

# Zitian Tang

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## SUMMARY

Ph.D. with 7+ years of experience in translational genetics, computational genomics, and biomedical informatics. Strong communicator and collaborator passionate about translating bioinformatics research into real-world solutions.

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## EXPERIENCE

### Ph.D. Computational Genomics Researcher

Washington University School of Medicine

May 2023 - August 2025, St. Louis, MO

- Collaborated with external academic partners to develop computational frameworks for detecting disease-associated genetic markers, utilizing Python, R, and HPC environments.
- Applied robust statistical frameworks and algorithmic approaches for cross-validation against gold-standard PCR methods, optimizing accuracy to over 98%.

*Pipeline publicly available at <https://github.com/ztang99/STR-detection-genotyping.git> with proper Docker denoted; pipeline set up to run in any high-performance computing platforms; random forest, SVM, and DBSCAN utilized.*

- Integrated automated workflow management systems, including Snakemake, Cromwell, and SQL, to decrease large genomic data processing time by 65% across projects spanning over 100 TB of sequencing data.
- Constructed, curated, and released a high-confidence genomic variant benchmark set, leveraged an integrated pipeline tailored to varying coverages and allele frequency scenarios and reached a validation rate above 96%.

*Graph-based benchmark method specified at <https://github.com/ztang99/Graph-Based-TruthSet.git>; validation method using Cromwell workflow stored in <https://github.com/jinlab-washu/HapMap-TruthSet-Manuscript.git>.*

- Facilitated knowledge exchange by presenting research outcomes to multi-institutional teams comprising clinicians, molecular biologists, and data scientists, contributing to cross-disciplinary scientific advancements.

### Deep Learning Researcher

Washington University School of Medicine

August 2022 - May 2023, St. Louis, MO

- Engineered deep learning architectures combining PET and MRI imaging modals to enhance tissue discrimination accuracy in tumor segmentation by 10%, integrating convolutional neural networks with attention mechanisms via TensorFlow and PyTorch.
- Devised semi-supervised learning pipelines leveraging graph convolutional networks to integrate multi-omics data from over 1,000 patient samples, increasing biomarker discovery recall by 18% using Python, PyTorch, and scikit-learn.
  - OR: Engineered graph attention-based neural networks in PyTorch to identify pathogenic biomarkers, conducting model selection and performance tuning and reached an AUROC of 0.85+.

### Deep Learning Research Assistant

Georgia Institute of Technology

May 2021 - July 2022, Atlanta, GA

- Reconstructed CODEX protein location maps using information from surface proteins through UNET.
- Implemented semantic segmentation to enhance CNN classification model performance by 20%.
- Published 2021 IEEE Data Hackathon—COVID-19 Prediction from Lung Radiography Images Using Deep Learning.

### Engineering Intern

Motus Nova LLC

January 2022 - June 2022, Atlanta, GA

- Contributed to the manufacturing process of FDA-listed medical devices for stroke tele-rehabilitation by following established assembly protocols and utilizing precision tooling skills.
- Issue, manage, maintain, and revise device quality control systems.
- Perform clinical demonstrations to stroke survivors and redesign linkage structures to smooth device's donning process.

### Research & Development Team Intern

Huahui Health Ltd.

May 2020 - January 2021, Beijing, China

- Constructed three antibody libraries with 10 billion+ high-affinity functional antibody fragments.
- Increased antibody expression level by 10,000% using recombinant DNA technique.

### Drug Development Research Assistant

Georgia Institute of Technology

January 2019 - April 2020, Atlanta, GA

- Increased ApoE3 mediated nanoparticle homogeneity by 15% for drugs across the blood-brain barrier.
- Boosted average yield by 20% for human ApoE3, E4, ApoA1, and r4f-linked nanoparticles.

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## EDUCATION

**Ph.D. in Biomedical Informatics and Data Science**

Washington University School of Medicine • St. Louis, MO • 2026 • 4.00 GPA

**Bachelor of Science in Biomedical Engineering**

Minor in Computer Science (AI track) • Georgia Institute of Technology • Atlanta, GA • 2021 • 4.00 GPA

**AWARDS**

• Precision Medicine Pathway Fellow, Washington University School of Medicine	2023 - 2025
• Jackson Laboratory’s Human Genetics and Genomics: The McKusick Short Course Travel Reward	2023
• Outstanding Academic Achievements Award (Nomination), Georgia Institute of Technology	2021
• Faculty Honors and Dean’s List recipient, Georgia Institute of Technology	2018 - 2021

**SELECTED PUBLICATIONS / TALKS**

- Kong N\*, **Tang Z\***, et al. “A Comprehensive Benchmarking Resource for Somatic Variant Detection using HapMap Mixtures and Human Pangenome Graphs”. *In Revision at Cell*. (2025)
- **Tang Z\***, Ovunc S\*, et al. “Heterozygous and Homozygous *RFC1 AAGGG* Repeat Expansions are Common in Idiopathic Peripheral Neuropathy”. *In Revision at Ann Neurol*. (2025)
- Coorens THH, ...; **Somatic Mosaicism across Human Tissues Network**. “The somatic Mosaicism across Human Tissues Network”. *Nature*. 2025 Jul;643(8070):47-59. doi: 10.1038/s41586-025-09096-7. Epub 2025 Jul 2. PMID: 40604182.
- Choi J\*, **Tang Z\***, et al. “Unleashing the Power of Multi-Omics: Unraveling the Molecular Landscape of Peripheral Neuropathy”. *Ann Clin Transl Neurol*. 2025 Apr;12(4):674-685. doi: 10.1002/acn3.70019. Epub 2025 Mar 24. PMID: 40126913; PMCID: PMC12040521.
- **Invited Talk:** Program Showcase for Immersion at Washington University School of Medicine. *Nominated by graduate program faculty members*. Aug 2024.

**LEADERSHIP AND COMMUNITY INVOLVEMENT**

• InPrint Scientific communication network Member	2024 - Present
• Association for Women in Science (AWIS) Member	2023 - Present
• The Biotechnology and Life Science Advising (BALSA) Member	2022 - 2023
• Georgia Tech College of Computing Teaching Assistant (120 Students Officially Registered)	2018 - 2020
• Georgia Tech Biomedical Engineering Robotics Club Member	2019 - 2020
• Georgia Tech Grand Challenges Program	2018 - 2019

**PATENT AND RELEVANT COURSEWORK**

- A central-line catheter insertion process to reduce bloodstream infection (US 63/265,047)
- A mask with bionic convex surface structure to prevent contamination (CN207075608U).
- **Graduate:** Computational Statistical Genetics (A), Genomics (A), Intro to Biomedical Informatics and Data Science (A+)
- **Undergrad:** Intro to Object Oriented Programing (A), Data Structure and Algorithms (A), Machine Learning (A), Intro to Artificial Intelligence (A), Intro to Perception and Robotics (A)