

Curriculum Vitae
Tong Wang, M.D., Ph.D.

Contact

towang@stanford.edu

Education

Stanford School of Medicine, Department of Pathology
Physician Scientist Faculty Incubator Resident
Chief Resident in Clinical Pathology (2024 – 2025)
Medical Resident in Clinical Pathology (2023 – current)
National Provider Identifier: 1730877929

Perelman School of Medicine at the University of Pennsylvania
M.D., 2023
Ph.D. in Biochemistry and Molecular Biophysics, 2021

University of Wisconsin—Madison, College of Letters and Science,
B.S., Honors in Chemistry, 2015

Research Interests

CRISPR therapy, chemical biology, nucleic acids, epigenetics, protein engineering, assay development, lab directorship, diagnostic stewardship

Experience

Department of Genetics, Stanford School of Medicine
Faculty Mentor: Professor William Greenleaf, Ph.D.
Researcher: January 2024 – current

Department of Genetics, Perelman School of Medicine
Faculty Mentor: Professor Hao Wu, Ph.D.
Researcher: January 2023 – May 2023
Project: Non-canonical cytosine methylation

Biochemistry and Molecular Biophysics Graduate Group, Perelman School of Medicine
Faculty Mentor: Professor Rahul M. Kohli, M.D., Ph.D.
Dissertation Student: September 2017 – July 2021
Project: Bisulfite-free epigenetic sequencing
Funding: Cambridge Epigenetix (CEGX) Training Fellowship, 2019-2021

Department of Chemistry, University of Wisconsin—Madison
Faculty Mentor: Professor Samuel H. Gellman, Ph.D.
Undergraduate Researcher: January 2012 – May 2015
Project: Recognition of α/β peptides by the adaptive immune system

MRC Laboratory of Molecular Biology, University of Cambridge
Faculty Mentor: Professor Jason W. Chin, Ph.D.
Visiting Researcher: Summer 2014
Project: Synthesis of glycosylated amino acids for genetic code expansion

First Author Peer Reviewed Publications

- 1) **Wang, T.** and Silva, O. HHV8+ Diffuse large B-cell lymphoma with EBV coinfection occurring post-transplant. *Blood*. **2024**. 144 (6): 677. <https://doi.org/10.1182/blood.2024025072>. (case report)
- 2) **Wang, T.**; Pizarro-Falcon, S.; Quiros, A.; Bowen, R. A. R. Particulate Matter in Water: An Overlooked Source of Preanalytical Error Producing Erroneous Chemistry Test Results. *Clin Chem Lab Med*. **2024**. <https://doi.org/10.1515/cclm-2024-1151>. (case report)
- 3) **Wang, T.***; Park, B.*; Anderson, G.; Shaller, B.; Budvytiene, I.; Banaei, N. Application of Diagnostic Stewardship to Fungal PCR: Low Yield of Follow-up Testing on Plasma and BAL After a Negative Result. *Clinical Infectious Diseases*, **2024**. 79 (4), 944-952. <https://doi.org/10.1093/cid/ciae382>.
Stanford Department of Pathology Whitlock Prize 2024
- 4) **Wang, T.**; Fowler, J. M.; Liu, L.; Loo, C. E.; Luo, M.; Schutsky, E. K.; Berríos, K. N.; DeNizio, J. E.; Dvorak, A.; Downey, N.; Montermoso, S.; Pingul, B.; Nasrallah, M.; Gosal, W.; Wu, H.; Kohli, R. M. Unnatural DNA modifications enable direct enzymatic sequencing of 5-methylcytosine at single base resolution. *Nature Chemical Biology* **2023**. 19, 1004–1012.* <https://doi.org/10.1038/s41589-023-01318-1>.

This work represents the technological foundation of two patents and a pre-seed diagnostic company ACE Genomics Inc. It additionally describes unappreciated bias in a Base Genomics technology called TAPS that was recently acquired by Exact Sciences for use in liquid biopsy.

News and Views:

Abakir, A.; Reik, W. Direct methylation sequencing. *Nat Chem Biol* **2023**.
<https://doi.org/10.1038/s41589-023-01356-9>

Highlighted by:

Video Interview, NHGRI Genome Technology Development Coordinating Center:
<https://www.youtube.com/watch?v=-Tv80wSS1FI>

Genetic and Engineering Biotechnology News:
<https://www.genengnews.com/topics/omics/novel-dm-seq-method-profiles-5mc-at-single-base-resolution-using-nanograms-of-dna/>

Epigenie:
<https://epigenie.com/dm-seq-a-dm-youll-want-to-slide-into-for-direct-methylation-sequencing-of-cytosines/>

- 5) **Wang, T.**; Loo, C. E.; Kohli, R. M. Enzymatic approaches for profiling cytosine methylation and hydroxymethylation. *Molecular Metabolism*. **2022**, 57, 101314. (review)

- 6) **Wang, T** and Kohli, R. M. Discovery of an Unnatural DNA Modification Derived from a Natural Secondary Metabolite. *Cell Chemical Biology*. **2021**, 28, 1-8.
Austrian Basic Science Award, 2020

This work describes the discovery of the new DNA base 5-carboxymethylcytosine and the enzyme that creates it for the first time.

- 7) **Wang, T.**; Luo, M; Berríos, K. N.; Schutsky, E. K.; Wu, H.; Kohli, R. M. Bisulfite-Free Sequencing of 5-Hydroxymethylcytosine with APOBEC-Coupled Epigenetic Sequencing (ACE-Seq). *Methods in Molecular Biology* **2021**, 349-367. (book chapter)

*co-first authors

Coauthor Peer Reviewed Publications

- 1) Jamal, J. A.; Nicholas, J. A.; **Wang, T.**; Abdelmonem, M.; Pandey, S.; Virk, M. S. Serologic investigation and management of an antibody screen negative para-Bombay phenotype during pregnancy. *Transfusion Medicine* **2025**. <http://doi.org/10.1111/tme.70000> .
- 2) Loo, C. E.*; Hix, M. A.*; **Wang, T.**; Cisneros, G. A.*; Kohli, R. M.* Revealing drivers for carboxy-S-adenosyl-L-methionine use by neomorphic variants of a DNA methyltransferase. *ACS Chemical Biology*, **2023**. <https://doi.org/10.1021/acscchembio.3c00184>.
- 3) Fabyanic, E. B.*; Hu, P.*; Qiu, Q.*; Berríos, K. N.; Connolly, D. R.; **Wang, T.**; Flournoy, J.; Zhou, Z.; Kohli, R. M.; Wu, H. Joint profiling of 5hmC and 5mC in single cells resolves epigenetic base ambiguity and reveals regulatory strategies of cell-type specific genes by TET dioxygenases. *Nature Biotechnology* **2023**. <https://doi.org/10.1038/s41587-023-01909-2>.
- 4) Barka, A.*; Berríos, K. N.*; Bailer, P.; Schutsky, E. K.; **Wang, T.**; Kohli, R. M. The base-editing enzyme APOBEC3A catalyzes cytosine deamination in RNA with low proficiency and high selectivity. *ACS Chemical Biology*, **2022**, 17 (3), 629–636
- 5) Wu, M.*; Shi, L.*; Dubrot, J.*; Merritt, J.; Vijay, V.; Wei, T.; Kessler, E.; Olander, K.; Adli, R.; Tummala, K. S.; Weersekara, V.; Zhen, Y.; Qibiao, W.; Luo, M.; Shen, W.; Garcia-Beccaria, M.; Fernandez, M.; Hudson, C.; Ronseaux, S.; Sun, Y.; Saad-Berreta R.; Jenkins, R. W.; **Wang, T.**; Heikenwalder, M.; Nicolay, B.; Deshpande, V.; Kohli, R. M.; Zheng, H.; Manguso, R.*; Bardeesy, N. Mutant-IDH Inhibits TET2-Interferon Signaling to Promote Immune evasion and Tumor Maintenance in Cholangiocarcinoma. *Cancer Discovery* **2021**. 21-1077.
- 6) Berríos, K. N.; Evitt, N. H.; DeWeerd, R.; Ren, D.; Luo, M.; Barka, A.; **Wang, T.**; Bartman, C. R.; Lan, Y.; Green, A. M.; Shi, J.*; Kohli, R. M.*. Split-Engineered Base Editors for Controllable Genome Editing. *Nature Chemical Biology*. **2021**, 17, 1262-1270.
- 7) Caldwell, B. A.; Liu, M. Y.; Prasasya, R. D; **Wang, T.**; DeNizio, J. E.; Leu, A. N.; Amoh, N. Y. A; Krapp, C.; Lan, Y.; Shields, E. J.; Bonasio, R.; Lengner, C. J.; Kohli, R. M.; Bartolomei, M. S. Functionally distinct roles for TET-oxidized 5-methylcytosine bases in somatic reprogramming to pluripotency. *Molecular Cell*. **2021**, 81, 1-11
- 8) Ghanty, U; **Wang, T.**; Kohli, R. M. Nucleobase Modifiers Identify TET Enzymes as Bifunctional DNA Dioxygenases Capable of Direct N-Demethylation. *Angew. Chem. Int. Ed.* **2020**, 59, 1-5.
- 9) Cheloha, R. W.; Woodham, A. W.; Bousbaine, D.; **Wang, T.**; Liu, S.; Sidney, J.; Sette, A.; Gellman, S. H.; Ploegh, H. L. Recognition of Class II MHC Peptide Ligands That Contain β -Amino Acids. *J. Immunol.* **2019**. 203 (6). 1619-1628.
- 10) Cheloha, R. W.; Sullivan, J. A.; **Wang, T.**; Sand, J. M.; Sidney, J.; Sette, A.; Cook, M. E.; Suresh, M.; Gellman, S. H. Consequences of Periodic α -to- β 3 Residue Replacement for Immunological Recognition of Peptide Epitopes. *ACS Chemical Biology* **2015**, 10 (3), 844-854.

*co-first authors

Preprints

- 1) **Wang, T.**; Jessa, S.; Marinov, G. K.; Klemm, S.; Kundaje, A.; Greenleaf, W. J. Sensitive, direct detection of non-coding off-target base editor unwinding and editing in primary cells. *bioRxiv*. doi: <https://doi.org/10.1101/2025.09.25.678665>
- 2) Marinov, G. K.; Doughty, B. R.; Schaepe, J. M.; **Wang, T.**; Smith, M. M.; Chen, M.; Kundaje, A.; Sun, Z.; Greenleaf, W. J. The human transcription factor occupancy landscape viewed using high-resolution in situ base-conversion strand-specific single-molecule chromatin accessibility mapping. *bioRxiv*. doi: <https://doi.org/10.1101/2025.06.27.662080>

Submitted Manuscripts

- 1) Zhu, J. *; Loo, C. E. *; **Wang T**; Kohli, R. M. Fully enzymatic, Nondestructive Sequencing of 5-Methylcytosine with Direct Methylation Sequencing (DM-Seq). *Methods in Mol. Biol.*

External Oral Presentations

- 1) ACS National Meeting, San Francisco: 8/13/23 – 8/17/23
- 2) 7th Nucleic Acids Fusion Conference, Cancun, Mexico: 2/9/23 – 2/12/23
- 3) APSA Northeast Regional Conference, Virtual: 1/9/21-1/10/21
- 4) ACS National Meeting, Virtual: 8/17/20 – 8/20/20
- 5) Chemistry – Biology Interface Meeting, Philadelphia: 11/13/20
- 6) Cambridge Epigenetix (CEGX), Cambridge, United Kingdom: 7/22/19

Awards

Cambridge Epigenetix (CEGX) Training Fellowship, 2019-2021
Balduin Lucke Memorial Prize, 2021
Barry M. Goldwater Scholar, 2014
SCORE Program Research Fellow, 2013
Hilldale Undergraduate Research Fellow, 2013
Wisconsin Academic Excellence Scholarship, 2011-2015
Agustin A. Ramirez Jr. Family Foundation Scholarship, 2011-2015

Patents

Wang, T.; Schutsky, E, K.; Kohli, R. M. Compositions and Methods for DNA Cytosine Carboxymethylation. 2021. US Patent Application 63027254.

Loo, C. E.; **Wang, T.**; Kohli, R. M. Modified Adapters for Enzymatic DNA Deamination and Methods of use thereof for Epigenetic Sequencing of Free and Immobilized DNA. 2022. US Patent Application 63220650.

Mentoring

Lillie Pankratz (high school student in Gellman Lab)
Meiqi Luo (research specialist in Kohli Lab)
Saira Monterroso (rotation student in Kohli Lab)
Bianca Pingul (rotation student in Kohli Lab)
Christian Loo (pre-candidacy graduate student in Kohli Lab)
Laura Liu (high school and undergraduate student in Kohli Lab)
Johanna Fowler (research specialist in Kohli Lab)
Saurav Nagpal (undergraduate student in Wu Lab)
Gavin Anderson (research specialist in the Banaei Lab)

Committees

Department of Pathology Teaching and Training Committee 2024-2025
GME Chief Resident Counsel 2024-2025
MD-PhD Steering Committee Representative 2020-2021
MD-PhD Retreat Planning Committee 2018
BGS Innovative Ideas Committee Member 2018

Volunteering

The COVID Tracking Project at the Atlantic, 3/2020-3/2021
Race and Ethnicity Data Collection
Scientific Communication Editorial Team

Health Science Exploration after-school program, 10/2015-12/2016
Huey Elementary School and Comegys Elementary School

Bylines

Wang, T. (2020, August 18). By wearing a Milwaukee Bucks mask, I hope people will stop asking me where I'm 'really' from. The Philadelphia Inquirer.
<https://www.inquirer.com/opinion/commentary/coronavirus-covid-masks-racism-chinese-american-20200818.html>

Guo, M., **Wang, T.**, & Chen, Y. (2021, April 05). Anti-Asian Racism in America. Penn Medicine Office of Diversity and Inclusion. <https://www.med.upenn.edu/inclusion-and-diversity/anti-asian-racism-in-america.html>

Houtman, J., Shultz, L., & **Wang, T.** (2021, February 25). Variants 101: FAQ. The Covid Tracking Project at the Atlantic. <https://covidtracking.com/analysis-updates/variants-101-faq>

Ledur, J., Rivera, J.M., & **Wang, T.** (2020, September 22). Test Positivity: So Valuable, So Easy to Misinterpret. The Covid Tracking Project at the Atlantic. <https://covidtracking.com/analysis-updates/test-positivity>

Wang, T., Rivera, J.M., & Ledur, J. (2020, June 29). The Other COVID-19 Metric We Should Be Using. The Covid Tracking Project at the Atlantic. <https://covidtracking.com/analysis-updates/the-other-covid-19-metric>

Peer Reviewer (ad hoc)

Annals of Family Medicine
Journal of American Chemical Society, Nature Chemistry, Biochemistry (all through Ph.D. advisor)

References

Rahul Kohli, MD, PhD, Associate Professor of Medicine, rkohli@pennmedicine.upenn.edu
Hao Wu, PhD, Associate Professor of Genetics, haowu2@pennmedicine.upenn.edu
Walraj Gosal, PhD, Director of Discovery at Biomodal, walraj@gmail.com
Niaz Banaei, MD, Professor of Pathology, Associate Program Director, nbanaei@stanford.edu
William Greenleaf, PhD, Professor of Genetics, wjg@stanford.edu