Tianhe (Rory) Wu

B.S. in Applied Mathematics | B.A. in Biology
GPA: 3.99/4.00
Emory University
Atlanta, GA

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Education

•Emory University *Expected: May 2025*

B.S. in Applied Mathematics | B.A. in Biology Dean's List, Phi Eta Sigma, GPA: 3.9/4.0

– **Relevant Courses:** Data Strcture and Algorism, Mathematical Stats, Organic Chemistry, Neurology, Cancer Biology, Nonlinear Optimization, PDE, Numerical Analysis, Linear Algebra, Multi-variable Calculus, Real Analysis

Publication

– **Under Review at Acta Biomaterialia:** Li, Y., ..., **Wu, T.**, ... & Mao, H., A M2-Subtype Macrophage Targeted Magnetic Nanoparticle Probe for Magnetic Resonance Imaging of Tumor-Associated Macrophages in the Orthotopic Patient-tissue-derived xenograft Model of Glioblastoma.
– Mozhi, A., Ma, H., **Wu, T.**, ... & Mao, H. (2024) Shape-Dependent Cell Uptake of Iron Oxide Nanorods: Mechanisms of Endocytosis and Implications on Cell Labeling and Cellular Delivery. *Nanoscale.*
– Yao, L, & **Wu, T.**. (2024). Application and Regulatory Challenges of Artificial Intelligence/Machine Learning in Clinical Trials from the Perspectives of FDA Discussion, EMA Reflection Paper, and the Stakeholders' Comments. *China Food & Drug Admission Magazine.*
– Tang, L., **Wu, T.**, Hu, R., Gu, Q., Yang, X., Mao, H. (2024). Hemodynamic property incorporated brain tumor segmentation by deep learning and density-based analysis of dynamic susceptibility contrast-enhanced magnetic resonance imaging (MRI). *Quantitative Imaging in Medicine and Surgery*
– **Wu, T.**, Liu, C., Thamizhchelvan, A. M., Fleischer, C., Peng, X., Liu, G., & Mao, H. (2023). Label-free chemically and molecularly selective magnetic resonance imaging. *Chemical & Biomedical Imaging.*

Poster & Conference

– Tang, L., **Wu, T.**, Mao, H.. Hemodynamic Property Incorporated Brain Tumor Segmentation by Deep Learning and Density-Based Analysis of Dynamic Susceptibility Contrast-Enhanced MRI; Poster presented at *World Molecular Imaging Congress 2023*; 2023 Sep 6; Prague, Czech Republic.
– Martin E, Valavala N, **Wu T(Rory)**, Asante R, Taliaferro-Smith L. (All authors contributed equally) The Impact of c-Jun Initiated Tap63 Upregulation on TNBC Metastasis; Poster presented at *2023 Oxford College Research Scholar Symposium*; 2023 Apr 14; Oxford, GA.

Research Experience

•Winship Cancer Institute, Emory Medical School *Jun 2022 – Present*

Research Assistant; Supervised by Dr.Hui Mao Atlanta, GA

– Investigated shape-dependent cellular uptake of iron oxide nanorods (IONR) with different aspect ratios, revealing that larger IONRs exhibited higher uptake in macrophages and cancer cells via distinct endocytosis pathways.
– Participated in the development of an MRI probe using sub-5 nm ultrafine iron oxide nanoparticles (uIONP) with M2-specific peptides (M2pep) to target pro-tumoral M2 tumor-associated macrophages (TAM) in glioblastoma, achieving 88.7-fold higher tumor accumulation and superior MRI contrast compared to Ferumoxytol, enabling non-invasive imaging of TIME changes.
– Developed novel U-Net/HDBScan model to incorporate hemodynamic properties into brain tumor segmentation using dynamic susceptibility contrast-enhanced MRI
– Enhanced glioblastoma prognosis by integrating DSC perfusion MRI hemodynamic features with HDBNet for feature extraction and XGBoost for prediction, achieving 0.72 ROC-AUC accuracy for 10- and 16-month survival outcomes
– Developed Learning Based Confocal Signal Identification Algorism, Python-based

•Department of Biomedical Infomatic, Emory Medical School *Jan 2024 - Present*

Student Researcher; Supervised by Dr.Hyeok Kwon Atlanta, GA

– Developing Self-Supervised Pre-Training for Diffusion Transformers through Human Motion Reconstruction for Few-Shot Severity Classification
– Developing Foundational Generative AI Model for Movement Disorder with GAN, Diffusion-based Architecture

•Biology Department of Oxford College, Emory University *Aug 2022 - May 2023*

Student Researcher; Supervised by Dr.Taliaferro-Smith Oxford, GA

– Investigated the effect of Tap63a upregulation through c-Jun in Triple Negative Breast Cancer

•Tsinghua University & Bluepha *Nov 2018 – Dec 2019*

Captain of IGEM Team BESA-China Beijing, China

– Co-led a team of fifteen to design NEZHA, a noncanonical amino acid controlled, extraordinarily sensitive, modularized, heavy metal sensor, and absorber

Leadership Experience

•Emory International Pre-health Organization *May 2022 - Present*

Co-President of 2024 | Chair of Academic Development 2023 | Member of Oxford Committee 2022

– Spearheading the coordination and integration of 7 distinct departments and committees
– Leading a dynamic team of 30+ members distributed across two campuses
– Curated and refined over 50 weekly newsletters, engaging an audience of 350 subscribers
– Conceptualized and executed 5 professional career panels, featuring 20 Academic/Industry experts

•International Student Advocacy Board *August 2021 – Sep 2022*

Representative

– Gathered opinions from the international student body and provided feedback to the International Students' Office
– Coordinated summer housing availability for incoming international students
– Coordinated 2 faculty-student panel

Technical Skills

Languages: Native in Mandarin, Proficient in English, Beginner in Latin
Developer Tools: Python, Rust, Bash, Linux, Java, MATLAB, R, FSL
Experimental Tools: MRI, Confocal Microscopy, Flow Cytometry, Cell Culture, PCR, Western Blot