

# YUELIN YAO

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🌐 <https://yuelinyao.github.io/>

## Education

- Nov 2020 – Nov 2024 📖 **Ph.D. Computational biology, University of Edinburgh, UK**  
School of Informatics, IANC: Machine Learning, Computational Neuroscience, Computational Biology.  
Thesis: *High order expression dependencies finely resolve cell (sub)type and state in single cell data.*  
Supervisors: Ava Khamseh, Chris Ponting and Luke Boulter
- Sep 2019 – Sep 2020 📖 **M.Sc. Bioinformatics, University of Edinburgh, UK**  
School of Biological Sciences, Graduated with Distinction.  
Thesis: *Comparative transcriptome in large-scale human and cattle populations.*  
Supervisors: Lingzhao Fang
- Sep 2015 – Jun 2019 📖 **B.Sc. Plant Protection, Zhejiang University, China.**  
College of Agriculture and Biotechnology, GPA: 3.63/4.0.  
Thesis: *Functional analysis of genes related to development and reproduction of *Nilaparvata lugens*.*  
Supervisors: Yanyuan Bao

## Experience

### Mitochondrial Genomics: Chinnery Group, University of Cambridge

- Aug 2024 - Ongoing 📖 Deciphering mtDNA mutations during embryonic development by single-cell multi-omics approach
- 📖 Developing and applying bioinformatics pipeline to study single cell genomics in neurodegenerative & mitochondrial disease.

### Biomedical AI: Khamseh Group, University of Edinburgh

- Nov 2020 - Nov 2024 📖 Developed state-of-the-art pipeline and computational tools for **scRNA-seq** data analysis.  
📖 Estimated **mutational interactions** across pancancer from WGS data.  
📖 Received training in **Causality in Biomedicine Course**, and **Neuromatch Deep Learning Course**.
- Jan 2022 - Nov 2024 📖 Teaching, Tutor and marker of **Methods for Causal Inference Course**.  
📖 **Supervised** Bachelor's thesis & MSc dissertations.
- Dec 2023 📖 Presented poster at **CSHL Genome Informatics**, New York State, US.
- Nov 2022 📖 Presented poster at **CSHL The Biological Data Science conference**, New York State, US.
- Jun 2022 📖 Summer School. **Dynamics and Statistics of Cancer Evolution: Applying Mathematics to Experimental and Clinical Data** Summer School in Marseille, France.
- May 2021 📖 Presented poster at **CSHL The Biology of Genomes virtual conference**.

### Quantitative Genetics: Tenesa Group, University of Edinburgh

- Jan 2020 - Sep 2020 📖 Systematic comparison of **transcriptional landscape & eQTL** of all orthologous genes across major tissues among mammals.
- 📖 Integrative analysis of characterised regulatory elements with **large-scale GWAS** to understand shared & divergent genetic architecture underlying complex phenotypes.

## Awards and Achievements

- 2023  **The Scottish Informatics & Computer Science Alliance (SICSA) Research Scholar**
-  **Chinese Government Award for Outstanding Self-Financed Students Abroad**
-  **The Institute of Genetics and Cancer POGS Event Best Poster**
- 2022  **The Institute of Genetics and Cancer Early Career Award**
-  **Informatics Graduate School PGR Student Travel and Conference Fund**
- 2020  **School of Informatics PhD Scholarship, University of Edinburgh**

## Skills

- Coding**  R, Python, Java, SQL, HTML, Shell, Docker, Git, Nextflow,  $\LaTeX$ .
- Technical Skills**  Machine learning, Statistical modelling, High-throughput bioinformatics analysis.
- Languages**  Strong reading, writing and speaking competencies for English, Mandarin Chinese.

## Publications

- 1 D. Guan, Z. Bai, X. Zhu, ..., **Y. Yao**, *et al.*, "Genetic regulation of gene expression across multiple tissues in chickens," *Nature Genetics*, vol. 57, no. 5, pp. 1298–1308, 2025.
- 2 A. Jansma\*, **Y. Yao\***, J. Wolfe, *et al.*, "High order expression dependencies finely resolve cryptic states and subtypes in single cell data," *Molecular Systems Biology*, vol. 21, no. 2, pp. 173–207, 2025.
- 3 E. J. Jarman, A. Martinez Lyons, **Y. Yao**, *et al.*, "Epithelial state-transitions permit inflammation-induced tumorigenesis," *bioRxiv*, pp. 2025–06, 2025.
- 4 A. Walker, P. Olaizola, E. Brennan, E. J. Jarman, **Y. Yao**, *et al.*, "Tissue scarring provides a biomechanical framework to promote mammalian bile duct regeneration through the activation of integrin-src/fak signalling," *bioRxiv*, pp. 2025–04, 2025.
- 5 T. Jinyan, Y. Gao, ..., **Y. Yao**, *et al.*, "A compendium of genetic regulatory effects across pig tissues," *Nature Genetics*, pp. 1–12, 2024.
- 6 S. H. Waddell\*, **Y. Yao\***, P. Olaizola, *et al.*, "A TGF- $\beta$ -ECM-integrin signaling axis drives structural reconfiguration of the bile duct to promote polycystic liver disease," *Science Translational Medicine*, vol. 15, no. 713, eabq5930, 2023.
- 7 S. Liu, Y. Gao, O. Canela-Xandri, ..., **Y. Yao**, *et al.*, "A multi-tissue atlas of regulatory variants in cattle," *Nature Genetics*, vol. 54, no. 9, pp. 1438–1447, 2022.
- 8 W. Yang, J. Yu, **Y. Yao**, *et al.*, "Comparative immune-relevant transcriptome reveals the evolutionary basis of complex traits," *IScience*, vol. 25, no. 12, p. 105 572, 2022.
- 9 **Y. Yao\***, S. Liu\*, C. Xia\*, *et al.*, "Comparative transcriptome in large-scale human and cattle populations," *Genome Biology*, vol. 23, no. 1, pp. 1–24, 2022.
- 10 S. Mi, Y. Tang, ..., **Y. Yao**, *et al.*, "Protective roles of folic acid in the responses of bovine mammary epithelial cells to different virulent staphylococcus aureus strains," *Biology*, vol. 10, no. 11, p. 1164, 2021.
- 11 Z. Pan\*, **Y. Yao\***, H. Yin, *et al.*, "Pig genome functional annotation enhances the biological interpretation of complex traits and human disease," *Nature Communications*, vol. 12, no. 1, p. 5848, 2021.
- 12 W. Wang, R.-R. Yang, L.-Y. Peng, L. Zhang, **Y.-L. Yao**, and Y.-Y. Bao, "Proteolytic activity of the proteasome is required for female insect reproduction," *Open Biology*, vol. 11, no. 2, p. 200 251, 2021.