Saisai Ding

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Education

Doctor of Philosophy in Food Science **August 2027(**Expected**)**
The Pennsylvania State University, University Park, PA
Research topics: Alternative proteins; Bioinformatics; Computational Biology

Bachelor of Engineering in Food Engineering **June 2021**
Jiangsu University of Science and Technology, Zhenjiang, China
Thesis: Endogenous Expression of Xylanase and Its Application Studies.

Research and professional experience

Research Assistant **August 2023 – Present**

Department of Food Science, University Park, PA

• Participate in three ongoing research projects.

- Conduct single-cell transcriptome analysis of plant cells to explore alternative proteins similar to Rubisco.
- Using QM/MM and molecular dynamics tools to study the enzymatic products and impact value of alternative protein candidates.
- Construct a graph neural network (deep learning) to predict the properties of proteins/peptides.

Research Scientist (R&D Manager) **December 2021 – March 2023**

Data & Intelligence Department, JoesFutureFood, China

• Led a team to develop cost-effective, efficient serum-free media for muscle stem cells using omics data analysis and virtual screening.

• Designed polypeptides using Rosetta and GROMACS to enhance cell adhesion to soy protein scaffolds, improving culture efficiency by 30%.

• Implemented and optimized deep learning models for rapid cell counting, achieving a 96-well plate analysis within 2 hours.

Research Impacts

Accelerate the cell-cultured meat industry: During my time at Joes Future Food, I utilized computational biology and bioinformatics to develop serum-free media, contributing to the successful

launch of the world's first 500L bioreactor for cell-cultured pork in China.

Reduce agricultural land use and environmental pollution: Future work will contribute to the progress of the cell-cultured meat career. The implementation of these novel meat production technologies will decrease dependency on agricultural land and mitigate pollution from livestock farming.

Research Achievements

Journal Articles:

1. **Ding, S.S.**, Zhu, J.P., Wang, Y., Yu, Y. and Zhao, Z., 2021. Recent progress in magnetic nanoparticles and mesoporous materials for enzyme immobilization: an update. *Brazilian Journal of Biology*, *82*.
2. **Ding, S.S.**, Zhu, J.P., Wang, Y., Wu, B. and Zhao, Z., 2020. Immobilization of the extracellular recombinant Lucky9 xylanase from *Bacillus subtilis* enhances activity at high temperature and pH. *FEBS Open bio*, *10*(12), pp.2733-2739.
3. Wang, L., **Ding, S.S.**, Zhang, N.J., Lu, Y., Geng, X. and Zhao, Z., 2022. The insecticidal activity of methyl benzoate against *Tribolium castaneum* by transcriptomic analysis and *in-silico* simulation. *Journal of Stored Products Research*, *97*, p.101972.

Patents:

1. Zhou Guanghong, **Ding Saisai,** Ding Shijie, Wu Zhongyuan, Li Jiamin, Tang Changbo. A segmentation method for adipocyte progenitor cells based on SUnet algorithm [P]. Jiangsu Province: CN114998360A, 2022-09-02.
2. Zhou Guanghong, **Ding Saisai**, Ding Shijie, Wu Zhongyuan, Li Jiamin, Tang Changbo. A method for predicting the concentration of serum-free medium components [P]. Jiangsu Province: CN115101118A, 2022-09-23.

Honors and Awards

EDITH and WILLIAM B. ROSSKAM, II memorial scholarship	**July 2023**
Excellent staff of the year – Joes Future Food	**November 2022**
First Level Scholarship - Jiangsu University of Science and Technology	**September 2020**
National Encouragement scholarship, China	**July 2019**
Excellent Student Cadre and Outstanding League Cadres	**March 2018**

Skills

Gene synthesis and cloning expression; Characterization of protein; Protein purification; Western Bolt NGS; Molecular Dynamic; Machine Learning; Python