

CV for Yuanguang Li

Professor Yuanguang Li is the founder and head of Marine Bioprocess Engineering Group, State Key Lab of Bioreactor Engineering, East China University of Science and Technology (ECUST) (Formally named Institute of Marine Bioprocess Engineering, ECUST). **Li has over 20 years of R&D experience in microalgae cultivation and photobioreactor, and serves as the Chief Scientist of National Basic Research**



Program of China (973 Project) in the field of microalgae biofuels. Li's academic training was at ECUST and Tsinghua University in China, where he received his M.S. and Ph.D degrees, both in Chemical Engineering. His research fields includes: (1) Marine bioprocess engineering: Microalgae biofuels and CO₂ emission mitigation; Design, optimization and scale-up of photobioreactor; Photoautotrophic, heterotrophic, mixtrophic and Sequential Heterotrophy-Dilution-Photoinduction (SHDP) cultivation technologies of microalgae; Cultivation of marine microbiology. (2) Biopesticides: R & D of novel microbial pesticide and commercialization, especially biopesticide to prevent earth born diseases with strains of *Paenibacillus polymyxa* and *Bacillus marinus*; R & D of novel agricultural antibiotics from marine microbiology. (3) Fermentation Engineering: Process development, scale-up and commercialization of fermentation processes for bioproducts. Prof. Li has already published over **100** academic papers and applied for more than **40** patents.

1. Education

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| 9/1989-3/1994 | Ph.D. Degree and assistant in Chemical Engineering,
Tsinghua University, Beijing, China |
| 9/1986-7/1989 | Master's Degree in Chemical Engineering, East China University of
Science and Technology, Shanghai, China |
| 9/1982-7/1986 | Bachelor's Degree in Chemical Engineering, Hefei University of
Technology, Hefei, Anhui province, China |
| 9/1980-7/1982 | High school, Hexian No 1 middle school, Chaohu, Anhui
province, China |

2. Working Experience

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| 1/2007-present | Professor, Director of Marine Bioprocess Engineering Group,
State Key Lab of Bioreactor Engineering, East China University
of Science and Technology, Shanghai, China |
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5/2001-12/2006	Professor and Director, Institute of Marine Bioprocess Engineering, East China University of Science and Technology, Shanghai, China
6/1997-4/2001	Associate Professor and Director, Group of Marine Bioprocess Engineering, Institute of Biochemical Engineering, East China University of Science and Technology, Shanghai, China
6/1995-5/1997	Post-doctor, State Key Lab of Bioreactor Engineering, East China University of Science and Technology, Shanghai, China (promoted to be Associate Professor, 1996)
8/1994-5/1995	Lecturer, College of Food Bioengineering, Southern China University of Science and Technology, Guangzhou, China
9/1989-7/1992	Counselor, Department of Chemical Engineering, Tsinghua University, Beijing, China

3. Representative publications in microalgae cultivation and PBRs

- [1] Weiliang Wang, Tingting Wei, Jianhua Fan, Jun Yi, **Yuanguang Li***, Minxi Wan*, Jun Wang, Wenmin Bai. Repeated mutagenic effects of 60 Co- γ irradiation coupled with high-throughput screening improves lipid accumulation in mutant strains of the microalgae *Chlorella pyrenoidosa* as a feedstock for bioenergy. *Algal Research*, 2018, 33: 71-77
- [2] Fanxue Zen, Jianke Huang, Chen Meng, Fachao Zhu, Jianpei Chen*, **Yuanguang Li***. Investigation on novel raceway pond with inclined paddle wheels through simulation and microalgae culture. *Bioprocess and Biosystems Engineering*. 2016, 39(1):169-180.
- [3] Dongda Zhang, Minxi Wan, Ehecatl A. del Rio-Chanona, Jianke Huang, Weiliang Wang, **Yuanguang Li**, Vassilios S. Vassiliadis. Dynamic modelling of *Haematococcus pluvialis* photoinduction for astaxanthin production in both attached and suspended photobioreactors. *Algal Research*, 2016, 13: 69-78.
- [4] Jianhua Fan*, Hui Xu, **Yuanguang Li***. Transcriptome-Based Global Analysis of Gene Expression in Response to Carbon Dioxide Deprivation in the Green Algae *Chlorella pyrenoidosa*. *Algal Research*, 2016, 16, 12-19.
- [5] Jianhua Fan, Kang Ning, Xiaowei Zeng, Jian Xu*, **Yuanguang Li***, et al. Genomic foundation of starch to lipid switch in oleaginous *Chlorella*. *Plant Physiology*, 2015, 169(4):2444-2461.

- [6] Minxi Wan, Zhen Zhang, Jun Wang, Jianke Huang, Jianhua Fan, Anquan Yu, Weiliang Wang, **Yuanguang Li***. Sequential Heterotrophy –Dilution –Photoinduction Cultivation of *Haematococcus pluvialis* for efficient production of astaxanthin. *Bioresource Technology*, 2015, 198: 557-563
- [7] Jianke Huang, Xiaoxing Qu, Minxi Wan, Jiangguo Ying, **Yuanguang Li***, Faochao Zhu, Jun Wang, Guomin Shen, Jianpei Chen, Wei Li*. Investigation on the performance of raceway ponds with internal structures by the means of CFD simulations and experiments. *Algal Research*. 2015, 10: 64-71.
- [8] Jianke Huang, Shaofeng Kang, Minxi Wan, **Yuanguang Li***, Xiaoxing Qu, Fei Feng, Jun Wang, Weiliang Wang Guomin Shen, Wei Li. Numerical and experimental study on the performance of flat-plate photobioreactors with different inner structures for microalgae cultivation. *Journal of Applied Phycology*, 2015, 27:49-58.
- [9] Jianke Huang, Fei Feng, Minxi Wan, Jiangguo Ying, **Yuanguang Li***, Xiaoxing Qu, Ronghua Pan, Guomin Shen, Wei Li*. Improving performance of flat-plate photobioreactors by installation of novel internal mixers optimized with computational fluid dynamics. *Bioresource Technology*, 2015, 182:151-159.
- [10] Jianhua Fan, Hui Xu, Yuanchan Luo, Minxi Wan, Jianke Huang, Weiliang Wang, **Yuanguang Li***. Impacts of CO₂ Concentration on Growth, Lipid Accumulation and Carbon Concentrating Mechanism Related Genes Expression in Oleaginous *Chlorella*. *Applied Microbiology and Biotechnology*, 2015, 99(5):2451-2462.
- [11] Weiliang Wang, Feifei Han, **Yuanguang Li***, Yinsong Wu, Jun Wang, Ronghua Pan, Guomin Shen. Medium Screening and Optimization for Photoautotrophic Culture of *Chlorella pyrenoidosa* with High Lipid Productivity Indoors and Outdoors. *Bioresource Technology*. 2014, 170:395-403.
- [12] Xiuyuan Zhuang, Daojing Zhang, Wen Qin, Jia Deng, Hui Shan, Liming Tao, **Yuanguang Li***. A comparison on preparation of hot water extracts from *Chlorella pyrenoidosa* (CPEs) and radical scavenging and macrophage activation effects of CPEs. *Food & Function*, 2014, 5, 3252-3260.
- [13] Jianhua Fan, Yanbin Cui, Yang Zhou, Jingli Xie, **Yuanguang Li***. The Effect of Nutrition Pattern Alteration on *Chlorella pyrenoidosa* Growth, Lipid Biosynthesis-Related Gene Transcription. *Bioresource Technology*, 2014, 164:214-220.
- [14] Minxi Wan, Dongmei Hou, **Yuanguang Li***, Jianhua Fan, Jianke Huang, Songtao Liang, Weiliang Wang, Ronghua Pan, Jun Wang, Shulan Li. The effective photoinduction of *Haematococcus pluvialis* for accumulating

- astaxanthin with attached cultivation. *Bioresource Technology*, 2014, 163:26-32.
- [15] Minxi Wan, Jingkui Zhang, Dongmei Hou, Jianhua Fan, **Yuanguang Li***, Jianke Huang, Jun Wang, The effect of temperature on cell growth and astaxanthin accumulation of *Haematococcus pluvialis* during a light-dark cyclic cultivation. *Bioresource Technology*, 2014, 167, 276-283.
- [16] Jianhua Fan, Yanbin Cui, Minxi Wan, Weiliang Wang, **Yuanguang Li***. Lipid Accumulation and Biosynthesis Genes Response of the Oleaginous *Chlorella pyrenoidosa* under Three Nutrition Stressors. *Biotechnology for Biofuels*. 2014, 7(1):17. 2014.
- [17] Jianke Huang, **Yuanguang Li***, Minxi Wan, Yi Yan, Fei Feng, Xiaoxing Qu, Jun Wang, Guomin Shen, Wei Li, Jianhua Fan, Weiliang Wang. Novel flat-plate photobioreactors for microalgae cultivation with special mixers to promote mixing along the light gradient. *Bioresource Technology*. 2014, 159: 8-16.
- [18] Feifei Han, Jianke Huang, **Yuanguang Li***, et al. Enhanced lipid productivity of *Chlorella pyrenoidosa* through the culture strategy of semi-continuous cultivation with nitrogen limitation and pH control by CO₂. *Bioresource technology*, 2013, 136:418-424.
- [19] Feifei Han, Weiliang Wang, **Yuanguang Li***, Guomin Shen, Minxi Wan*, Jun Wang, Changes of biomass, lipid content and fatty acids composition under a light-dark cyclic culture of *Chlorella pyrenoidosa* in response to different temperature, *Bioresource Technology*, 2013, 132: 182-189.
- [20] Jianhua Fan, Yanbin Cui, Jianke Huang, Weiliang Wang, Weibo Yin, Zamin Hu*, **Yuanguang Li***. Suppression subtractive hybridization reveals transcript profiling of *Chlorella* under heterotrophy to photoautotrophy transition . *PLoS ONE*, 2012, 7(11): e50414.
- [21] Feifei Han, Jianke Huang, **Yuanguang Li***, Weiliang Wang, Jun Wang, Jianhua Fan, Guoming Shen. Enhancement of microalgal biomass and lipid productivities by a model of photoautotrophic culture with heterotrophic cells as seed. *Bioresource Technology*, 2012, 118:431-437.
- [22] Jianhua Fan, Jianke Huang, **Yuanguang Li***, Feifei Han, et al. Sequential Heterotrophy - Dilution - Photoinduction Cultivation for Efficient Microalgal Biomass and Lipid Production. *Bioresource Technology*, 2012, 112:206-211.
- [23] **Yuan-Guang Li***, Ling Xu, Ying-Ming Huang, Feng Wang, Chen Guo, Chun-Zhao Liu*. Microalgal biodiesel in China: Opportunities and challenges. *Applied Energy*, 2011, 88 (10):3432-3437.
- [24] Huifang Zhang, Weiliang Wang*, **Yuanguang Li***, Wenjie Yang, Guomin Shen. Mixotrophic Cultivation of *Botryococcus braunii*, Biomass and Bioenergy, 2011, 35(5):1710-1715.

- [25]Gang Yu, **Yuanguang Li***, Guomin Shen, Weiliang Wang, Chen Lin, Hongxi Wu, Zhisheng Chen. A Novel Method Using CFD to Optimize the Inner Structure Parameters of Flat-panel Photobioreactors. *Journal of Applied Phycology*, 2009, 21:719-727.
- [26]Xingmei Han, **Yuanguang Li***, Xinzhi Sun, Xiaodong Wei, Yongru Sun, Yiqin Wang, Studies on Heterotrophic Cultivation Process of Transgenic *Chlorella* with Rabbit Defensin Gene in Bioreactor. *Process Biochemistry*, 2005, 40(9): 3055-3060.

4. Representative publications in biopesticides

- [1] Zhenhua Liu, Honggang Wei, **Yuanguang Li***, Shulan Li, Yuanchan Luo, Daojing Zhang, Lie Ni. Optimization of the spray-drying of a *Paenibacillus polymyxa*-based biopesticide on pilot plant and production scales, *Biocontrol Science and Technology*, Biocontrol Science and Technology, 2014, 24(4):426-435.
- [2] Zhen-Hua Liu, Lei Fan, Dao-Jing Zhang, **Yuan-Guang Li***. Antifungal Depsipeptide Compounds from *Paenibacillus polymyxa* HY96-2. *Chemistry of Natural products*, 2011, 47(3):496-497.
- [3] Zhenhua Liu, Honggang Wei*, **Yuanguang Li***, Shulan Li, Lin Zhang, Houlong Chen. Effects of milling and surfactants on suspensibility and spore viability in *Paenibacillus polymyxa* powder formulations. *Biocontrol Science and Technology*, 2011.21(9):1103-1116.
- [4] Liu Rong-Feng, Zhang Dao-Jing*, **Li Yuan-Guang***, Tao Li-Ming, Tian Li. A New Antifungal Cyclic Lipopeptides from *Bacillus marinus* B-9987. *Helvetica Chimica Acta*. 2010, 93(12):2419-2425.
- [5] Dao-Jing Zhang, Rong-Feng Liu, **Yuan-Guang Li***, Li-Ming Tao, Li Tian. Two New Antifungal Cyclic Lipopeptides from *Bacillus marinus* B-9987. *Chemical & Pharmaceutical Bulletin*, 2010, 58(12):1630-1634.

5. Contact information

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