Yi-nan Xue

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EDUCATION

Zhejiang University of Technology (ZJUT) *Microbiology, Master of Science*, ***Sep 2022 - Jun 2025***

- Lab Leader: Prof. *Yuguo Zheng*; Direct Supervisor: Asst. Prof. *Junping Zhou*.
- Average Score: 91.56/100. Ranking: < 0.5%.
- Core Courses: Microbial Physiology and Metabolic Regulation (96/100), Molecular Biology and Gene Engineering (94/100).

Zhejiang Normal University (ZJNU) *Biological Science, Bachelor of Science*, ***Sep 2018 - Jun 2022***

- Average Score: 88.00/100.
- Core Courses: Molecular Biology (95/100), Genetics (93/100), Cell Biology (92/100), Advanced Mathematics (95/100).

PUBLICATIONS

[Note: In our lab, the supervisor is customarily listed as the first author for all publications by master's students.]

Cell factories for biosynthesis of D-glucaric acid (GA): a fusion of static and dynamic strategies [*Link*][*PDF*] *(IF: 4.00)*
Junping Zhou (supervisor), ***Yinan Xue***, *et al*, *Zhiqiang Liu*[*], *Yuguo Zheng*. ***World Journal of Microbiology & Biotechnology, 2024***

- Content: Summarized the shift from static strategies to dynamic regulations in reprogramming pathways for GA cell factories.
- Role: Structured, generated, and revised the whole manuscript.

Synthetic biology for *Monascus*: From strain breeding to industrial production [*Link*][*PDF*] *(IF: 3.20)*
Junping Zhou (supervisor), *Qilu Pan*, ***Yinan Xue***, *et al*, *Zhiqiang Liu*[*], *Yuguo Zheng*. ***Biotechnology Journal, 2024***

- Content: Reviewed the application of synthetic biology and fermentation control techniques in the production of *Monascus*.
- Role: Participated in structured, and generated the manuscript.

Metabolic engineering of *Escherichia coli* for production of D-panthenol from 3-aminopropanol and glucose *(IF: 9.30)*
Junping Zhou (supervisor), *Zheng Zhang*, *Xinyuan Xin*, ***Yinan Xue***, *et al*, *Zhiqiang Liu*[*], *Yuguo Zheng*. ***Green Chemistry***, *Accepted*

- Content: Achieved *de novo* D-panthenol biosynthesis, yielding 13.2 g/L in a 5 L bioreactor, enabling sustainable production.
- Role: Participated in experiments, provided suggestions, and reviewed the manuscript.

Alleviating substrate inhibition of leucine dehydrogenase (LeuDH) by enhancing NADH dissociation efficiency
Junping Zhou (supervisor), ***Yinan Xue***, *et al*, *Zhiqiang Liu*[*], *Yuguo Zheng*.

- Status: Ready to submit to ***Biotechnology and Bioengineering*.**
- Content: Relieved substrate inhibition of LeuDH by accelerating the breakdown of the substrate-NADH-enzyme complex.
- Role: Participated in experiments, performed data analysis, structured, generated, and revised the whole manuscript.

Efficient multi-enzyme system constructions for icaritin production from naringenin and prenol utilization in *Escherichia coli*
Anyi Wu, *Junping Zhou (supervisor)*, ***Yinan Xue***, *et al*, *Zhiqiang Liu*[*], *Yuguo Zheng*.

- Status: Under review at ***Journal of Agricultural and Food Chemistry.***
- Content: Developed a novel multi-enzyme system in *Escherichia coli* for the first-time production of icaritin.
- Role: Contributed to data analysis, and drafting of the manuscript.

Efficient L-arginine(L-Arg) production in *Escherichia coli* through multiple strategies
Xin Gao, *Junping Zhou (supervisor)*, ***Yinan Xue***, *et al*, *Zhiqiang Liu*[*],*Yuguo Zheng*.

- Status: Ready to submit to ***Journal of Agricultural and Food Chemistry.***
- Content: Obtained an efficient L-Arg-producing *E. coli* via donor transport, flux optimization, and energy conservation.
- Role: Contributed to experiment, data analysis, and drafting of the manuscript.

Other publications

- Artificial intelligence-assisted bioinformatics, microneedle, and diabetic wound healing: a "new deal" of an old drug, ***ACS Applied Materials & Interfaces, 2022*** (*IF: 8.30, cover paper*, ***9th author***, *participated in cell experiments*) [*Link*][*PDF*]

RESEARCH EXPERIENCES

Constructing a highly efficient *Escherichia coli* cell factory producing L-2-aminobutyric acid (L-2-ABA) ***Nov 2023 - Present***
Part of master's thesis

- Designed an efficient multi-enzymatic module for L-2-ABA production and integrated it into an L-threonine-producing strain.
- Redirected and rebalanced the metabolic flux of the chassis strain to maximize the production of L-2-ABA.

Expanding metabolism for biosynthesis of non-canonical amino acids derived from L-threonine (TncAAs) ***Apr 2023 - Nov 2023***
Part of master's thesis

- Integrated a carbon chain elongation module into an L-2-ABA-producing strain.
- Achieved production of 1.6 g/L L-norleucine (one of the TncAAs) after a 48 h shake flask.

Rational modification of leucine dehydrogenase (leuDH) from *Thermoactinomyces. intermedius* ***Apr 2023 - Nov 2023***
Complete with other students, ready for submission

- Rationally designed mutation sites around the NADH binding site.
- Attained two leuDH mutants with enhanced catalytic activity by accelerating the dissociation rate of the NAD(H).

INTERNSHIP EXPERIENCE

Zhejiang University ***Jan 2022 - Mar 2022***
Internship student, Micro/Nano Manipulation and Biomedical Robotics Laboratory

- Participated in laboratory project about diabetic wound healing, surveyed the thesis about dental robotics.

HONORS AND AWARDS

China National Scholarship **(< 4%)** ***2024***

ZJUT Academic Innovation Scholarship **(< 3%)** ***2024***

ZJUT First Prize Scholarship ***2023, 2024***

Outstanding Postgraduate, ZJUT **(< 3%)** ***2023***

Outstanding Graduate, College of Life Sciences, ZJNU ***2022***

China National Life Science Innovation and Entrepreneurship Competition, **Second Prize** ***2020***

Zhejiang Provincial Life Science Competition, **Third Prize** ***2020***

SKILLS

Wet Lab Skills: Molecular cloning, CRISPR-Cas9 editing, Enzyme purification & modification, Fermentation, HPLC maintenance, etc.

Software Skills: AutoDock, Pymol, ChimeraX, Snapgene, Primer Premier, Chemdraw, Illustrator, Origin, SPSS, Zotero, Latex, etc.

English Proficiency: IELTS (6.5), CET-6 (548).