Han Xiao

State Key Laboratory of Microbial Metabolism, Joint International Research Laboratory of Metabolic and Developmental Sciences, and Laboratory of Molecular Biochemical Engineering, School of Life Sciences and Biotechnology,
Shanghai Jiao Tong University, 800 Dongchuan Road, Shanghai, 200240, China
Tel: + 86 (21) 34206350 **E-mail:** smallhan@sjtu.edu.cn

PROFESSIONAL EXPERIENCE

2015.3-present: **Associate Professor**
State Key Laboratory of Microbial Metabolism, Joint International Research Laboratory of Metabolic and Developmental Sciences, and Laboratory of Molecular Biochemical Engineering, School of Life Sciences and Biotechnology, Shanghai Jiao Tong University, 800 Dongchuan Road, Shanghai, 200240, China

2012.8-2015.1: **Postdoctoral Associate**
Supervisor: Dr. Huimin Zhao
Departments of chemical and biomolecular engineering, 215 Roger Adams Laboratory, University of Illinois at Urbana-Champaign, 600 South Mathews Avenue, Urbana, IL 61801, USA

EDUCATION

2007.9-2012.6: **Ph.D. in Microbiology**
Supervisor: Dr. Sheng Yang
Key laboratory of synthetic biology
Institute of Plant Physiology and Ecology, Shanghai Institutes for Biological Sciences, Chinese Academy of Sciences
New building 1103, 300# Fenglin Road, Shanghai, 200032, China

2003.9-2007.7: **Bachelor of Science**
Biological science, College of life and basic sciences, Sichuan Agricultural University, China

RESEARCH INTERESTS

1. Metabolic Engineering
2. Genome Engineering
3. Synthetic Biology

PROFESSIONAL ACTIVITIES

Reviewer for *Biotechnology and Bioengineering*, *FEMS Yeast Research*, *Environmental Microbiology*, *Process Biochemistry*, *BMC Biotechnology*, *Bioprocess and Biosystems Engineering* and *Genetics and Molecular Research*.

SCIENTIFIC ACTIVITIES

1. 2019. Presentation. “Towards efficient bioproduction of anti-tumor ganoderic acids (GAs): genome editing and synthetic biology approaches”. The 2nd International Forum on Synthetic Biology, Nanjing, Jiangsu Province, China.

2. 2019. Presentation. “Towards efficient bioproduction of anti-tumor ganoderic acids (GAs): genome editing and synthetic biology approaches”. The 14th Asian Congress on Biotechnology, Taipei, Taiwan.
3. 2019. Presentation. “Towards efficient bioproduction of anti-tumor ganoderic acids (GAs): genome editing and synthetic biology approaches”. The 12th National Conference on Model Fungi. Tianjin, China.
4. 2019. Presentation. “Towards efficient bioproduction of anti-tumor ganoderic acids (GAs): genome editing and synthetic biology approaches”. The 4th Youth Science and Technology Forum of Chinese Society of Bioengineering. Shanghai, China.
5. 2018. Presentation. “Efficient biosynthesis of antitumor secondary metabolites ganoderic acids (GAs)”. The Annual Meeting of the Chinese Society for Microbiology in 2018, Nanchang, Jiangxi, China.
6. 2018. Presentation. “Efficient biosynthesis of antitumor secondary metabolites ganoderic acids (GAs)”. The 8th Annual Meeting of Fermentation Engineering in 2018, Wuxi, Jiangsu, China.
7. 2018. Presentation. “Biosynthesis of ganoderic acids (GAs) by *Saccharomyces cerevisiae*”. The Annual Meeting of Mycological Society of China 2018. Tai’an, Shandong, China.
8. 2018. Presentation. “Biosynthesis of ganoderic acids (GAs) by *Saccharomyces cerevisiae*.”. The Annual Meeting of Biochemical Engineering in 2018, Chengdu, Sichuan, China.
9. 2018. Presentation. “Biosynthesis of ganoderic acids (GAs) by *Saccharomyces cerevisiae*.” The Youth Academic Forum of State Key Laboratory of Microbial Metabolism. Shanghai, China.
10. 2017. Presentation. “Adopting genome editing and synthetic biology approaches to efficient biosynthesis of antitumor ganoderic acids”. The Youth Academic Forum on Biochemistry and Molecular Biology 2017. Shanghai, China.
11. 2017. Presentation. “Exploiting *Ganoderma lucidum* and *Saccharomyces cerevisiae* for production of anti-tumor ganoderic acids (GAs).” The Annual Meeting of Mycological Society of China 2017. Yichang, Hubei, China.
12. 2017. Presentation. “Towards efficient bioproduction of anti-tumor ganoderic acids (GAs): genome editing and synthetic biology approaches.” The 3rd Synthetic Biology Young Scholar Forum 2017. Shanghai, China.
13. 2017. Presentation. “Genome editing of higher fungi.” The Youth Academic Forum on Synthetic Biology, Shanghai, China.
14. 2015. Presentation. “Multiple gene disruption of *Saccharomyces cerevisiae* – a significant host in synthetic biology.” Asian Congress on Biotechnology 2015 (ACB2015). Kuala Lumpur, Malaysia.
15. 2015. Presentation. “One-step multiple gene disruptions in *Saccharomyces cerevisiae*.” The 8th National Conference on Model Fungi. Jinan, Shandong Province, China.
16. 2014. Presentation. “Genome-wide screen reveals the E3 SUMO-protein ligase gene *SIZ1* as a novel determinant of furfural tolerance in *Saccharomyces cerevisiae*.” AIChE 2014. Atlanta, USA.
17. 2014. Participant. The first KU-UIUC joint symposium on synthetic and systems biotechnology. UIUC, USA.
18. 2014. Poster. “Characterization and engineering of *Issatchenkia orientalis* SD108 for succinic acid production.” 4th Annual Postdoctoral Research Symposium. UIUC, USA.
19. 2013. Presentation. “Exploiting *Issatchenkia orientalis* SD108 as a new platform organism for organic acids production.” AIChE 2013. San Francisco, USA.
20. 2012. Participant. Metabolic Engineering IX. Biarritz, France.
21. 2011. Participant. CSHA Symposium: Design and synthesis of biological systems. Suzhou, China.

22. 2011. Participant. Enabling technology for synthetic biology, Six Academies Synthetic Biology Symposium II. Shanghai, China.
23. 2009. Participant. BBSRC-China workshop on biobutanol. Shanghai, China.
24. 2008. Participant and volunteer. The 21st IUBMB and 12th FAOBMB International Congress of Biochemistry and Molecular Biology. Shanghai, China.
25. 2008. Participant. Training course of new drug evaluation. The Second Military Medical University. Shanghai, China.

HONORS AND AWARDS

1. Sep. 2019 The DaSilva Award. The Society of Biotechnology, Okayama, Japan.
2. Oct. 2018 Keynote Speech Award and Presentation Award of the Annual Meeting of the Chinese Society for Microbiology in 2018, Nanchang, Jiangxi, China.
3. Jan. 2018 Chenxing Outstanding Young Scholar Award at Shanghai Jiao Tong University, Shanghai, China.
4. Sep. 2017 Presentation Award at the Youth Academic Forum on Biochemistry and Molecular Biology. Shanghai, China.
5. Jun. 2015 Presentation Award of the 8th National Conference on Model Fungi, Shandong province, China.
6. Jan. 2014 Best Poster of the 4th Annual Postdoctoral Research Symposium in UIUC, Urbana, USA.
7. Jan. 2014 Outstanding Paper of Sheng Wu Gong Cheng Xue Bao in 2013, China.
8. Sep. 2012 Third-place prize of Innovation Cup among university students in Shanghai, China.

PUBLICATIONS

1. Xiaoting Lan, Wei Yuan, Meng Wang***** and **Han Xiao*** (2019). Efficient biosynthesis of antitumor ganoderic acid HLDOA using a dual tunable system for optimizing the expression of CYP5150L8 and a *Ganoderma* P450 reductase. *Biotechnol Bioeng*, DOI: 10.1002/bit.27154.
2. Xin Song, **Han Xiao*** (co-first author), Shangwen Luo, Xiaozheng Wang, Wenfang Wang and Shuangjun Lin***** (2019). Biosynthesis of squalene-type triterpenoids in *Saccharomyces cerevisiae* by expression of CYP505D13 from *Ganoderma lucidum*. *Bioresour Bioprocess*, 6: 19.
3. Qin Wang, Shu Quan and **Han Xiao*** (2019). Towards efficient terpenoid biosynthesis: manipulating IPP and DMAPP supply. *Bioresour Bioprocess*, 6: 6.
4. **Han Xiao***, Yue Zhang and Meng Wang***** (2019). Discovery and engineering of cytochrome P450s for terpenoid biosynthesis. *Trends Biotechnol*, 37(6): 618-631.
5. Wen-Fang Wang, **Han Xiao*** (co-first author) and Jian-Jiang Zhong* (2018). Biosynthesis of a genoderic acid in *Saccharomyces cerevisiae* by expressing a cytochrome P450 gene from *Ganoderma lucidum*. *Biotechnol Bioeng*, 115(7): 1842-1854.
6. Zehua Bao, Mohammad HamediRad, Pu Xue, **Han Xiao**, Ipek Tasan, Ran Chao, Jing Liang and Huimin Zhao* (2018). Genome-scale engineering of *Saccharomyces cerevisiae* with single nucleotide precision. *Nature Biotechnol*, 36(6): 505-508.
7. Hao Qin, **Han Xiao*** (co-first author), Gen Zou, Zhihua Zhou and Jian-Jiang Zhong* (2017). CRISPR-Cas9 assisted gene disruption in the higher fungus *Ganoderma* species. *Process Biochem* 56: 57-61.
8. Zhiqiang Du, Yuan Zhang, Zhigang Qian, **Han Xiao** and Jian-Jiang Zhong* (2017). Combination of traditional mutation and metabolic engineering to enhance ansamitocin P-3 production in

Actinosynnema pretiosum. *Biotechnol Bioeng* 114(12): 2794-2806.

9. Jie Wang, **Han Xiao**, Zhigang Qian and Jian-Jiang Zhong* (2017). Bioproduction of antibody-drug conjugate payload precursors by engineered cell factories. *Trends Biotechnol* 35(5): 466-478.
10. **Han Xiao*** and Jian-Jiang Zhong* (2016). Production of useful terpenoids by higher-fungus cell factory and synthetic biology approaches. *Trends Biotechnol* 34(3): 242-255.
11. Hao Qin, Junwei Xu, Jianhui Xiao, Yajie Tang, **Han Xiao** and Jian-Jiang Zhong* (2016). Cell factories of higher fungi for useful metabolite production. *Adv Biochem Eng Biotechnol* 155: 199-235.
12. Tong Si, **Han Xiao** (co-first author) and Huimin Zhao* (2015). Rapid prototyping of microbial cell factories via genome-scale engineering. *Biotechnol Adv* 33(7):1420-1432.
13. **Han Xiao**, Zehua Bao and Huimin Zhao* (2015). High throughput screening and selection methods for directed enzyme evolution. *Ind Eng Chem Res* 54(16): 4011-4020.
14. Zehua Bao, **Han Xiao** (co-first author), Jing Liang, Lu Zhang, Xiong Xiong, Ning Sun, Tong Si and Huimin Zhao* (2015). Homology-Integrated CRISPR-Cas (HI-CRISPR) system for one-step multigene disruption in *Saccharomyces cerevisiae*. *ACS Synth Biol* 4(5):585-594. (Selected as the SCI-most cited paper)
15. **Han Xiao**, Zengyi Shao, Yu Jiang, Sudhanshu Dole and Huimin Zhao* (2014). Exploiting *Issatchenkia orientalis* SD108 for succinic acid production. *Microb Cell Fact* 13:121.
16. **Han Xiao** and Huimin Zhao* (2014). Genome-wide RNAi screen reveals the E3 SUMO-protein ligase gene *SIZ1* as a novel determinant of furfural tolerance in *Saccharomyces cerevisiae*. *Biotechnol Biofuels* 7:78.
17. Tong Si, Yunzi Luo, **Han Xiao** and Huimin Zhao* (2014). Utilizing an endogenous pathway for 1-butanol production in *Saccharomyces cerevisiae*. *Metab Eng* 22:60-68.
18. Zhilin Li, **Han Xiao** (co-first author), Weihong Jiang, Yu Jiang* and Sheng Yang* (2013). Improvement of butanol production from xylose mother liquor by engineering the xylose metabolic pathway in *Clostridium acetobutylicum* EA 2018. *Appl Biochem Biotechnol* 171(3): 555-568.
19. **Han Xiao**, Zhilin Li, Yu Jiang, Yunliu Yang, Weihong Jiang, Yang Gu* and Sheng Yang* (2012). Metabolic engineering of D-xylose pathway in *Clostridium beijerinckii* to optimize solvent production from xylose mother liquid. *Metab Eng* 14(5): 569-578.
20. **Han Xiao**, Yang Gu, Yuanyuan Ning, Yunliu Yang, W. J. Mitchell, Weihong Jiang*, Sheng Yang* (2011). Confirmation and elimination of xylose-metabolic bottlenecks in glucose-PTS-deficient *Clostridium acetobutylicum* to realize simultaneous utilization of glucose, xylose and arabinose. *Appl Environ Microbiol* 77(22): 7886-7895.
21. Yang Gu, Yu Jiang, Hui Wu, Xudong Liu, Zhilin Li, Jian Li, **Han Xiao**, Zhaobing Shen, Hongjun Dong, Yunliu Yang, Yin Li, Weihong Jiang and Sheng Yang (2011). Economical challenges to microbial producers of butanol: Feedstock, butanol ratio and titer. *Biotechnol J* 6(11): 1348-1357.
22. Junjie Yang, Wenchao Fan, **Han Xiao**, Chunhong Guan, Chuanzeng Cao, Haifeng Shao,Weihong Jiang, and Sheng Yang (2010). Genome shuffling method of *Bacillus Subtilis*. *Sheng Wu Gong Cheng Xue Bao* 26(10): 1385−1392. (Chinese).
23. Yang Gu, Yu Jiang, Hui Wu, Xudong Liu, Zhilin Li, Jian Li, **Han Xiao**, Zhaobing Shen, Jingbo Zhao, Yunliu Yang, Weihong Jiang and Sheng Yang (2010). Current status and prospects of biobutanol manufacturing technology. Sheng Wu Gong Cheng Xue Bao 26(7): 914-923. (Chinese, which is awarded as the outstanding paper by Sheng Wu Gong Cheng Xue Bao in 2013)
24. **Han Xiao** and Xue Yuan (2006). Research progress of physiological activity and application in soybean peptides. Sciencepaper Online. http://www.paper.edu.cn/releasepaper/content/200602-19.

(Chinese).

25. Xue Yuan and **Han Xiao** (2006). The summarization of research on cardiovascular protection of resveratrol. The Sciencepaper Online. http://www.paper.edu.cn/releasepaper/content/200602-102. (Chinese).

PATENTS

1. Yang Gu, **Han Xiao**, Weihong Jiang, Yuanyuan Ning, Zhilin Li, Yu Jiang, Zhe Sun, Sheng Yang. A method of improving sugar consumption of *Clostridium acetobutylicum* in mixed sugars fermentation. Chinese Patent. 2014.12.17. ZL201210163123.8.
2. Sheng Yang, **Han Xiao**, Yang Gu, Zhilin Li, Yu Jiang, Jun Chen, Feng Dong, Weihong Jiang. A method of improving D-xylose consumption of *Clostridium beijerinckii*. Chinese Patent. 2013.4.25. 201310147888.7.