

Liang Sun, Ph.D.

Postdoctoral Research Associate, 2020-Present, Principal Investigator: Dr. Chris Todd Hittinger
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EDUCATION

University of Illinois, Urbana-Champaign (UIUC), Carl R. Woese Institute for Genomic Biology, Center for Advanced Bioenergy and Bioproducts Innovation, 2016-2020

- Doctor of Philosophy in Food Science and Human Nutrition (Mentor: Dr. Yong-Su Jin)
- Thesis: "Engineering yeast to synthesize high-value natural products from plant cell wall"

China Agricultural University (CAU), 2014-2016

- Master of Engineering in Food Biotechnology (Mentor: Dr. Guo-Liang Yan, Dr. Chang-Qing Duan)
- Thesis: "Enhanced production of β -carotene in recombinant *Saccharomyces cerevisiae* by inverse metabolic engineering"

Beijing Forestry University (BJFU), 2010-2014

- Bachelor of Engineering in Food Science and Engineering (Mentor: Dr. Shan-Zhi Lin)
- Thesis: "Effects of exogenous fatty acids on growth and β -carotene biosynthesis in recombinant *Saccharomyces Cerevisiae*"

PUBLICATIONS

19. Sun, L., Zhang, G.-C., Kong, I.-I., Park, S., Cate, J., and Jin, Y.-S.* 2021 (under review). Enhanced xylohexose metabolism and bioconversion of autohydrolysates in *Saccharomyces cerevisiae* through rational and evolutionary engineering. *Bioresource Technology*.
18. Sun, L., Wang, Y.-R., Sun, Z.-Q., Zhang, G.-C., Xia, P.-F., and Jin, Y.-S.* 2021 (in preparation for *Metabolic Engineering*). Repurposing phosphite dehydrogenase as a NADH regenerator for metabolic engineering in *Saccharomyces cerevisiae*.
17. Seo, S.-O., Kim, H., Lane, S., Sun, L., Yavuz, M., Blaschek, H., Jin, Y.-S.* 2021 (under review). A dilemma of ethanol-free isobutanol production by engineered yeast: a promiscuous activity of ketoisovalerate decarboxylase with pyruvate. *Applied and Environmental Microbiology*.
16. Lee, J. W., Bhagwat, S. S., Kuanyshev, N., Cho, Y. B., Sun, L., Lee, Y. G., ... & Jin, Y. S. (2023). Rewiring yeast metabolism for producing 2, 3-butanediol and two downstream applications: Techno-economic analysis and life cycle assessment of methyl ethyl ketone (MEK) and agricultural biostimulant production. *Chemical Engineering Journal*, 451, 138886.
15. Lee, Y.-G., Ju, Y., Sun, L., Jin, Y.-S.* , Kim, S.R.* 2022. Acetate-rich cellulosic hydrolysates and their bioconversion by yeast. *Biotechnology and Bioprocess Engineering*. 1-10.
14. Lee, Y.-G., Kim, C., Sun, L., Lee, T.-H., Jin, Y.-S.* 2021. Selective production of retinol by engineered *Saccharomyces cerevisiae* through the expression of retinol dehydrogenase. *Biotechnology and Bioengineering*. 1-12.
13. Sun, L., Lee, J.-W., Yook, S., Lane, S., Sun, Z.-Q., and Jin, Y.-S.* 2021. Complete and efficient conversion of plant cell wall hemicellulose into high-value bioproducts by engineered yeast. *Nature Communications*. 12, 4975.
12. Sun, L., and Jin, Y.-S.* 2020. Xylose assimilation for the efficient production of biofuels and chemicals by engineered *Saccharomyces cerevisiae*. *Biotechnology Journal*. 2000142.
11. Sun, L., Atkinson, C., Lee, Y.-G., and Jin, Y.-S.* 2020. High-level β -carotene production from xylose by engineered *Saccharomyces cerevisiae* without overexpression of a truncated *HMG1* (*tHMG1*). *Biotechnology and Bioengineering*. 117, 3522.
10. Cheng, M.-S., Sun, L. (co-first), Jin, Y.-S., Dien, B., and Singh, V.* 2020. Production of xylose enriched hydrolysate from bioenergy sorghum and its conversion to β -carotene using an engineered *Saccharomyces cerevisiae*. *Bioresource Technology*. 308, 123275.
9. Sun, L., Kwak, S., and Jin, Y.-S.* 2019. Vitamin A production by engineered *Saccharomyces cerevisiae* from xylose via two-phase *in situ* extraction. *ACS Synthetic Biology*. 8, 2131–2140.
8. Zhang, L., Sun, L., Yi, H., Wang, S., Han, J., Liu, N., Zhang, S., and Zhang, L.* 2019. Comparative proteome analysis of *Streptomyces mobaraensis* under MgCl₂ stress shows proteins modulating differentiation and transglutaminase biosynthesis. *Food Research International*. 121, 622–632.

L. Sun - Curriculum Vitae

7. Bu, X., **Sun, L.**, Shang, F., and Yan, G.* 2017. Comparative metabolomics profiling of engineered *Saccharomyces cerevisiae* leads to a strategy that improving β -carotene production by acetate supplementation. *PLOS ONE* 12, e0188385.
6. Sun, Y., **Sun, L. (co-first)**, Shang, F., and Yan, G.* 2016. Enhanced production of β -carotene in recombinant *Saccharomyces cerevisiae* by inverse metabolic engineering with supplementation of unsaturated fatty acids. *Process Biochemistry*. 51, 568–577.
5. Liu, P., **Sun, L.**, Sun, Y., Shang, F., and Yan, G.* 2016. Decreased fluidity of cell membranes causes a metal ion deficiency in recombinant *Saccharomyces cerevisiae* producing carotenoids. *Journal of Industrial Microbiology and Biotechnology*. 43, 525–535.
4. **Sun, L.**, Shang, F., Duan, C., and Yan, G.* 2015. Reduction of fatty acid flux at low temperature led to enhancement of β -carotene biosynthesis in recombinant *Saccharomyces cerevisiae*. *Korean Journal of Chemical Engineering*. 32, 1354–1360.
3. Wang, Y., Lan, Y., **Sun, L.**, Zhu, B, He, F, Wang, J.* 2015. Effect of Extended Harvest on the Quality of 'Merlot' Grapes. *Acta Agriculturae Boreali-occidentalis Sinica*. 07, 84-91. (In Chinese)
2. Fan, Z., Xu, Q., Zhu, R., Chen, P., **Sun, L.**, Wang, J.* 2013. Effect of different blanching conditions on banana browning. *Science and Technology of Food Industry*. 16, 318-325. (In Chinese)
1. Fan, Z., **Sun, L.**, Zhu, R., Chen, P., Xu, Q., Wang, J.-Z.* , Zhang, C. 2013. Study on optimization of enzymatic hydrolysis process parameters by response surface methodology in preparing banana juice with liquid compound enzyme. *Science and Technology of Food Industry*. 20, 203-207. (In Chinese)

PRESENTATIONS

6. **Sun, L.**, and Jin, Y.-S. 2022. Complete and efficient conversion of plant cell wall hemicellulose into high-value bioproducts by engineered yeast. Invited Talk. SIMB Annual Meeting. San Francisco, CA, USA.
5. **Sun, L.**, Hittinger, C.T. 2022. Functional investigation of a horizontally-acquired bacterial operon in a sophorolipid-producing yeast. Poster Presentation. SIMB Annual Meeting. San Francisco, CA, USA.
4. **Sun, L.**, Hittinger, C.T. 2021. Functional and evolutionary investigation of a novel pathway in Lipomycetaceae family yeasts. Poster Presentation. GLBRC Annual Science Meeting, Online, USA.
3. **Sun, L.**, and Jin, Y.-S. 2019. Complete and efficient microbial conversion of hemicellulose fractions into valuable chemicals. Invited Talk. *Switchgrass V International Conference*. Champaign, IL, USA.
2. **Sun, L.**, Kwak, S., and Jin, Y.-S. 2019. Vitamin A production by engineered *Saccharomyces cerevisiae* from xylose via two-phase *in situ* extraction. ePoster Presentation. IFT19 Annual Meeting. New Orleans, LA, USA.
1. **Sun, L.**, Atkinson, C., and Jin, Y.-S. 2019. High-level β -carotene production from xylose by engineered *Saccharomyces cerevisiae*. Poster Presentation. IFT19 Annual Meeting. New Orleans, LA, USA.

HONORS AND AWARDS

- Henry D. and Donna E. Strunk scholarship merit award, UIUC, 2018-9
- Kathryn VanAken Burns Memorial Fund merit award, UIUC, 2016-7, 2017-8
- Government Award for Studying Abroad, China Scholarship Council, 2016-2020
- Outstanding Graduates, CAU, 2016
- First Prize Scholarship for Academic Excellence & COFCO Scholarship, CAU, 2015
- Second Prize Scholarship for Academic Excellence, CAU, 2014
- Second Prize Scholarship for Outstanding Student, BJFU, 2013
- Third Prize Scholarship for Outstanding Student, BJFU, 2012
- Merit Student & Second Prize Scholarship for Outstanding Student, BJFU, 2011

TEACHING AND MENTORING

- Teaching Assistant. *Communicating Evolutionary Biology*, Biology/Genetics 522, UW-Madison, Spring 2021
- Mentoring two undergraduate students Peiqi Zhang (current PhD student at Carnegie Mellon University), Ira Wang (current PhD student at WUSTL) and a master student Ziqiao Sun (current PhD student at Cornell University) in research projects, UIUC, 2018-9

EDITORIAL AND REVIEWING

- Review Editor for *Frontiers in Bioengineering and Biotechnology*; Guest Editor for *Nutrients*
- Reviewed 26 times for 13 SCI journals: *Critical Reviews in Biotechnology*; *Scientific Reports*; *Frontiers in Microbiology*; *Journal of Applied Microbiology*; *Applied Biochemistry and Biotechnology*; *Biochemical Engineering Journal*; *Process Biotechnology*; *Food Chemistry: X*; *Food Science and Human Wellness*; *Applied Engineering in Agriculture, Biological Engineering*; *Preparative Biochemistry and Biotechnology*; *Biotechnology Reports*; *Journal of Bioscience and Bioengineering*