as human kidney dissection
- Strong background in protein chemistry including mass spectrometry sample preparation & recombinant protein preparation and protein liquid chromatography

**Computational workflow**
- Extensive experience in using Python, R, Shell and Jupyter
- Extensive experience in single-cell sequencing data preprocessing and analysis including UMAP visualization, data integration, sample demultiplexing, cell trajectory interference, fate mapping, gene activity prediction and multimodal analysis at the million-cell level
- Strong experience in analysis of bulk RNA-seq, proteomics and metabolomics data
- Extensive experience in data mining and discovering biological insights

- Strong training background in mathematics

# TEACHING EXPERIENCE

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|---|---|
| **Assistant Instructor, Washington University in St. Louis** | 8/2022 – present |

- Structural bioinformatics of proteins (Bio4525)

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| **Peer Study Mentor, Washington University in St. Louis** | 1/2022 – 6/2022 |

- Genomics (Bio5488) and Python-based coding tutoring

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| **Assistant Instructor, Washington University in St. Louis** | 1/2021 – 6/2021 |

- Genomics (Bio5488)

**Undergraduate Teaching Assistant, Shanghai Jiao Tong University**

- College Genetics Course (2/2019–6/2019)
- College Macrobiology Course (2/2018–6/2018)
- College Biochemistry Course (9/2017–1/2018)

# PRESENTATIONS & POSTERS

| | |
|---|---|
| Speaker, Nephrology Division Research Seminars, Washington University in St. Louis | 9/2022 |
| Retreat Talk (MGG/CSB/HSG/IMSD programs), Washington University in St. Louis | 9/2022 |
| POSTER (**PDF**) | PhD program retreat, Washington University in St. Louis | 9/2022 |

- Cell profiling defines metabolic dysregulation in kidney fibrosis

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| DBBS Friday Talks (MGG/CSB/HSG/IMSD programs), Washington University in St. Louis | 5/2022 |
| REBUILDING A KIDNEY Spring Meeting | lighting talk | 4/2022 |
| PhD Program Thesis Committee Meeting, Washington University in St. Louis | 8/2021, 4/2022 |
| REBUILDING A KIDNEY Work in Progress | small group meeting | 12/2021 |
| PhD Program Qualifying Examination Committee Meeting | 9/2020 |
| POSTER (**PDF**) | SJTU Academic Festival (Best Poster Award) | 2/2019 |

- Modulating the Tumor-Targeting Specificity of "Decoy-Resistant" Interleukin-18 by Protein Engineering

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| POSTER (**PDF**) | Human Proteome Organization World Congress | 10/2018 |

- Clinical Proteomics Analysis using Data Independent Acquisition-Mass Spectrometry (DIA-MS) Identified Classifiers for Molecular Characterization of Lymphoma

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| POSTER (**PDF**) | SJTU Academic Festival (Best Poster Award) | 12/2017 |

- Detecting Positively Selected Genes among Mammalian Species Using Phylogenetic Analysis of Maximum Likelihood

# HONORS & ACTIVITIES

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| Member, ASN (American Society of Nephrology) | 2020 - present |
| Top 0.2% Bachelor Thesis of Shanghai Jiao Tong University (**URL**) (Thesis **PDF**) | 2019 |
| Outstanding Graduate in Bachelor Degree, Shanghai | 2019 |
| Academic Excellence Scholarship (First-class), Shanghai Jiao Tong University | 2016, 2017, 2018 |
| Rank #1 Student Presentation, National Biology Education Conference of Chinese Ministry of Education | 2018 |
| Vice President, Students' Union of Zhiyuan Honors Program, Shanghai Jiao Tong University | 2017 - 2018 |
| Top 0.1% in Chinese University Entrance Examination (681 points) | 2015 |
| Bronze medal, Chinese Mathematical Olympiad (CMO) | 2014 |