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- 研究员
- 兼职研究员
- 产业研究员
- 副研究员、高级工程师

研究员

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专家类别	N/A	职称	研究员
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简历

2001年获天津大学化工学院生物化工专业博士学位
2001年到2005年在德国生物技术中心（GBF，German Research Centre for Biotechnology)做博士后
2005年到2011年在英国爱丁堡大学信息学院任高级研究员（Senior Research Fellow）
2011年底加入中科院天津工业生物技术研究所担任一级项目负责人

研究方向：

主要包括基因组规模代谢网络分析与代谢途径设计，酶动力学表征与代谢途径动力学模型模拟，系统生物学工具与软件开发等方面，在Molecular Systems Biology、Metabolic Engineering、Bioinformatics等刊物发表SCI论文30余篇，引用近2000次。

代表论著：

1.　　Yang, X.; Yuan, Q.; Luo, H.; Li, F.; Mao, Y.; Zhao, X.; Du, J.; Li, P.; Ju, X.; Zheng, Y.; Chen, Y.; Liu, Y.; Jiang, H.; Yao, Y.; Ma, H.; Ma, Y., Systematic design and in vitro validation of novel one-carbon assimilation pathways. *Metabolic engineering* **2019**.

2.　　Wang, Y.; Liu, Y.; Li, J.; Yang, Y.; Ni, X.; Cheng, H.; Huang, T.; Guo, Y.; Ma, H.; Zheng, P.; Wang, M.; Sun, J.; Ma, Y., Expanding targeting scope, editing window, and base transition capability of base editing in Corynebacterium glutamicum. *Biotechnology and bioengineering* **2019**.

3.　　Lu, X.; Liu, Y.; Yang, Y.; Wang, S.; Wang, Q.; Wang, X.; Yan, Z.; Cheng, J.; Liu, C.; Yang, X.; Luo, H.; Yang, S.; Gou, J.; Ye, L.; Lu, L.; Zhang, Z.; Guo, Y.; Nie, Y.; Lin, J.; Li, S.; Tian, C.; Cai, T.; Zhuo, B.; Ma, H.; Wang, W.; Ma, Y.; Liu, Y.; Li, Y.; Jiang, H., Constructing a synthetic pathway for acetyl-coenzyme A from one-carbon through enzyme design. *Nature communications* **2019,** *10* (1), 1378.

4.　　Liu, D.; Sun, H.; Ma, H., Deciphering Microbiome Related to Rusty Roots of Panax ginseng and Evaluation of Antagonists Against Pathogenic Ilyonectria. *Frontiers in microbiology* **2019,** *10*, 1350.

5.　　Cui, Z.; Zhao, Y．, Mao, Y．, Shi, T．, Lu, L．, Ma, H．, Wang, Z. and Chen, T．, In vitro biosynthesis of optically pure d‐(？）‐acetoin from meso‐2,3‐butanediol using 2,3‐butanediol dehydrogenase and NADH oxidase. *J. Chem. Technol. Biotechnol.* **2019,** *94*, 8.

6.　　Zheng, Y.; Yuan, Q.; Luo, H.; Yang, X.; Ma, H., Engineering NOG-pathway in Escherichia coli for poly-(3-hydroxybutyrate) production from low cost carbon sources. *Bioengineered* **2018,** *9* (1), 209-213.

7.　　Zhang, S.; Liu, D.; Mao, Z.; Mao, Y.; Ma, H.; Chen, T.; Zhao, X.; Wang, Z., Model-based reconstruction of synthetic promoter library in Corynebacterium glutamicum. *Biotechnology letters* **2018,** *40* (5), 819-827.

8.　　Liu, D.; Mao, Z.; Guo, J.; Wei, L.; Ma, H.; Tang, Y.; Chen, T.; Wang, Z.; Zhao, X., Construction, Model-Based Analysis, and Characterization of a Promoter Library for Fine-Tuned Gene Expression in Bacillus subtilis. *ACS synthetic biology* **2018,** *7* (7), 1785-1797.

9.　　Li, F.; Xie, W.; Yuan, Q.; Luo, H.; Li, P.; Chen, T.; Zhao, X.; Wang, Z.; Ma, H., Genome-scale metabolic model analysis indicates low energy production efficiency in marine ammonia-oxidizing archaea. *AMB Express* **2018,** *8* (1), 106.

10.   Zheng, Y.; Yuan, Q.; Yang, X.; Ma, H., Engineering Escherichia coli for poly-(3-hydroxybutyrate) production guided by genome-scale metabolic network analysis. *Enzyme and microbial technology* **2017,** *106*, 60-66.

11.   Yuan, Q.; Huang, T.; Li, P.; Hao, T.; Li, F.; Ma, H.; Wang, Z.; Zhao, X.; Chen, T.; Goryanin, I., Pathway-Consensus Approach to Metabolic Network Reconstruction for Pseudomonas putida KT2440 by Systematic Comparison of Published Models. *PloS one* **2017,** *12* (1), e0169437.

12.   Zhou, W.; You, C.; Ma, H.; Ma, Y.; Zhang, Y. H., One-Pot Biosynthesis of High-Concentration alpha-Glucose 1-Phosphate from Starch by Sequential Addition of Three Hyperthermophilic Enzymes. *Journal of agricultural and food chemistry* **2016,** *64* (8), 1777-83.

13.   Yang, X.; Yuan, Q.; Zheng, Y.; Ma, H.; Chen, T.; Zhao, X., An engineered non-oxidative glycolysis pathway for acetone production in Escherichia coli. *Biotechnology letters* **2016,** *38* (8), 1359-65.

14.   Meng, Q.; Zhang, Y.; Ju, X.; Ma, C.; Ma, H.; Chen, J.; Zheng, P.; Sun, J.; Zhu, J.; Ma, Y.; Zhao, X.; Chen, T., Production of 5-aminolevulinic acid by cell free multi-enzyme catalysis. *Journal of biotechnology* **2016,** *226*, 8-13.

15.   Li, P.; Ma, H.; Zhao, X.; Chen, T., [Predicting genetic modification targets based on metabolic network analysis--a review]. *Sheng wu gong cheng xue bao = Chinese journal of biotechnology* **2016,** *32* (1), 1-13.

16.   Fu, J.; Huo, G.; Feng, L.; Mao, Y.; Wang, Z.; Ma, H.; Chen, T.; Zhao, X., Metabolic engineering of Bacillus subtilis for chiral pure meso-2,3-butanediol production. *Biotechnology for biofuels* **2016,** *9*, 90.

17.   Zhang, Y.; Meng, Q.; Ma, H.; Liu, Y.; Cao, G.; Zhang, X.; Zheng, P.; Sun, J.; Zhang, D.; Jiang, W.; Ma, Y., Determination of key enzymes for threonine synthesis through in vitro metabolic pathway analysis. *Microbial cell factories* **2015,** *14*, 86.

18.   Lin, Z.; Zhang, Y.; Yuan, Q.; Liu, Q.; Li, Y.; Wang, Z.; Ma, H.; Chen, T.; Zhao, X., Metabolic engineering of Escherichia coli for poly(3-hydroxybutyrate) production via threonine bypass. *Microbial cell factories* **2015,** *14*, 185.

19.   Kiseleva, L.; Garushyants, S. K.; Ma, H.; Simpson, D. J.; Fedorovich, V.; Cohen, M. F.; Goryanin, I., Taxonomic and functional metagenomic analysis of anodic communities in two pilot-scale microbial fuel cells treating different industrial wastewaters. *Journal of integrative bioinformatics* **2015,** *12* (3), 273.

20.   Zhang, Y.; Lin, Z.; Liu, Q.; Li, Y.; Wang, Z.; Ma, H.; Chen, T.; Zhao, X., Engineering of Serine-Deamination pathway, Entner-Doudoroff pathway and pyruvate dehydrogenase complex to improve poly(3-hydroxybutyrate) production in Escherichia coli. *Microbial cell factories* **2014,** *13*, 172.

21.   Yang, X.; Zhang, Y.; Zheng, Y.; Ma, H., [Development and analysis of a kinetic model for Escherichia coli threonine biosynthesis]. *Sheng wu gong cheng xue bao = Chinese journal of biotechnology* **2014,** *30* (1), 18-29.

22.   Tang, B.; Hao, T.; Yuan, Q.; Chen, T.; Ma, H., [Genome minimization method based on metabolic network analysis and its application to Escherichia coli]. *Sheng wu gong cheng xue bao = Chinese journal of biotechnology* **2013,** *29* (8), 1173-84.

23.   Sharp, G. C.; Ma, H.; Saunders, P. T.; Norman, J. E., A computational model of lipopolysaccharide-induced nuclear factor kappa B activation: a key signalling pathway in infection-induced preterm labour. *PloS one* **2013,** *8* (7), e70180.

24.   Liu, Z.; Ma, H.; Goryanin, I., A semi-automated genome annotation comparison and integration scheme. *BMC bioinformatics* **2013,** *14*, 172.

25.   Hao, T.; Han, B.; Ma, H.; Fu, J.; Wang, H.; Wang, Z.; Tang, B.; Chen, T.; Zhao, X., In silico metabolic engineering of Bacillus subtilis for improved production of riboflavin, Egl-237, (R,R)-2,3-butanediol and isobutanol. *Molecular bioSystems* **2013,** *9* (8), 2034-44.

26.   Hao, T.; Ma, H.; Zhao, X., [Progress in automatic reconstruction and analysis tools of genome-scale metabolic network]. *Sheng wu gong cheng xue bao = Chinese journal of biotechnology* **2012,** *28* (6), 661-70.

27.   Boogerd, F. C.; Ma, H.; Bruggeman, F. J.; van Heeswijk, W. C.; Garcia-Contreras, R.; Molenaar, D.; Krab, K.; Westerhoff, H. V., AmtB-mediated NH3 transport in prokaryotes must be active and as a consequence regulation of transport by GlnK is mandatory to limit futile cycling of NH4(+)/NH3. *FEBS letters* **2011,** *585* (1), 23-8.

28.   Wang, H.; Ma, H.; Zhao, X., [Progress in genome-scale metabolic network: a review]. *Sheng wu gong cheng xue bao = Chinese journal of biotechnology* **2010,** *26* (10), 1340-8.

29.   Ma, H.; Boogerd, F. C.; Goryanin, I., Modelling nitrogen assimilation of Escherichia coli at low ammonium concentration. *Journal of biotechnology* **2009,** *144* (3), 175-83.

30.   Ma, H.; Goryanin, I., Human metabolic network reconstruction and its impact on drug discovery and development. *Drug discovery today* **2008,** *13* (9-10), 402-8.

31.   Wang, Q.; Yang, Y.; Ma, H.; Zhao, X., Metabolic network properties help assign weights to elementary modes to understand physiological flux distributions. *Bioinformatics (Oxford, England)* **2007,** *23* (9), 1049-52.

32.   Ma, H.; Sorokin, A.; Mazein, A.; Selkov, A.; Selkov, E.; Demin, O.; Goryanin, I., The Edinburgh human metabolic network reconstruction and its functional analysis. *Molecular systems biology* **2007,** *3*, 135.

承担科研项目情况：

1. 科技部重点专项项目：高版本模式微生物底盘细胞（课题组长），2019-2023

2. 中科院对外合作重点项目：面向天然产物生物合成的人工细胞（子课题负责人）2018-2022

3. 中科院重点部署项目：二氧化碳的人工生物转化 （子课题负责人）2016-2018

4. 科技部973计划项目：用合成生物学方法构建生物基材料的合成新途径(课题组长)，2012-2016

5. 天津市科技支撑计划重点项目：数据和模型相结合的生物产品代谢途径设计的研究 （主持）2014-2017

获奖及荣誉：

2014年汤森路透高被引科学家奖

2014年起任中国生物工程学会生物资源专业委员会副主任委员
2006年获天津市自然科学奖二等奖（第二完成人）
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