Stanford

Bing Wang

Postdoctoral Scholar, Stem Cell Transplantation

NIH Biosketch available Online

Bio

BIO

My academic training and research experience have equipped me with multidisciplinary skills and knowledge of molecular biology and immunology.

I led two projects when I was an undergraduate, in which I got primary academic learning. My team member and I investigated the bacteria content in drinking water from two types of machines that are commonly used in colleges under the guidance of our experimental microbiology teacher Zhihong Zhong. Secondly, we produced a hybridoma cell line secreting monoclonal antibody against the core antigen of the hepatitis C virus (HCV) to develop an ELISA kit for the detection of HCV under the guidance of Dr. Rushi Liu and Minjing Liao.

Thereafter, as a Ph. D. candidate at Xiaoming Feng's lab, my research primarily focused on understanding the biology of regulatory T cells (Treg) and CD11c+ myeloid cells using cutting-edge single-cell sequencing and conditional knockout mice under healthy and disease conditions. We first revealed the heterogeneity and bifurcated differentiation pathway of human Tregs from normal donors and transplanted patients at the single-cell transcriptome level. A subsequent first and corresponding author publication identified a key innate responsive protein in CD11c+ alveolar macrophages, NRP2, that protects mice from lung injury via promoting the phagocytosis of neutrophils. I also participated in two projects regarding the role of a serine/threonine kinase, LKB1, in mice CD11c+ dendritic cells from lymphoid tissues and adipose tissue with diet-induced obesity. These academic experiences guided me into a strong passion and independent capacities for biomedical studies.

For my postdoctoral training, I will focus on developing Treg therapies and genetic stem cell therapy to cure patients with IPEX syndrome (a severe autoimmune disease) at preclinical and clinical stages, and other immune disorders. My sponsor Dr. Rosa Bacchetta is a well-known leader in treating IPEX patients and developing Treg therapies. My co-mentor Dr. Maria Grazia Roncarolo is a well-recognized pediatric immunologist and also one of the pioneers in the stem cell and gene therapy field, who discovered the type 1 regulatory T cells or Tr1 cells and translate the scientific discoveries into novel Treg therapies. Both of them have an excellent record of training postdoctoral fellows. The proposed projects will provide me with great opportunities in cutting-edge technology and translational research and outline a set of career development including grant writing, public presentation, and lab management, which will enhance my ability to become an independent investigator and help me to reach my goal of developing efficient and safe Treg therapies for a wide range of immune disorders and associated human diseases.

INSTITUTE AFFILIATIONS

- Member, Maternal & Child Health Research Institute (MCHRI)

HONORS AND AWARDS

- Outstanding Graduate Award, Peaking Union Medical College (7/2022)
- Scholarship (4 times), Peaking Union Medical College (9/2017-7/2022)
- Outstanding Graduate Thesis Award, Hunan Normal University (5/2017)

- Scholarship (3 times), Hunan Normal University (9/2012-7/2017)

STANFORD ADVISORS

- Rosa Bacchetta, Postdoctoral Faculty Sponsor

Publications

PUBLICATIONS

- **Identification of unstable regulatory and autoreactive effector T cells that are expanded in patients with FOXP3 mutations.** *Science translational medicine*
  Borna, Š., Lee, E., Nideffer, J., Ramachandran, A., Wang, B., Baker, J., Mavers, M., Lakshmanan, U., Narula, M., Garrett, A. K., Schulze, J., Olek, S., Marois, et al
  2023; 15 (727): eadg6822

- **Loss of Lkb1 in CD11c+ myeloid cells protects mice from diet-induced obesity while enhancing glucose intolerance and IL-17/IFN-# imbalance.** *Cellular and molecular life sciences : CMLS*
  Sun, Y., Wang, B., Hu, Q., Zhang, H., Lai, X., Wang, T., Zhao, C., Wang, J., Zhang, X., Niu, Q., He, B., Jiang, E., Shi, et al
  2023; 80 (3): 63

- **Alveolar macrophage-derived NRP2 curtails lung injury while boosting host defense in bacterial pneumonia** *JOURNAL OF LEUKOCYTE BIOLOGY*
  Wang, B., Guo, W., Qiu, C., Sun, Y., Zhao, C., Wu, C., Lai, X., Feng, X.
  2022; 112 (3): 499-512

- **Single-cell transcriptomic analysis reveals disparate effector differentiation pathways in human T-reg compartment** *NATURE COMMUNICATIONS*
  Luo, Y., Xu, C., Wang, B., Niu, Q., Su, X., Bai, Y., Zhu, S., Zhao, C., Sun, Y., Wang, J., Liu, M., Sun, X., Song, et al
  2021; 12 (1): 3913

- **Control of T-reg cell homeostasis and immune equilibrium by Lkb1 in dendritic cells** *NATURE COMMUNICATIONS*
  Chen, S., Fang, L., Guo, W., Zhou, Y., Yu, G., Li, W., Dong, K., Liu, J., Luo, Y., Wang, B., Li, Z., Zhao, C., Sun, et al
  2018; 9: 5298

- **Spatial Transcriptomics Analysis Reveals that CCL17 and CCL22 are Robust Indicators of a Suppressive Immune Environment in Angioimmunoblastic T Cell Lymphoma (AITL)** *Front. Biosci. (Landmark Ed)*
  Du, J., Qiu, C., Li, W., Wang, B., Han, X., Lin, S., Fu, ., Hou, J., Huang, Z.
  2022; 27 (9): 270