
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.
- Advanced skills in cellular immunology assays including flow cytometry and cell culture.
- Proficient in using R and bioinformatics methods for the analysis of next-generation sequencing data, high-dimensional single-cell data, and T cell receptor repertoire.
- 4 years of experience in programming using Python for web development and data analysis.
- Demonstrated ability to develop hypotheses, design experiments, and manage research projects.
- Strong public speaking and communication skills, as evidenced by 12 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, RNA isolation, real-time PCR, murine viral infection models, and isolation of primary cells from murine tissues.
- **Programming and Bioinformatics:** Python, R, Bioconductor packages, Gene Set Enrichment Analysis (GSEA), Ingenuity Pathway Analysis (IPA), MiXCR, Pandas, Django, TensorFlow, Keras, Unix, Javascript/jQuery, HTML, and CSS.

Research Experience

Jun 2016–present Postdoctoral Fellow

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

- Investigate the immune signatures of T cell responses following dengue virus (DENV) infection and vaccination.
- Perform bioinformatics analysis of RNA-sequencing data and T cell receptor repertoire using R and various bioinformatics methods such as DESeq2, MiXCR, GSEA, and IPA.
- Introduce CyTOF to the laboratory and conduct high-dimensional single-cell analysis using algorithms such as viSNE and SPADE.

Aug 2011–May 2016 Graduate Research Assistant

Department of Microbiology, University of Alabama at Birmingham

- Elucidated the roles of two cytokines, including IL-21 and IL-10, in T cell differentiation under homeostatic conditions and following viral infections.
- Conducted independent research utilizing various techniques including flow cytometry, cell culture, ELISA, ELISPOT, and real-time PCR.
- Published 3 first-author papers and delivered 12 oral/poster presentations.

Sep 2009–Jul 2011 Undergraduate Researcher

Department of Bioengineering, Tianjin University

- Designed and conducted experiments aimed at the isolation and characterization of 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, 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. *Co-author
- **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
2011	Tianjiu Innovation Research Scholarship
2010	Shanghai Pudong Development Bank Scholarship

Presentations**Oral**

- 2016 AAI Annual Meeting, Seattle, WA. "A context-dependent role for IL-21 in modulating the differentiation, distribution, and abundance of effector and memory CD8 T cell subsets"
- 2015 Annual UAB Microbiology Research Retreat, Chattanooga, TN. "Regulation of CD8 T cell subsets by IL-21"
- 2015 AAI Annual Meeting, New Orleans, LA. "IL-21 signaling modulates the differentiation, distribution, and abundance of CD8 T cell subsets"
- 2015 UAB Graduate Student Research Days, Birmingham, AL. "A context-dependent role of interleukin-21 in modulating CD8 T cell responses"
- 2014 UAB Graduate Student Research Days, Birmingham, AL. "IL-21 signaling modulates the generation and maintenance of CD8 T cell subsets"
- 2013 Annual UAB Microbiology Research Retreat, Columbiana, AL. "The role of IL-21 in memory CD8 T cell differentiation and maintenance"

Poster

- 2017 AAI Annual Meeting, Washington, D.C. "Human CD4 memory T cells re-expressing CD45RA (TEMRA) fall into distinct subsets with different phenotypic characteristics and levels of clonal expansion"
- 2016 AAI Annual Meeting, Seattle, WA. "A context-dependent role for IL-21 in modulating the differentiation, distribution, and abundance of effector and memory CD8 T cell subsets"
- 2015 AAI Annual Meeting, New Orleans, LA. "IL-21 signaling modulates the differentiation, distribution, and abundance of CD8 T cell subsets"
- 2014 Annual UAB Microbiology Research Retreat, Rogersville, AL. "IL-21 signaling modulates the differentiation, distribution, and abundance of CD8 T cell subsets"
- 2014 Southeastern Immunology Symposium, Atlanta, GA. "IL-21 signaling modulates the differentiation, distribution, and abundance of CD8 T cell subsets"
- 2013 Spring Immunology Symposium, Birmingham, AL. "The role of IL-21 in memory CD8 T cell differentiation and maintenance"