



## 一. 姓名

**赵明**，博士，讲师，硕士生导师。本科毕业于安徽大学，并联合培养于中科院微生物研究所，博士毕业于华东理工大学，毕业后留校开展博士后研究工作，现任安徽工程大学生物与食品工程学院教师。本人长期致力于**合成生物学、微生物代谢工程、基因组工程**等领域研究。自主开发出独特的微生物元器件挖掘改造、全局调控及全基因定向进化新技术。近年来，主持承担国家重点研发计划子课题、安徽省科研编制计划优秀青年科研项目、中国博士后基金面上项目等多项国家及省部级科研任务，在 *ACS Synthetic Biology*、*Applied Microbiology and Biotechnology*、*Synthetic and Systems Biotechnology*、*Microbial Cell Factories* 等本领域重点期刊发表 SCI 论文 20 余篇，申请发明专利 3 项，获得“挑战杯”、“互联网+”等创新创业大赛国家级银奖、省部级金奖等。

## 二. 教育背景

- 2013.09-2019.01 华东理工大学，生物工程学院，博士（导师：任宇红 教授）
- 2011.03-2012.10 中国科学院微生物研究所，联合培养，学士（导师：刘翠华 研究员）
- 2008.09-2012.06 安徽大学，生命科学学院，学士

## 三. 工作经历

- 2022.03-至今 安徽工程大学，生物与食品工程学院
- 2019.04-2022.03 华东理工大学，生物工程学院，博士后（合作导师：魏东芝 教授）

## 四. 教学方面

分子生物学、合成生物学（研）

## 五. 科研方面

### 主持项目：

- 安徽省科研编制计划优秀青年科研项目，高值化合物人工生物合成体系创建及应用，2022.09-2025.08，2022AH030097，50 万，在研
- 芜湖市科技计划项目，25-羟基维生素 D3 生物合成工艺关键技术研究，2022.05-2024.04 2022jc19，4 万，在研

3. 国家重点研发计划子课题,通用型酶分子表达载体和宿主构建及优化,2021.07-2024.06, 2021YFC2100303, 147.3 万, 在研
4. 中国博士后科学基金第 67 批面上项目, 基于 CRISPR-Cas 随机切割与 DNA 修补的基因组工程研究, 2020.09-2022.03, 2020M671021, 8 万, 结题

代表性论文 (\*通讯作者) :

1. Kun Liu<sup>#</sup>, Yan Liu<sup>#</sup>, Xiangfei Li, Xiushan Zhang, Zhenglian Xue\*, **Ming Zhao\***. Efficient production of  $\alpha$ -ketoglutaric acid using an economical double-strain cultivation and catalysis system. **Applied Microbiology and Biotechnology**. 2023, accepted. (JCR Q1)
2. Zhenglian Xue<sup>#</sup>, Bingsheng Wang<sup>#</sup>, Changyu Qu, Mengdie Tao, Zhou Wang, Guoqiang Zhang, **Ming Zhao\***, Shiguang Zhao\*. Response of stress resistance in highland barley (*Hordeum vulgare L. var. nudum*) through phenylpropane metabolic pathway. **PLoS One**. 2023, accepted. (JCR Q2)
3. **Ming Zhao**, Mingrui Wang, Shuiling Wang, Liangbin Xiong, Bei Gao, Min Liu, Xinyi Tao\*, Feng-Qing Wang\*, Dongzhi Wei. A self-sustained system spanning the primary and secondary metabolism growth stages to boost the productivity of *Streptomyces*. **ACS Synthetic Biology**. 2022, 11: 353–365. (JCR Q1)
4. Liang-Bin Xiong, Hao-Hao Liu, Lu Song, Miao-Miao Dong, Jie Ke, Yong-Jun Liu, Ke Liu, **Ming Zhao\***, Feng-Qing Wang\*, Dong-Zhi Wei. Improving the biotransformation efficiency of soybean phytosterols in *Mycolicibacterium neoaurum* by the combined deletion of *fbpC3* and *embC* in cell envelope synthesis. **Synthetic and Systems Biotechnology**. 2022, 7: 453–459. (JCR Q1)
5. **Ming Zhao**, Miaomiao Gao, Liangbin Xiong, Yongjun Liu, Xinyi Tao, Bei Gao, Min Liu, Feng-Qing Wang\*, Dongzhi Wei\*. CRISPR-Cas assisted shotgun mutagenesis method for evolutionary genome engineering. **ACS Synthetic Biology**. 2022, 11, 1958–1970. (JCR Q1)
6. Yun-Qiu Zhao, Yong-Jun Liu, Wei-Ting Ji, Kun Liu, Bei Gao, Xin-Yi Tao, **Ming Zhao\***, Feng-Qing Wang\*, Dong-Zhi Wei. One-pot biosynthesis of 7 $\beta$ -hydroxyandrosta-4-ene-3,17-dione from phytosterols by cofactor regeneration system in engineered *Mycolicibacterium neoaurum*. **Microbial Cell Factories**. 2022, 21: 59. (JCR Q1)
7. **Ming Zhao**<sup>#</sup>, Yuting Li<sup>#</sup>, Fengqing Wang\*, Yuhong Ren\*, Dongzhi Wei. A CRISPRi mediated self-inducible system for dynamic regulation of TCA cycle and improvement of itaconic acid production in *Escherichia coli*. **Synthetic and Systems Biotechnology**. 2022, 7: 982–988. (JCR Q1)
8. Ke Liu, Gui-Hong Lin, Kun Liu, Yong-Jun Liu, Xin-Yi Tao, Bei Gao, **Ming Zhao\***, Dong-Zhi Wei\*\*, Feng-Qing Wang. Multiplexed site-specific genome engineering in *Mycolicibacterium neoaurum* by Att/Int system. **Synthetic and Systems Biotechnology**. 2022, 7: 1002–1011. (JCR Q1)
9. Liu-xiu Hu<sup>#</sup>, **Ming Zhao**<sup>#</sup>, Wen-song Hu, Meng-jie Zhou, Jun-bao Huang, Xi-lin Huang, Xu-li Gao, Ya-ni Luo, Chuang Li, Kun Liu, Zheng-lian Xue, and Yan Liu\*. Poly- $\gamma$ -glutamic

- acid production by engineering a DegU quorum-sensing circuit in *Bacillus subtilis*. **ACS Synthetic Biology**. 2022, 11: 4156–4170. (JCR Q1)
10. **Ming Zhao**, Shui-Ling Wang, Xin-Yi Tao\*, Guo-Ling Zhao, Yu-Hong Ren, Feng-Qing Wang\*, Dong-Zhi Wei. Engineering diverse eubacteria promoters for robust gene expression in *Streptomyces lividans*. **Journal of Biotechnology**. 2019, 289: 93–102. (JCR Q2)
  11. **Ming Zhao**, Xin-Yi Tao\*, Feng-Qing Wang\*, Yu-Hong Ren, Dong-Zhi Wei. Establishment of a low-dosage-IPTG inducible expression system construction method in *Escherichia coli*. **Journal of Basic Microbiology**. 2018, 7: 1–5. (JCR Q3)
  12. Kun Liu, Yunsen Zhang, Ke Liu, Yunqiu Zhao, Bei Gao, Xinyi Tao, **Ming Zhao**, Feng-Qing Wang\*, Dongzhi Wei\*. De novo design of a transcription factor for a progesterone biosensor. **Biosensors and Bioelectronics**. 2022, 203: 113897. (JCR Q1)
  13. Yong-Jun Liu, Wei-ting Ji, Lu Song, Xin-Yi Tao, Ming Zhao, Bei Gao, Hao Meng, Feng-Qing Wang\*, Dong-Zhi Wei. Transformation of phytosterols into pregnatetraenedione by a combined microbial and chemical process. **Green Chemistry**. 2022, 24: 3759-3771. (JCR Q1)
  14. Liang-Bin Xiong, Zhi-Yong Xie, Jie Ke, Li Wang, Bei Gao, Xin-Yi Tao, **Ming Zhao**, Ya-Ling Shen, Dong-Zhi Wei, Feng-Qing Wang\*. Engineering *Mycolicibacterium neoaurum* for the production of antioxidant ergothioneine. **Food Bioengineering**. 2022, 1: 26–36.
  15. Kun Liu, Feng-Qing Wang\*, **Ming Zhao**, Bei Gao, Hong Xu\*, Dongzhi Wei. Economic optimization of expression of soluble human epidermal growth factor in *Escherichia coli*. **Biotechnology letters**. 2022, 44: 1401-1414. (JCR Q3)
  16. Xiangfei Li, Fei Yu, Fang Wang, Sang Wang, Rumeng Han, Yihan Cheng, **Ming Zhao**, Junfeng Sun, Zhenglian Xue\*. Point mutation of V252 in neomycin C epimerase enlarges substrate-binding pocket and improves neomycin B accumulation in *Streptomyces fradiae*. **Bioresources and Bioprocessing**. 2022, 9: 1. (JCR Q2)
  17. Bing-Yao Sun, Hua-Lu Sui, Zi-Wei Liu, Xin-Yi Tao, Bei Gao, **Ming Zhao**, Yu-Shu Ma, Jian Zhao, Min Liu\*, Feng-Qing Wang\*, Dong-Zhi Wei. Structure-guided engineering of a flavin-containing monooxygenase for the efficient production of indirubin. **Bioresources and Bioprocessing**. 2022, 9: 7. (JCR Q2)
  18. Yuting Li, Ming Zhao, Dongzhi Wei, Jian Zhang\*, Yuhong Ren\*. Photocontrol of itaconic acid synthesis in *Escherichia coli*. **ACS Synthetic Biology**. 2022, 11: 2080–2088. (JCR Q1)
  19. Zhan-Tao Zhu, Meng-Meng Du, Bei Gao, Xin-Yi Tao, **Ming Zhao**, Yu-Hong Ren, Feng-Qing Wang\*, Dong-Zhi Wei. Metabolic compartmentalization in yeast mitochondria: Burden and solution for squalene overproduction. **Metabolic Engineering**. 2021, 68: 232–245. (JCR Q1)
  20. Min Liu, Yang-Chen Lin, Jiao-Jiao Guo, Meng-Meng Du, Xinyi Tao, Bei Gao, **Ming Zhao**, Yushu Ma, Feng-Qing Wang\*, Dong-Zhi Wei\*. High-level production of sesquiterpene patchoulol in *Saccharomyces cerevisiae*. **ACS Synthetic Biology**. 2021, 10: 158–172. (JCR Q1)

21. Liang-Bin Xiong, Hao-Hao Liu, **Ming Zhao**, Yong-Jun Liu, Lu Song, Zhi-Yong Xie, Yi-Xin Xu, Feng-Qing Wang\*, Dong-Zhi Wei. Enhancing the bioconversion of phytosterols to steroidal intermediates by the deficiency of kasB in the cell wall synthesis of *Mycobacterium neoaurum*. **Microbial Cell Factories**. 2020, 19: 80. (JCR Q1)
22. Guo-Song Liu, Tian Li, Wei Zhou, Min Jiang, Xin-Yi Tao, Min Liu, **Ming Zhao**, Yu-Hong Ren, Bei Gao\*, Feng-Qing Wang\*, Dong-Zhi Wei\*. The yeast peroxisome: A dynamic storage depot and subcellular factory for squalene overproduction. **Metabolic Engineering**. 2020, 57: 151–161. (JCR Q1)
23. Tian Li, Guo-Song Liu, Wei Zhou, Min Jiang, Yu-Hong Ren, Xin-Yi Tao, Min Liu, **Ming Zhao**, Feng-Qing Wang\*, Bei Gao\*, Dong-Zhi Wei. Metabolic Engineering of *Saccharomyces cerevisiae* to overproduce squalene. **Journal of Agricultural and Food Chemistry**. 2020, 68: 2132–2138. (JCR Q1)
24. Xinyi Tao, Ming Zhao, Ying Zhang, Min Liu, Qinghai Liu, Wei Wang, Feng-Qing Wang\*, Dongzhi Wei. Comparison of the expression of phospholipase D from *Streptomyces halstedii* in different hosts and its over-expression in *Streptomyces lividans*. **FEMS Microbiology Letters**. 2019, 366: 1–8. (JCR Q3)

#### 发明专利:

1. 陶欣艺, 王风清, 魏东芝, 贾宁, 陈能辉, **赵明**。一种酶促响应释放的磷脂酰纳米前药及其制备方法和应用。专利授权号: ZL201610399628.2
2. 王风清, **赵明**, 魏东芝, 高苗苗, 陶欣艺, 熊亮斌。一种基于 CRISPR-Cas 系统的全基因组随机突变方法及其应用。专利公布号: CN112680450A
3. 王风清, 谢智勇, 魏东芝, 克洁, 陶欣艺, **赵明**, 熊亮斌。一种用于生产麦角硫因的基因工程菌株及其构建方法以及应用。专利公布号: CN112980760A

#### 六. 获得荣誉

1. 2023 年第八届全国大学生生命科学竞赛安徽省三等奖
2. 2022 年安徽工程大学第六届大学生生物标本制作大赛优秀奖
3. 2020 年中国国际“互联网+”大学生创新创业大赛上海赛区铜奖
4. 2018 年“汇创青春”上海大学生创业大赛三等奖
5. 2016 年中航工业全国大学生创业大赛银奖
6. 2016 年“创青春”上海市大学生创业大赛金奖

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