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Professor, Graduate Advisor

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Research/Education Experience

2018-Now, Professor. Division of Biotechnology, Dalian Institute of Chemical Physics, CAS, China

2017-2018, Assoc. Professor. Division of Biotechnology, Dalian Institute of Chemical Physics, CAS, China

2014-2016, Co-founder and Chief Scientist, Biopetrolia AB

2012-2016, Postdoc Fellow, Department of Chemical and Biological Engineering, Chalmers University of Technology, Sweden.

2008-2012, PhD, Division of Biotechnology, Dalian Institute of Chemical Physics, CAS, China

2006-2008, MS, Biochemical Engineering, Tianjin University, China.

2002-2006, BS, Food Science and Technology, Jiangnan University, China.

Awards and Honors

- 2019 The Best Potential Youth Scholar
- 2019 Excellent Young Scholars from NSFC
- 2018 “Lun Shiyi” Distinguished Young Scientists
- 2018 National Talent Program for Young Scientists
- 2017 Talent Program of Chinese Academy of Sciences
- 2017 Young Scholar Award in the Biochemical Engineering of China
- 2017 Young Scholar Award in the Chemical Engineering from NSFC
- 2016 Young Scholar Award of International Metabolic Science Conference
- 2015 The first prize of Chinese Pharmaceutical Association
- 2013 Outstanding Youth Scholar of Chinese Industrial Biotechnology
- 2012 Outstanding Graduates of Chinese Academy of Sciences
- 2011 DICP-Corning Student Award
- 2011 Excellent Tri-A Student Scholarship
- 2010 Excellent Student Cadre Scholarship
- 2008 Yihai Kerry Scholarship
- 2006 Outstanding Graduate Student of Jiangnan University
- 2003/2005 National Scholarship
- 2003/2005 Excellent Tri-A Student Scholarship, Jiangnan University
- 2004 First Class Prize in China Undergraduate Contest in Mathematical Modeling
- 2004/2005 The major Award of Jiangnan University

Publication (#equal contribution, *Corresponding author)**2021**

1. Cai P.#, Duan X.#, Wu X., Gao L., Ye M., **Zhou Y.J.***, Recombination machinery engineering facilitates metabolic engineering of the industrial yeast *Pichia pastoris*. *Nucleic Acids Res.*, 2021, 49(13), 7791–7805
2. Gao J. Q., Gao N., Zhai X., **Zhou Y. J.***, Recombination machinery engineering for precise genome editing in methylotrophic yeast *Ogataea polymorpha*, *iScience*, 2021, 24(3), 102168
3. Yu W., Gao J. Q., Zhai X. X., **Zhou Y. J.***, Screening neutral sites for metabolic engineering of methylotrophic yeast *Ogataea polymorpha*, *Synth. Syst. Biotechnol.*, 2021, 6, 63-68.
4. Gao L., Cai P., **Zhou Y.J.***, Advances in metabolic engineering of methylotrophic yeasts, *Chinese J. Biotechnol.*, 2021, 37(3), 966-979.

2017-2020

5. Ren Y. Y.#, Liu S. S.#, Jin G. J., Yang X. B.*, **Zhou Y. J.***, Microbial production of limonene and its derivatives: Achievements and perspectives, *Biotechnol. Adv.*, 2020, 44, 107628.
6. Chen R., Yang S., Zhang L., **Zhou Y.J.***, Advanced strategies for production of natural products in yeast. *iScience*, 2020, 23, 100879.
7. Gao J. Q., **Zhou Y. J.***, Advances in methanol bio-transformation, *Synth. Biol. J.*, 2020, 1(2), 158-173.
8. Cao X., Yang S., Cao C., Zhou Y.J.*, Harnessing sub-organelle metabolism for biosynthesis of isoprenoids in yeast, *Synth. Syst. Biotechnol.*, 2020, 5, 179-186.
9. Yang S., Cao X., Yu W., Li S., **Zhou Y.J.***, Efficient targeted mutation of genomic essential genes in yeast *Saccharomyces cerevisiae*. *Appl. Microbiol. Biotechnol.*, 2020, 104, 3037-3047
10. Jiang Y., Li Z., Zheng S., Xu H., **Zhou Y.J.**, Gao Z., Meng C.*, Li S.*, Establishing an enzyme cascade for one-pot production of α -olefins from low-cost triglycerides and oils without exogenous H_2O_2 addition, *Biotechnol. Biofuels*, 2020, 13, 52
11. Hu T., Zhou J., Yong Y., Su P., Li X., Liu Y., Liu N., Wu X., Zhang Y., Wang J., Gao L., Tu L., Lu Y., Jiang Z., **Zhou Y.J.**, Gao W., Huang L., Engineering chimeric diterpene synthases and isoprenoid biosynthetic pathways enables high-level production of miltiradiene in yeast, *Metab Eng.*, 2020, 60, 87-96
12. 刘爽, 高教琪*, 薛闯, 周雍进, 多形汉逊酵母提高生长性能的培养基优化, *生物加工过程*, 2020, 18, 116-125.
13. Xu H., Liang W., Ning L., Jiang Y., Yang W., Wang C., Qi F., Ma L., Du L., Fourage L., **Zhou Y. J.**, Li S.*, Directed evolution of P450 fatty acid decarboxylases via high-throughput screening towards improved catalytic activity. *ChemCatChem*, 2020, 12, 80-84
14. Duan X.P., Ma X.J., Li S.Y., **Zhou Y.J.***, Free fatty acids promote transformation efficiency of yeast. *FEMS Yeast Res.*, 2019, 19, foz069.
15. Yu W., Gao J., **Zhou Y. J.***, Application of proteomics and metabolomics in microbial metabolic engineering (In Chinese). *Chin. J. Chromatogr.*, 2019, 37, 798-805
16. Cai P., Gao J., **Zhou Y. J.***, CRISPR-mediated genome editing in non-conventional yeasts for biotechnological applications. *Microb. Cell Fact.*, 2019, 18, 63.
17. Jiang Y., Li Z., Wang C., **Zhou Y. J.**, Xu H.,*, Li S., Biochemical characterization of three new

- α -olefin-producing P450 fatty acid decarboxylases with a halophilic property. *Biotechnol. Biofuels*, 2019, 12, 79
18. Gao J., **Zhou Y. J.***, Repurposing peroxisomes for microbial synthesis for biomolecules. *Methods Enzymol.*, 2019, 617, 83-111.
 19. **Zhou Y. J.***, Expanding the terpenoid kingdom. *Nat. Chem. Biol.*, 2018, 14, 1069-1070.
 20. Yu T.#, **Zhou Y. J.#**, Huang M. T., Liu Q. L., Pereira R., David F., Nielsen J.*, Reprogramming yeast metabolism from alcoholic fermentation to lipogenesis. *Cell*. 2018, 174(6), 1549-1558.
 21. **Zhou Y. J.**, Kerkhoven E., Nielsen J.*, Barriers and opportunities in bio-based production of hydrocarbons. *Nat. Energy*, 2018, 3, 925-935.
 22. Gao J., Duan X., **Zhou Y. J.***, Production of fatty acids and their derivatives by yeast cell factories (In Chinese). *Chin. J. Bioproc. Eng.* 2018, 16(1), 19-30.
 23. **Zhou Y. J.***, Hu Y., Zhu Z., Siewers V., Nielsen J.*, Engineering 1-alkene biosynthesis and secretion by dynamic regulation in yeast. *ACS Syn. Biol.*, 2018, 7(2), 584-590.
 24. Duan X., Gao J, **Zhou Y. J.***, Advances in engineering methylotrophic yeast for biosynthesis of valuable chemicals from methanol. *Chin. Chem. Lett.* 2018, 29, 681-686.
 25. Zhu Z., **Zhou Y. J.**, Kang M. K., Krivoruchko A., Buijs N. A., Nielsen J.*, Enabling the synthesis of medium chain alkanes and 1-alkenes in yeast. *Metab. Eng.*, 2017, 44, 81-88.
 26. Gong Z., Nielsen J.*, **Zhou Y. J.***, Engineering robustness of microbial cell factories. *Biotechnol. J.* 2017, 12(10), 1700014.
 27. Yu T., **Zhou Y. J.**, Wenning L., Liu Q., Krivoruchko A., Siewers V., Nielsen J., David F.*, Metabolic engineering of *Saccharomyces cerevisiae* for production of very long chain fatty acid-derived chemicals. *Nat. Commun.* 2017, 8, 15587.
 28. Wang X., **Zhou Y. J.**, Wang L., Liu W., Liu Y., Peng C., Zhao Z. K.*, Engineering *Escherichia coli* nicotinic acid mononucleotide adenyltransferase for fully active amidated NAD biosynthesis. *Appl. Environ. Microbiol.* 2017, 83, e00692-17.
 29. Teixeira P. G., Ferreira R., **Zhou Y. J.**, Siewers V., Nielsen J.*, Dynamic regulation of fatty acid pools for improved production of fatty alcohols in *Saccharomyces cerevisiae*. *Microb. Cell Fact.* 2017, 16, 45.
 30. Kang M. K.#, **Zhou Y. J.#**, Buijs N. A., Nielsen J. Functional screening of aldehyde decarbonylases for long-chain alkane production by *Saccharomyces cerevisiae*. *Microb. Cell Fact.* 2017, 16, 74.
 31. Hu Y., **Zhou Y. J.**, Bao J., Huang L., Nielsen J.*, Krivoruchko A., Metabolic engineering of *Saccharomyces cerevisiae* for production of germacrene A, a precursor of beta-elemene. *J. Ind. Microbiol. Biotechnol.* 2017, 44, 1065-1072.
 32. Zhu Z, **Zhou Y. J.**, Krivoruchko A., Grininger M., Zhao Z. K.*, Nielsen J.*, Expanding the product portfolio of fungal type I fatty acid synthases. *Nat. Chem. Biol.* 2017, 13, 360–362.
 33. Wang L., Ji D. B., Liu Y.X., Wang Q., Wang X. Y., **Zhou Y. J.**, Zhang Y. X., Liu W. J., Zhao Z. K.*, Synthetic Cofactor-Linked Metabolic Circuits for Selective Energy Transfer, *ACS Catal.* 2017, 7, 1977–1983.

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34. **Zhou Y. J.***, Buijs N. A., Zhu Z., Gómez D. O., Boonsombuti A., Siewers V., Nielsen J.*, Harnessing yeast peroxisomes for biosynthesis of fatty acid-derived biofuels and chemicals with relieved side-pathway competition. *J. Am. Chem. Soc.* 2016, 138 (47), 15368–15377.
35. **Zhou Y. J.**, Buijs N. A., Zhu Z., Qin J., Siewers V., Nielsen J.*, Production of fatty acid-derived oleochemicals and biofuels by synthetic yeast cell factories. *Nat. Commun.* 2016, 7, 11709.

36. Zhang Y., Pan Y., Liu W., **Zhou Y. J.**, Wang K., Wang L., Sohail M., Ye M., Zou H.* , Zhao Z. K.* , In vivo protein allylation to capture protein methylation candidates. *Chem. Commun.* 2016, 52(40), 6689-6692.
37. Guo J., Ma X., Cai Y., Ma Y., Zhan Z., **Zhou Y. J.**, Liu W., Guan M., Yang J., Cui G., Kang L., Yang L., Shen Y., Tang J., Lin H., Ma X., Jin B., Liu Z., Peters R. J.* , Zhao Z. K.* , Huang L. Q.* , Cytochrome P450 promiscuity leads to a bifurcating biosynthetic pathway for tanshinones, *New Phytol.*, 2016, 210, 525–534
38. Buijs N. A.#, **Zhou Y. J.**#, Siewers V., Nielsen J.* , Long-chain alkane production by the yeast *Saccharomyces cerevisiae*. *Biotechnol. Bioeng.* 2015, 112(6):1275-1279.
39. Wang K. #, **Zhou Y. J.**#, Liu H. #, Cheng K., Mao J., Wang F., Liu W., Ye M., Zhao Z. K.* , Zou H.* , Proteomic analysis of protein methylation in the yeast *Saccharomyces cerevisiae*. *J. Proteomics.* 2015, 114:226-233.
40. Zhang M., Su P., **Zhou Y. J.**, Wang X. J., Zhao Y. J., Liu Y. J., Tong Y. R., Hu T. Y., Huang L. Q.* , Gao W., Identification of geranylgeranyl diphosphate synthase genes from *Tripterygium wilfordii*. *Plant Cell Rep.* 2015, 34, 2179-2188.
41. Chen Y., **Zhou Y. J.**, Siewers V., Nielsen J.* , Enabling technologies to advance microbial isoprenoid production. *Adv. Biochem. Eng. Biotechnol.* 2015, 148, 143-160.
42. Qin J., **Zhou Y. J.**, Krivoruchko A., Huang M., Liu L., Khoomrung S., Siewers V., Jiang B., Nielsen J.* , Modular pathway rewiring of *Saccharomyces cerevisiae* enables high-level production of L-ornithine. *Nat. Commun.*, 2015, 6:8224.
43. **Zhou Y. J.**, Buijs N. A., Siewers V., Nielsen J.* , Fatty acid-derived biofuels and chemicals production in *Saccharomyces cerevisiae*. *Front. Bioeng. Biotechnol.* 2014, 2: 32.
44. Wang L., **Zhou Y. J.**, Ji D., Lin X., Liu Y., Zhang Y., Liu W., Zhao Z. K.* , Identification of UshA as a major enzyme for NAD degradation in *Escherichia coli*. *Enzyme Microb. Technol.* 2014, 58-59:75-79.
45. 黄璐琦*, 高伟, 周雍进, 合成生物学在中药资源可持续利用研究中的应用. *药学报* 2014, 49, 37-43.
46. Lin X., Wang Y., Zhang S., Zhu Z., **Zhou Y. J.**, Yang F., Sun W., Wang X. and Zhao Z. K.* , Functional integration of multiple genes into the genome of the oleaginous yeast *Rhodospiridium toruloides*. *FEMS Yeast Res.* 2014, 14(4): 547-555.
47. **Zhou Y. J.**, Yang W., Wang L., Zhu Z., Zhang S. and Zhao Z. K.* , Engineering NAD⁺ availability for *Escherichia coli* whole-cell biocatalysis: a case study for dihydroxyacetone production. *Microb. Cell Fact.*, 2013, 12:103.
48. Yang W., **Zhou Y. J.**, Zhao Z. K.* , Production of dihydroxyacetone from glycerol by engineered *Escherichia coli* cells co-expressing *gldA* and *nox* genes. *Afr. J. Biotechnol.* 2013, 12, 4387-4392.
49. 杨薇, 周雍进, 刘武军, 沈宏伟, 赵宗保*, 构建酿酒酵母工程菌合成香紫苏醇. *生物工程学报* 2013, 29, 1185-1192.
50. Wang L., **Zhou Y. J.**, Ji D., Zhao Z. K.* , An accurate method for estimation of the intracellular aqueous volume of *Escherichia coli* cells. *J. Microbiol. Methods*, 2013, 93(2): 73-76.
51. Guo J.#, **Zhou Y. J.**#, Hillwig M. L., Shen Y., Yang L., Wang Y., Zhang X., Liu W., Peters R. J.* , Chen X., Zhao Z. K.* , Huang L. Q.* , CYP76AH1 catalyzes turnover of miltiradiene in tanshinones biosynthesis and enables heterologous production of ferruginol in yeasts. *Proc. Nat. Acad. Sci. USA*, 2013, 110(29):12108–12113.
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- omic map of the lipid-producing yeast *Rhodospiridium toruloides*. **Nat. Commun.** 2012, 3, 1112.
53. Zhou Y. J.[#], Gao W.[#], Rong Q., Jin G., Chu H., Liu W., Yang W., Zhu Z., Li G., Zhu G., Huang L.*[#], Zhao Z.K.*[#], Modular pathway engineering of diterpenoid synthases and the mevalonic acid pathway for miltiradiene production. **J. Am. Chem. Soc.** 2012, 134(6): 3234–3241.
54. 蔡媛, 郭娟, 周雍进, 朱志伟, 吴文燕, 黄璐琦, 陈敏, 赵宗保*, 转化次丹参酮二烯酿酒酵母全细胞催化体系的构建. **药学学报** 2012, 48, 1618-1623.
55. Lin X. P., Yang F., Zhou Y. J., Zhu Z. W., Jin G. J., Zhang S. F., Zhao Z. K.*[#], High-efficient colony PCR method for red yeast and its applicability in identification of two leucine auxotroph mutants. **Yeast.** 2012, 29(11), 467–474.
56. Ji D. B., Wang L., Zhou Y. J., Yang W., Wang Q., Zhao Z. K.*[#], Oxidative Decarboxylation of L-malate by using a synthetic bioredox system. **Chin. J. Catal.** 2012, 33(3): 530–535.
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58. Yang, F., Tan H., Zhou Y. J., Lin X., Zhang, S.*[#], High-quality RNA preparation from *Rhodospiridium toruloides* and cDNA library construction therewith. **Mol. Biotechnol.** 2011, 47(2):144–151.
59. Zhou Y. J., Wang L., Yang F., Lin X., Zhang S., Zhao Z. K.*[#], Determining the extremes of the cellular NAD(H) level by using an *Escherichia coli* NAD⁺ auxotrophic mutant. **Appl. Environ. Microbiol.** 2011, 77(17):6133–6140.
60. Zhou Y. J., Yang F., Zhang S., Tan H., Zhao Z. K.*[#], Efficient gene disruption in *Saccharomyces cerevisiae* using marker cassettes with long homologous arms prepared by the restriction-free cloning strategy. **World J. Microbiol Biotechnol.** 2011, 27(12):2999–3003.
61. Zhou Y. J., Zhao Z. K.*[#], Advanced biofuel-oriented engineering of fatty acid pathway: a review. **Chin. J. Biotech.** 2011, 27(9): 1261–1267.
62. Zhao G. R., Luo T., Zhou Y. J., Jiang X., Qiao B., Yu F. M., Yuan Y. J., *fabC* of *Streptomyces lydicus* involvement in the biosynthesis of streptolydigin. **Appl. Microbiol. Biotechnol.** 2009, 83(2):305–313.

Conference Oral Presentations

1. Engineering Recombination Machinery for Precise Genome Editing in Methylophilic Yeasts, Asian Synthetic Biology Association 2019 (ASBA 2019), October 26-30, 2019, Chengdu, China
2. Methanol biotransformation for manufacturing fatty acid derivatives, The International Conference on Green Biomanufacturing (ICGB2019), October 22-24, 2019, Beijing China.
3. Precise Genome editing in Methylophilic Yeast by Enhancing Homologous Recombination, 27th International Conference on Yeast Genetics and Molecular Biology. August 18-22, 2019, Gothenburg, Sweden
4. Synthetic cell factories for over-production of fatty acids, Advanced Biosynthesis and Biorefinery Workshop, March 15-16, 2019, Xi'an, China
5. Engineering yeast cell factories for over-production of fatty acids, The 1st International Conference on Advanced Biomanufacturing (ICAB2019), January 12-14, 2019, Nanjing, China
6. Peroxisome engineering – a feasible approach for bio-manufacturing, Advancing Synthetic Biology Mini-Symposium, April 18-19, 2018, Beijing, China
7. Engineering yeast fatty acid metabolism for production of hydrocarbons, Chinese-Swedish Bilateral Synthetic Biology Workshop, April 10-12, 2018, Qingdao, China
8. Harnessing yeast peroxisomes for production of fatty acid-derived chemicals and biofuels (Key note and Chair), 7th International Forum on Bioprocessing. May 21-24, 2017, Wuxi, China
9. Engineering biosynthesis and secretion of 1-alkenes in yeast, 9th Sino-US Joint Conference of Chemical Engineering. October 15-19, 2017, Beijing, China
10. Production of oleo-chemicals and advanced biofuels in yeast. 27th International Conference on Yeast Genetics and Molecular Biology. September 6-12, 2015, Levico Terme, Trentino, Italy
11. Systematic rewiring of lipid metabolism for production of oleo-chemicals and advanced biofuels in yeast. EMBL symposia 2015-Enabling Technologies for Eukaryotic Synthetic Biology. June 21-23, 2015, Heidelberg, Germany.
12. Synthetic biology for microbial production of terpenoids Xiangshan Science conference. November 10-12, 2014, Beijing, China
13. Construction of *E. coli* NAD⁺ auxotrophic strains and the biotechnological application thereof, 1st Asian Congress on Biotechnology. May 11-15, 2011, Shanghai

Editorial Board member

2021- Synthetic and Systems Biotechnology, Editorial Board
2019- FEMS Yeast Research, Editorial Board
2019- Environmental Science & Ecotechnology, Editorial Board
2020- Bioresources and Bioprocessing, Editorial Board
2019- Synthetic Biology Journal, Editorial Board
2019- Chinese Journal of Bioprocess Engineering, Editorial Board

Scientific Journal Reviewer

Nature Biotechnology, Nature Chemical Biology, Nature Communications, Science Advances, PNAS, JACS, Nucleic Acids Research, Biotechnology Advances, Current Opinion in Biotechnology, Critical Reviews in Biotechnology, Metabolic Engineering, Metabolic Engineering Communications, ACS Synthetic Biology, Biotechnology and Bioengineering, Communications Biology, Biochemical Society Transactions, Essays in Biochemistry, Biotechnology for Biofuels, Biotechnology Journal, Biotechnology Progress, Microbial Cell Factories, BMC Genomics, Fungal Genetics and Biology, Applied Microbiology and Biotechnology, Journal of Biotechnology, FEMS Yeast Research, FEMS Microbiology Letters, Journal of Proteomics, Biotechnology and Applied Biochemistry, Journal of Agricultural and Food Chemistry, International Journal of Biological Macromolecules, Journal of Chemical Technology & Biotechnology, Biotechnology Letters, Science China Chemistry, Photochemistry, Physiologia Plantarum, Scientific Reports, Heliyon, Chinese Journal of Biotechnology, The Chinese Journal of Process Engineering, Chinese Journal of Bioprocess Engineering