Yuan Tian, Ph.D.

Staff Scientist
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Summary of Qualifications

- In-depth knowledge of immunology with extensive research experience in T cell biology.
- Proficient in using Python, R and various software to analyze next-generation sequencing data, high-dimensional single-cell data, and T cell receptor (TCR) repertoires.
- Demonstrated ability to use Python for web development, machine learning, and deep learning.
- Advanced skills in cellular immunology assays including flow cytometry, CyTOF, and cell culture.
- Strong public speaking and communication skills, as evidenced by numerous presentations at international conferences and a first prize for poster presentation.

Education

2011–2016   Ph.D. in Microbiology and Immunology
             University of Alabama at Birmingham (UAB), Birmingham, AL, United States
2007–2011   B.E. in Bioengineering, Tianjin University, Tianjin, China

Research Experience

Nov 2019–present   Staff Scientist
             TDS-IRC, Fred Hutchinson Cancer Research Center
- Develop and apply computational tools and technologies for cancer immunology research.
- Analyze single-cell RNA sequencing, high-dimensional flow cytometry, CyTOF, and other complex data types for cancer and infectious disease studies.

May 2019–Nov 2019 Bioinformatics Scientist
Feb 2019–Nov 2019 AAI Intersect Fellow
Jun 2016–Feb 2019 Postdoctoral Fellow
             Division of Vaccine Discovery, La Jolla Institute for Immunology
- Characterized antigen-specific IL-10+IFN-γ+ double positive (DP) CD4 T cells in acute dengue patients and their association with dengue disease.
- Characterized the transcriptomic profiles and TCR repertoires of human dengue virus-specific CD8 T cell subsets.
- Discovered the unique phenotypes and heterogeneity of human CD4 effector memory T cells re-expressing CD45RA (termed Temra cells) via systems biology approaches.
- Introduced CyTOF to the laboratory and conducted high-dimensional single-cell analysis
- Mentored Life Sciences Summer Institute (LSSI) intern and laboratory technician.

Aug 2011–May 2016 Graduate Research Assistant
             Department of Microbiology, University of Alabama at Birmingham
- Elucidated the roles of interleukin 21 (IL-21) in CD8 T cell differentiation under homeostatic conditions and following viral infections.
- Discovered the function of IL-10 in the development of memory T cells and the differentiation of antiviral CD4 T cell subsets during an acute viral infection.
- Published 3 first-author papers and delivered 12 oral/poster presentations.

Sep 2009–Jul 2011 Undergraduate Researcher
             Department of Bioengineering, Tianjin University
- Isolated and characterized anti-digoxin llama single-domain antibodies (VHHs) by phage display.
- Obtained funding for the project through a competitive proposal process.
- Managed the project budget and a research team consisting of three undergraduate students.

Honors

2019	The American Association of Immunologists (AAI) Intersect Fellowship for Computational Scientists and Immunologists
2015, 2016	AAI Trainee Abstract Award
2015	Raymond N. Hiramoto Travel Award
2014	Gail H. Cassell Award for Best Graduate Student Poster
2013	UAB Spring Immunology Symposium Award
2010, 2011	Tianjiu Innovation Research Scholarship
2010	Shanghai Pudong Development Bank Scholarship

Selected Presentations

2019	AAI Annual Meeting, San Diego, CA
2019	Cold Spring Harbor Meeting: Systems Immunology, Cold Spring Harbor, NY
2019	Human Immunology Project Consortium (HIPC) 2019 Annual Meeting, Rockville, MD
2018	Network of Immunology Frontier (NIF) Winter School on Advanced Immunology, Awaji, Island and Osaka, Japan
2018	6th Pan-American Dengue Research Network Meeting, Galveston, TX
2018	AAI Annual Meeting, Austin, TX
2017	AAI Annual Meeting, Washington, D.C.
2016	AAI Annual Meeting, Seattle, WA
2015	AAI Annual Meeting, New Orleans, LA
2014	Southeastern Immunology Symposium, Atlanta, GA
2013	Spring Immunology Symposium, Birmingham, AL

Peer Reviewer

- *Ad Hoc* reviewer for *Frontiers in Immunology*, *Aging*, *Bioinformatics*, *Frontiers in Bioengineering and Biotechnology*, *Scientific Reports, Frontiers in Genetics, Clinical & Experimental Immunology, Journal of Biomolecular Structure & Dynamic, Virus Research, BMC Immunology, Medicine, Viral Immunology, Computational Biology and Chemistry,* and *Research Square*
- Editorial Board Member for *Medicine*, *Journal of Cellular Immunology*
- Review Editor for *Frontiers in Bioinformatics and Computational Biology*

Publications

1. Grifoni A, **Tian Y**, Sette A and Weiskopf D. 2020. "Transcriptomic immune profiles of human flavivirus-specific T-cell responses." *Immunology* 160(1):3-9.
2. **Tian Y**[*], Seumois G, De-Oliveira-Pinto LM, Herrera-de la Mata S, Kim C, Hinz D, Goonawardhana NDS, De Silva AD, Premawansa S, Premawansa G, Wijewickrama A, Balmaseda A, Grifoni A, Vijayanand P, Harris E, Peters B, Sette A, and Weiskopf D. 2019. "Molecular Signatures of Dengue Virus-Specific IL-10/IFN-γ Co-Producing CD4 T Cells and Their Association with Severe Dengue Disease." *Cell Reports* 29(13):4482-4495.e4. (*designates corresponding author)
3. **Tian Y**, Grifoni A, Sette A and Weiskopf D. 2019. "Human T Cell Response to Dengue Virus Infection." *Frontiers in Immunology* 10:2125.
4. **Tian Y**, Babor M, Lane J, Seumois G, Liang S, Goonawardhana NDS, De Silva AD, Phillips EJ, Mallal SA, da Silva Antunes R, Grifoni A, Vijayanand P, Weiskopf D, Peters B, Sette A. 2019. "Dengue-Specific CD8^{+} T Cell Subsets Display Specialized Transcriptomic and TCR Profiles." *The Journal of Clinical Investigation* 130:1727-1741.
5. Lee BH, Kelly G, Bradford S, Davila M, Guo XV, Amir ED, Thrash EM, Solga M, Lannigan J, Sellers B, Candia J, Tsang J, Montgomery R, Tamaki S, Sigdel T, Sarwal M, Lanier L, **Tian Y**, Kim C, Hinz D, Peters B, Sette A, Rahman A. 2019. "A Modified Injector and Sample Acquisition Protocol Can Improve Data Quality and Reduce Inter-Instrument Variability of the Helios Mass Cytometer." *Cytometry Part A* 95(9):1019-1030.
6. Swaminathan K, Olsson N, Lund PJ, Marceau CD, Wagar LE, **Tian Y**, Sidney J, Weiskopf D, Majzoub K, De Silva AD, Harris E, Davis MM, Sette A, Carette JE, and Elias JE. 2018. "Immuno-

Proteomic Interrogation of Dengue Infection Reveals Novel HLA Haplotype-1 Specific MHC-I Antigens." *bioRxiv* 471821.

7. **Tian Y**, da Silva Antunes R, Sidney J, Lindestam Arlehamn CS, Grifoni A, Dhanda SK, Paul S, Peters B, Weiskopf D, and Sette A. 2018. "A Review on T Cell Epitopes Identified Using Prediction and Cell-Mediated Immune Models for *Mycobacterium tuberculosis* and *Bordetella pertussis*." *Frontiers in Immunology* 9:2778.

8. Grifoni A, Costa-Ramos P, Pham J, **Tian Y**, Seumois G, Sidney J, De Silva AD, Lakshmanane P, Collins MH, Stone M, Norris PJ, Romero CME, Durbin A, Watkins DI, De Silva AM, Busch M, Peters B, Vijayanand P, Harris E, Falconar A, Kallas E, Weiskopf D, and Sette A. 2018. "Cutting Edge: Transcriptional Profiling Reveals Multifunctional and Cytotoxic Antiviral Responses of Zika Virus-Specific CD8+ T Cells." *The Journal of Immunology* 201(12):3487-3491.

9. **Tian Y**, Babor M, Lane J, Schulten V, Patil VS, Seumois G, Rosales S, Fu Z, Burel J, Zapardiel-Gonzalo J, Tennekoon R, De Silva AD, Premawansa S, Premawansa G, Wijewickrama A, Greenbaum J, Vijayanand P, Weiskopf D, Sette A, and Peters B. 2017. "Unique Phenotypes and Clonal Expansions of a Human CD4 Memory T Cell Subset Termed TEMRA." *Nature Communications* 8:1473.

10. **Tian Y**, Sette A, and Weiskopf D. 2016. "Cytotoxic CD4 T Cells: Differentiation, Function, and Application to Dengue Virus Infection." *Frontiers in Immunology* 7:531.

11. **Tian Y**, Mollo SB, Harrington LE, and Zajac AJ. 2016. "IL-10 Regulates Memory T Cell Development and the Balance between Th1 and Follicular Th Cell Responses during an Acute Viral Infection." *The Journal of Immunology* 197(4):1308-21.

12. **Tian Y** and Zajac AJ. 2016. "IL-21 and T Cell Differentiation: Consider the Context." *Trends in Immunology* 37(8):557-68.

13. **Tian Y**, Cox MA, Kahan SM, Ingram JT, Bakshi RK, and Zajac AJ. 2016. "A Context-Dependent Role for IL-21 in Modulating the Differentiation, Distribution, and Abundance of Effector and Memory CD8 T Cell Subsets." *The Journal of Immunology* 196(5):2153-66.