

YANCHANG BIAN

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My Personal Website

EDUCATION

Shandong University, Qingdao, China

September 2021 – June 2025

B.S. in Biology Science

- GPA: 91.57/100; rank 1/25 in major.
- Selected coursework: Molecular Biology (99), Advanced Experiment of Biochemistry (98), Microbiology (96), Advanced Mathematics I (96), Advanced Mathematics II (91), Organic Chemistry (95), Physical Chemistry (94), Biochemistry I (93), Biochemistry II (94), and Cell Biology (93).

RESEARCH EXPERIENCE

University of California, San Francisco

October 2025 – Present

Junior Specialist, Cardiovascular Research Institute

Advisor: Prof. [Dengke Ma](#)

- Study membrane and metabolic remodeling during hypometabolic states in *Caenorhabditis elegans*. During liquid-induced suspended animation, observed loss of V-ATPase signal from the intestinal apical membrane. Blue native PAGE revealed a reduction in fully assembled V-ATPase complexes accompanied by increased abundance of the free V₁ sector, supporting V₁–V₀ complex disassembly. A similar loss of apical V-ATPase signal occurs during lethargus, the sleep-like phase associated with molting.
- Currently identifying a candidate regulator of fatty-acid oxidation from proteomic data, with structural modeling suggesting a potential interface with the ETFA/B complex. Purified the candidate protein, ETFA/B, and medium-chain acyl-CoA dehydrogenase and established a DCIP-based electron-transfer assay. Addition of the candidate protein caused a concentration-dependent reduction in electron-transfer activity; ongoing work is testing the in vivo relevance of this effect.
- Continued investigating the physiological role of TMEM161B in heme homeostasis. Following dietary heme supplementation, *C. elegans* lacking the TMEM161B ortholog displayed paler body coloration and lower whole-animal heme content than wild-type animals, consistent with reduced heme accumulation.

Tsinghua University

May 2025 – October 2025

Research Assistant, School of Basic Medical Sciences

Advisor: Prof. [Zhiyong Lou](#)

- Used cryo-EM to characterize the structure and higher-order assembly of the membrane protein TMEM161B.
- Determined that TMEM161B forms a C₂-symmetric homodimer and that these dimers further assemble into linear oligomers.
- Cryo-EM revealed additional density associated with a cytosolic loop of TMEM161B. Mutational analysis of this loop validated its role in heme binding, while quantitative ITC measurements established a stoichiometry of approximately four to five heme molecules per TMEM161B monomer.

Tsinghua University

August 2024 – May 2025

Undergraduate Researcher, IDG/McGovern Institute for Brain Research

Advisor: Prof. [Yinqing Li](#)

- Developed an *Escherichia coli* split-adenylate-cyclase dual-hybrid system to quantify interactions among transcription-factor intrinsically disordered regions using flow cytometry and amplicon sequencing.
- Validated the system with FUS, directly observed FUS condensates in *E. coli*, and generated a 16 × 16 IDR interaction matrix that recovered established interaction pairs, including MED1–BRD4.

Shandong University

May 2023 – July 2024

Undergraduate Researcher, State Key Laboratory of Microbial Technology

Advisor: Prof. [Guang Zhao](#)

- Characterized ArcA acetylation by Pat and acetyl phosphate and its deacetylation by CobB.
- Used site-directed mutagenesis, EMSA, and qRT-PCR to show that acetylation of specific lysine residues reduced ArcA DNA-binding activity and altered target-gene expression.

Westlake University

Undergraduate Researcher, School of Life Sciences

Advisor: Prof. [Zhubing Shi](#)

July 2023 – August 2023

- Purified PAF1 and P-TEFb transcription complexes for biochemical reconstitution using Ni-NTA and Strep-tag affinity purification, size-exclusion chromatography, and anion-exchange chromatography.
- Received training in ÄKTA chromatography and cryo-electron microscopy workflows.

Shandong University

Undergraduate Researcher, School of Life Sciences

Advisor: Prof. [Ye Hong](#)

September 2022 – May 2023

- Used RNA interference, auxin-inducible degradation, yeast two-hybrid assays, and immunofluorescence to investigate NATH-10 function in *C. elegans* reproduction and meiosis.
- Found that NATH-10 localized predominantly to the nucleolus, with no detectable interaction with the proposed chromosome-axis proteins.
- This project received the National First Prize in the China Undergraduate Life Sciences Contest.

PUBLICATIONS AND MANUSCRIPT

1. Yao, J., **Bian, Y.**, Xu, S., Liang, S., Ji, Z., Liu, J., Chen, Y., Rao, Z., Ma, D., and Lou, Z. Linear assembly of TMEM161B reveals a conserved mechanism for intracellular heme management. *Under review at Molecular Cell (first round)*. [Research poster](#)
2. Ji, Z., de Belly, H., Pandey, T., Wang, B., Tang, Y., Yao, J., Xu, S., Li, K., **Bian, Y.**, Guang, S., et al. A conserved antioxidant defense at the endoplasmic reticulum membrane. *Cell Rep.* **45**, 117489 (2026).
3. Ji, Z., Wang, B., Ma, Z., Verbakel, L., Liu, J., **Bian, Y.**, Zeng, W., Chung, C.-I., Wei, S., et al. A genetically encoded sensor of ionic stress links cellular proton dynamics to sleep. *Sci. Adv.* **12**, eaef3219 (2026).

TECHNICAL SKILLS

Molecular Biology: Molecular cloning, qRT-PCR, site-directed mutagenesis, amplicon-library preparation, CRISPR–Cas9 genome editing, RNA interference, lentiviral packaging, and transduction.

Protein Biochemistry: Recombinant protein expression and purification, Ni-NTA and Strep-tag affinity chromatography, size-exclusion chromatography, ion-exchange chromatography, ÄKTA systems, SDS-PAGE, Western blotting, EMSA, blue native PAGE, co-immunoprecipitation, ITC, and plate-reader-based enzyme assays.

Cell Biology and Imaging: Mammalian cell culture, transient transfection, lentiviral stable-cell generation, flow cytometry, immunofluorescence, live-cell imaging, spinning-disk confocal microscopy, and T12 negative-stain electron microscopy.

Data Analysis and Software: Codex, Claude Science, Python, RNA-seq analysis, Scanpy, FlowJo, ImageJ/Fiji, GraphPad Prism, SnapGene, Adobe Illustrator, and SPSS.

SELECTED HONORS AND AWARDS

- National Scholarship of China, 2022 and 2023
- National First Prize, China Undergraduate Life Sciences Contest, 2023
- First Prize, Shandong Provincial Biochemistry Experimental Skills Competition, 2024
- Shandong University Talent Award, Research and Innovation Category, 2023
- Shandong University Talent Award, Entrepreneurship and Practical Experience Category, 2023
- Shandong University Academic Scholarship, 2022 and 2023
- Merit Student of Shandong University, 2023

ADDITIONAL INFORMATION

Languages: Chinese, English (TOEFL 103).

Scientific interests: Protein biochemistry, membrane-protein structure, intrinsically disordered proteins, mitochondrial metabolism, redox biology, transcriptional regulation, quantitative cell biology, and biological physics.

Interests: Biological observation, nature photography, hiking, and biodiversity documentation. My iNaturalist: [inaturalist.org/people/ingester](https://www.inaturalist.org/people/ingester)