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# Yuan Tian, Ph.D.

Postdoctoral Fellow

Division of Vaccine Discovery

La Jolla Institute for Allergy and Immunology, La Jolla, CA, USA

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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 and Python libraries for web development, data analysis, 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 15 oral and poster presentations and a first prize for poster presentation.

## **Technical Skills**

- **Immunology:** flow cytometry, cytometry by time-of-flight (CyTOF), cell culture, ELISA, ELISPOT, handling human blood samples, murine viral infection models
- **Programming and Bioinformatics:** Python, fast.ai deep learning library/PyTorch, Keras, scikit-learn, Pandas, Django, R, Unix, Bioconductor packages, MiXCR, Gene Set Enrichment Analysis (GSEA), Ingenuity Pathway Analysis (IPA), Javascript/jQuery, HTML, and CSS.

## **Research Experience**

### **Jun 2016–present Postdoctoral Fellow**

Division of Vaccine Discovery, La Jolla Institute for Allergy and Immunology

- Characterized the transcriptional 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 using algorithms such as viSNE and SPADE.
- Recruited and mentored Life Sciences Summer Institute (LSSI) intern.

### **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.

## **Education**

2016 Ph.D. in Microbiology and Immunology

University of Alabama at Birmingham (UAB), Birmingham, AL, USA

2011 B.E. in Bioengineering

Tianjin University, Tianjin, China

**Publications**

- **Tian Y**, Babor M, Lane J, Seumois G, Liang S, Tennekoon RN, De Silva AD, da Silva Antunes R, Grifoni A, Vijayanand P, Weiskopf D, Peters B, and Sette A. 2018. "Dengue-specific CD8 T-cell subsets display specialized transcriptomic and TCR profiles." *The Journal of Clinical Investigation*. In revision.
- 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." *Cell Reports*. In revision.
- **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*. In press.
- 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. "Transcriptional profiling reveals multifunctional and cytotoxic antiviral responses of ZIKV-specific CD8 T cells." *The Journal of Immunology*. In press.
- **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.
- **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.
- **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.
- **Tian Y** and Zajac AJ. 2016. "IL-21 and T Cell Differentiation: Consider the Context." *Trends in Immunology* 37(8): 557-68.
- **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.

**Honors**

2015, 2016	The American Association of Immunologists (AAI) Trainee Abstract Award
2015	Raymond N. Hiramoto Travel Award
2014	First Prize for Poster Presentation at Annual UAB Microbiology Research Retreat
2013	UAB Spring Immunology Symposium Award
2010, 2011	Tianjiu Innovation Research Scholarship
2010	Shanghai Pudong Development Bank Scholarship

**Selected Presentations**

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.
2012	Annual UAB Microbiology Research Retreat, Sandestin, FL.