# Ling Liao

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## Professional Summary

Bioinformatics Ph.D. candidate passionate about developing predictive models using interpretable machine learning and deep learning approaches, applied to multi-source biomedical data.

**Skills:** Python • PyTorch • scikit-learn • Scanpy • tidyverse • Docker • Bash • Git

## Education & Awards

09/2021 – Present **Washington University School of Medicine**, PhD in Bioinformatics

Fellowship: Around 20 students selected from all graduate programs at Washington University annually, McDonnell International Scholars Academy (2021-Present)

09/2017 – 06/2020 **Tsinghua University**, MS in Biomedical Engineering

Award: Top 5 in the Open FIESTA program, Tsinghua Shenzhen International Graduate School (2018)

09/2013 – 06/2017 **Taiyuan University of Technology**, BS in Engineering

## Research Experience

- **Therapeutic Targets Identification:** Develop deep learning frameworks to predict co-regulated gene expression from micro-level histopathology image spots, identifying potential therapeutic targets in breast and lung cancers.
- **Interpretable ML for EHR:** Design subgroup-aware machine learning models for electronic health records, enabling patient subgroup identification and subgroup-specific risk alerts.
- **ICU Mortality Prediction Interpretation:** Benchmark multiple interpretability methods to identify key clinical predictors and improve reliability of ICU mortality predictions.
- **Breast Cancer Diagnosis:** Build reproducible pipelines for breast cancer diagnosis using the CBIS-DDSM dataset, improving transparency and reproducibility.

## Publications

*† corresponding author, * co-first author*

[1] **Ling Liao†,** Eva Aagaard†. An MLI-Guided Framework for Subgroup-Aware Modeling in Electronic Health Records (AdaptHetero). (submitted, 2025)

[2] **Ling Liao†,** Eva Aagaard†. Translating Machine Learning Interpretability into Clinical Insights for ICU Mortality Prediction. (submitted, 2025)

[3] **Ling Liao†.** Inequality in Breast Cancer: Global Statistics from 2022 to 2050. *The Breast* (2024)

[4] **Ling Liao†,** Eva Aagaard. An Open Codebase to Enhance Reliability in Deep Learning-Based Breast Cancer Diagnosis. *Sci Rep* (2024)

[5] Haowen Zhou, ..., **Ling Liao**, et al. Length-Scale Study in Deep Learning Prediction for Non-Small Cell Lung Cancer Brain Metastasis. *Sci Rep* (2024)

[6] Wei Wang*, **Ling Liao***, et al. An intelligent nanoscale insulin delivery system. *Molecules* (2018)

[7] Xiaobing Zhang, ..., **Ling Liao**, et al. Effects of mogrosides on high-fat-diet-induced obesity and nonalcoholic fatty liver disease in mice. *Molecules* (2018)

[8] Chang Hai, ..., **Ling Liao**, et al. Effects of SiCp content on the microstructure and mechanical properties of SiCp/Mg-5Al-2Ca composites. *Rare Metal Materials and Engineering* (2018)