

王长海，男，1962年7月出生，博士学位，南京农业大学资源与环境科学学院教授、博导，研究方向为海洋生化工程、微藻生物技术。

### 一、教育经历

2000.7-2001.7，博士后。香港科技大学生物系。

1999.6-2000.5，访问科学家。Ben-Gurion University of the Negev, Israel.

1995.3-1998.7，工学博士学位。中国科学院过程工程研究所。

1985.9-1988.7，理学硕士学位。北京大学生物学系。

1980.9-1985.7，理学学士学位。内蒙农业大学动物医学系。

### 二、工作经历

2011.01-，南京农业大学资源与环境学院、教授、博导，江苏省海洋生物学重点实验室 主任。

2001.7-2010.12，大连理工大学海洋生化工程研究室主任、教授、博士生导师。

2003.6 -2010.12，烟台大学海洋学院院长。

2001.9-2003.6，烟台大学化院副院长、生物工程系主任。

1988年烟台大学助教、1991年讲师、1993年副教授，1999年教授。

### 三、获奖情况

1. 王长海，孙利芹，鞠宝等. 海洋微藻的高密度培养技术研究，2007年获得山东省科技进步三等奖（编号：JB2007-3-39）。

2. 王长海, 姜爱莉. 海鞘油脂提取工艺研究, 2008 年获得山东省科技进步三等奖 (证书号: JB2008-3-199-1)

3. 王长海, 菊宝, 许波. 微藻生物活性物质研究, 2004 年 12 月获得山东省高等学校优秀科研成果 (自然科学类) 三等奖。

4. 王长海 (第五位). 海阳市千里岩岛渔业资源保护场原种资源及其生态环境调查与保护规划, 2009 年 8 月获山东软科学优秀成果二等奖 (证书号: RK09-06-02-140-05)。

5. 王长海, 孙利芹, 姜爱莉. 海洋生化工程概论. 烟台大学科技进步一等奖, 2005 年 6 月。

6. 温少红, 王长海, 菊宝. 微藻培养及生物活性物质研究, 2001 年 12 月获山东省高等学校优秀科研成果 (自然科学类) 三等奖。

#### 四、教学情况

1. 主讲“海洋生化工程概论”、“海洋生化工程原理”等研究生课程。

2. 指导博士后 4 名 (3 已出站)、博士研究生与硕士研究生 150 名, 国际研究生 7 名 (硕士 3 名、博士 4 名)。

#### 五、学术兼职

1. 中国海藻学会, 学术委员会委员

2. 江苏省海洋学会常务理事, 海洋生物资源与技术委员会主任委员

#### 六、社会兼职

1. 江苏省海洋生物产业联盟 理事

2. 江苏省海洋资源研究院，兼职研究员
3. 2007.7-2010.12，中国科学院海岸带经济可持续发展研究所，研究员、博导。

## 七、主持项目

1. 2018.12-2022.12. 棘皮类新养殖对象苗种繁育与育成技术体系（2018YFD0901605）。国家重点专项项目，子课题负责人。
2. 2018.1-2021.12. 微藻对极端环境的适应机制及其抗逆性和生态适应进化关系. 国家自然科学基金(31770436)，负责人。
3. 2016.1-2018.12. 北极适冷小球藻广温适应的生理生态特征及其分子调控机制. 国家青年自然科学基金（31500318），何梅琳、王长海。
4. 2017.1-2021.7. 基于原位电离质谱的产品质量安全现场快速检测技术研究. 中国检验检疫科学研究院课题。负责人
5. 2015.5-2017.5. 适冷小球藻光合作用适应冷/热胁迫的生理及分子机制，中国博士后科学基金面上资助（2015M571764），何梅琳、王长海。
6. 2015-2018. 织纹螺对毒素耐受性差异的分子进化机制研究. 江苏省青年自然科学基金（BK20150680），邹山梅、王长海。
7. 2015.7-2018.7. 脉红螺种群表型多样性的表观遗传机制. 中国博士后科学基金特别资助（2015T80558），邹山梅、王长海。
8. 2014-2016. 纳米 $\alpha$ -Fe<sub>2</sub>O<sub>3</sub>进入斜生栅藻细胞的转运机制研究. 江苏省青年自然科学基金（BK20140713），何梅琳、王长海。

9. 2014-2016. 影响微藻 DHA/EPA 比值的环境因素与分子调控机制研究. 博士后重点基金, 邓祥元、王长海。

10. 2014. 1-2017. 12. “微藻砷代谢的氮磷营养调控机理研究”, 国家自然科学基金 (课题编号: 41371468), 葛滢、王长海。

11. 2013. 12, “新型海洋微藻饵料创制与产业化”, 南京领军型科技创业人才引进计划, 课题负责人。

12. 2013. “滩涂耐盐特质植物新品种与安全高效栽培技术引进与创新”, 农业部 948 项目 (课题编号: 2013-Z22), 课题负责人。

13. 2012. 6-2015. 6. “盐土特质植物产业化关键技术研究集成创新”, 江苏省农业科技自主创新—江苏特色产业技术体系类项目 (课题编号: CX(12)1005), 1640 万元; 首席科学家。

14. 2012. 1-2015. 12. “海洋特殊生物资源的研究与开发”-微藻抗菌与抗肿瘤活性物质的分离提取及其应用研究, 十二五国家 863 计划 (课题编号: 2012AA021706), 子课题负责人。

15. 2012-2014. “几种微藻活性多糖的制备及其抗肿瘤作用研究”, 江苏省“六大人才高峰”项目, 课题负责人。

16. 2011. 1-2015. 12. “高效能源微藻育种和规模化培养关键技术”, 十二五国家科技支撑计划 (课题编号: 2011BAD14B01), 子课题负责人。

17. 2012-2014. “海洋微藻高密度培养技术开发与研究”, 企业合作项目, 课题负责人。

18. 2008. 5-2010. 12. “经济海藻精深加工技术集成与产业化示

范”，十一五国家科技支撑计划（课题编号：2008BAD94B04），子课题负责人。

19. 1996. 10-2000. 3, “光生物反应器研制及其在藻类大规模培养中的应用研究”，国家“九五”重点科技攻关课题（课题编号：96-C02-04-05），课题负责人。

20. 1997. 10-2000. 12, “二氧化碳补碳及泡载分离藕合培养微藻新方法”，国家自然科学基金课题（课题编号：29776044），12万元。课题主持人。

21. 2001. 10-2005. 12, “一类治疗乙型肝炎新药海鞘醇的临床前研究”，国家高技术研究发展计划（“十五”-863计划）（课题编号：2001AA620416, 2003AA624160），课题负责人。

22. 2001. 01-2003. 12, “食品安全中微藻毒素检测标样的研制”，国家“十五”重点科技攻关课题（课题编号：2001BA707B03），课题负责人。

23. 2002. 9-2005. 12, “微咸水与再生水高效安全利用技术研究”，国家“十五”重大科技专项—生物与现代农业（863）课题（课题编号：2002AA2Z4061, 2004AA2Z4091），课题负责人。

24. 2001. 10-2003. 12, “畜禽新型高效免疫佐剂和疫苗的产业化”，国家高技术研究发展计划（“十五”-863计划）（课题编号：2001AA243071），课题负责人。

25. 2004. 1-2005. 10, “ACC合成酶反义基因转化大豆和高产优良品种(系)选育”，国家转基因重大专项课题（课题编号：JY04-B-01），

课题负责人。

26. 2003. 1-2004. 12, “无载体、无标记基因植物转化技术平台和转基因育种”, 国家转基因重大专项课题 (课题编号: JY03-B-18-02), 课题第二负责人。

27. 2005-2009, “山东省近岸海域海洋生物生态化学调查 (烟台海区)”, 山东省政府 908 专项 (课题编号: SD-908-01-01-05. 06), 课题负责人。

28. 2007. 9-2009. 9, “基于交叉学科的研究生创新人才培养模式探索”, 山东省研究生教育创新计划项目 (课题编号: SDYC053), 课题负责人。

29. 2007. 6-2010. 6, “紫球藻光生物反应器高密度培养及其多糖应用研究”, 山东省科技厅 (课题编号: Y2007D59), 课题负责人。

30. 2009. 12-2012. 12, “用于多酚化合物纯化的琼脂糖基质氢键吸附新材料研究”, 山东省科技厅 (课题编号: ZR2009BM006), 课题负责人。

31. 2002. 10-2005. 10, “紫球藻高密度培养及其活性物质研究”, 国家教育部回国人员科研基金, 课题负责人。

32. 2005-2009, “山东省近海经济生物资源综合评价与修复研究”, 山东省政府 908 专项 (课题编号: SD-908-02-09), 第二负责人。

33. 2008-2010, 山东省近岸产卵场和索饵场综合评价与保护 (SD908-02-15), 山东省政府 908 专项 (课题编号: SD-908-02-09), 第二负责人。

34. 1997. 7-1998. 12 “全国海洋滩涂资源开发可持续发展战略研究”，国家科委课题（课题编号：B09-03-01），课题主持人，第二位。

## 八、发表论文

### SCI 论文

1. Cong Fei, Tong Wang, Abeselom Woldemicael, Meilin He, Shanmei Zou, **Changhai Wang\***. Nitrogen supplemented by symbiotic Rhizobium stimulates fatty-acid oxidation in *Chlorella variabilis*. *Algal Res* 44 (2019): 101692
2. Cong Fei, Shanmei Zou, Tong Wang, Chun Wang, Nyabuto Dorothy Kemuma, Meilin He, Shady A. Amin and **Changhai Wang\***. A quick method for obtaining high-quality DNA barcodes without DNA extraction in microalgae. *J Appl Phycol* (2019) DOI: 10.1007/s10811-019-01926-2
3. Wei Ren, Po-Jung Jimmy Huang, Meilin He, Mingsheng Lyu, Shujun Wang, **Changhai Wang\***, Juewen Liu. The two classic Pb<sup>2+</sup>-selective DNazymes are related: rational evolution for understanding metal selectivity. *Nucleic Acids Research*, 2019
4. Temesgen Gebreluel, Meilin He, Shiyan Zheng, Shanmei Zou, Abeselom Woldemicael, **Changhai Wang\***, Optimization of enzymatic degradation of dealginated kelp waste through response surface methodology, *Journal of Applied Phycology*, 2019, <https://doi.org/10.1007/s10811-019-01894-7> (IF: 2.635)
5. Meilin He, Hong Song, Wu Chen, Yi Zhang, Tong Wang, **Changhai Wang\***, Weijie Du, Comparative transcriptome analysis of wild type and an oleaginous mutant strain of *Desmodesmus* sp. reveals a unique reprogramming of lipid metabolism under high light, *Journal of Applied Phycology*, 2019, <https://doi.org/10.1007/s10811-019-01821-w> (IF: 2.635)
6. Hong Song, Meilin He, Chuankun Gu, Dong Wei, Yuqi Liang, Junmei Yan and **Changhai Wang\***, Extraction optimization, purification, antioxidant activity and preliminary structural characterization of crude polysaccharide from an arctic

Chlorella sp., *Polymers*, 2018, 10(3), 292

7. Yebing Yu, **Changhai Wang\***, Aimin Wang, Wenping Yang, Fu Lv, Fei Liu, Bo Liuc, Cunxin Sun. Effects of various feeding patterns of *Bacillus coagulans* on growth performance, antioxidant response and Nrf2-Keap1 signaling pathway in juvenile gibel carp (*Carassius auratus gibelio*). *Fish and Shellfish Immunology*, 73 (2018): 75-83

8. Shoubing Qi, Xiaowei Zhao, Weijie Zhang, **Changhai Wang\***, Meilin He, Yaqing Chang, Jun Ding. The effects of 3 different microalgae species on the growth, metamorphosis and MYP, gene expression of two sea urchins, *Strongylocentrotus intermedius* and *S. nudus*[J]. *Aquaculture*, 2018(492);123–131

9. Zou, Shanmei, Cong Fei, Weinan Yang, Zheng Huang, Meilin He, and **Changhai Wang\***. "High-efficiency 18S microalgae barcoding by coalescent, distance and character-based approaches: a test in *Chlorella* and *Scenedesmus*." *Chin J Oceanol Limnol* 36, no. 5 (2018): 1771-1777.

10. Meilin He, Yuting Chen, Yongquan Yan, Shanmei Zou, **Changhai Wang\***. Influence of interaction between  $\alpha$ -Fe<sub>2</sub>O<sub>3</sub> nanoparticles and dissolved fulvic acid on the physiological responses in *Synechococcus* sp. PCC7942, *Bulletin of Environmental Contamination and Toxicology*, 2017, 99(6), pp 719–727

11. Meilin He, Yongquan Yan, Feng Pei, Mingzhu Wu, Yuting Chen, Shanmei Zou, **Changhai Wang\***, "Improvement on lipid production by *Scenedesmus obliquus* triggered by low dose exposure to nanoparticles." *Scientific reports*, 2017, 7:15526.

12. Rajper Aftab Ahmed, Meilin He, Rajper Asma Aftab, Shiyan Zheng, Mostafa Nagi. Ramadan Bakri, **Changhai Wang\***. Bioenergy application of *Dunaliella salina* SA 134 grown at various salinity levels for lipid production. *Scientific Reports*, 2017, 7 (1) :8118

13. Shiyan Zheng, Meilin He, Yangsui Sui, Temesgen Gebreluel, Shanmei Zou, Nyabuto Dorothy Kemuma, **Changhai Wang\***. Kelp waste extracts coupled with acetate enhances the biofuel characteristics of *Chlorella sorokiniana*. *Bioresource Technology*, 2017, 225:142-150

14. Ying-ying Sun, Kun Meng, Zhen-xia Su, Gan-lin Guo, Yin-fang Pu,



Chang-hai Wang. Isolation and purification of antialgal compounds from the red alga *Gracilaria lemaneiformis* for activity against common harmful red tide microalgae [J]. *Environmental Science and Pollution Research*, 2017, 24(5), 4964-4972

15. Shiyang Zheng, Jie Jiang, Meilin He, Shanmei Zou, **Changhai Wang\***. Effect of Kelp Waste Extracts on the Growth and Development of Pakchoi (*Brassica chinensis* L.). *Scientific Reports*, 2016, 6:38683

16. Shanmei Zou, Cong Fei, Chun wang, Zhan gao, Yashao Bao, Meilin He, **Changhai Wang\***. How DNA barcoding can be more effective in microalgae identification: a case of cryptic diversity revelation in *Scenedesmus* (Chlorophyceae). *Scientific Reports*, 2016. 6, 36822;

17. Yi Zhang, Meilin He, Shanmei Zou, Cong Fei, Shiyang Zheng, Yongquan Yan, Aftab Ahmed Rajper, **Changhai Wang\***. Breeding of high biomass and lipid producing *Desmodesmus* sp. by Ethylmethane sulfonate-induced mutation. *Bioresource Technology*, 2016, 207: 268-275

18. Shiyang Zheng, Meilin He, Jie Jiang, Shanmei Zou, Weinan Yang, Yi Zhang, Jie Deng, **Changhai Wang\***. Effect of kelp waste extracts on the growth and lipid accumulation of microalgae. *Bioresource Technology*, 2016, 201:80-88

19. Weinan Yang, Shanmei Zou, Meilin He, Cong Fei, Wei Luo, Shiyang Zheng, Bo Chen, **Changhai Wang\***. Growth and lipid accumulation in three *Chlorella* strains from different regions in response to diurnal temperature fluctuations. *Bioresource Technology*, 2016, 202:15-24

20. Kewei Cao, Meilin He, Weinan Yang, Shanmei Zou, **Changhai Wang\***. The eurythermal adaptivity and temperature tolerance of a novel isolated psychrotolerant Arctic *Chlorella* sp. *Journal of Applied Phycology*, 2016, 28: 877-888

21. Shanmei Zou, Rujia Pan, Xiaodi Dong, Meilin He, **Changhai Wang\***. Physicochemical properties and antioxidant activities of two fucosylated chondroitin sulfate from sea cucumber *Acaudina molpadioidea* and *Holothuria nobilis*. *Process Biochemistry*. 2016, 51(5):650-658

22. Shanmei Zou, Yizhou Wang, Meilin He, Xiangyuan Deng, **Changhai Wang\***. Scale-up batch fermentation of bioethanol production from the dry powder of

Jerusalem artichoke tubers by recombinant *Saccharomyces cerevisiae*, *Journal of the Institute of Brewing*, 2016, 122 (2) :261-267

23. Shanmei Zou, Cong Fei, Yachao Bao, **Changhai Wang\***. Combining and comparing coalescent, distance and character-based approaches for barcoding microalgae: a test with *Chlorella*-like species (Chlorophyta). *Plos One*, 2016, 11(4):e0153833

24. Qingsong Zheng, Jinlong Liu, Ran Liu, Hao Wu, Chaoqiang Jiang, **Changhai Wang\***, Yongxiang Guan. Temporal and spatial distributions of sodium and polyamines regulated by brassinosteroids in enhancing tomato salt resistance. *Pant Soil.*, 2016, 400: 147-164.

25. Yu, Yebing; Lv, Fu; **Wang, Changhai**; Wang, Aimin; Zhao, Weihong; Yang, Wenping. Effects of *Bacillus coagulans* on Growth Performance, Disease Resistance, and HSP70 Gene Expression in Juvenile Gibel Carp, *Carassius auratus gibelio*. *JOURNAL OF THE WORLD AQUACULTURE SOCIETY*, 2016, 47(5):729-740

26. Yin XM, Quan LT, Yang N, Jiang CQ, Wang CH, Zheng QS\*. Changes in growth, contents of mineral nutrient and active ingredients in *Aloe vera* in response to iso-osmotic water and salt stresses. *Journal of Plant Nutrition*, 2016, 39(13): 1840-1851

27. Ying-ying Sun, Hui Wang, Gan-lin Guo, Yin-fang Pu, Bin-lun Yan, **Chang-hai Wang**. Isolation, purification and identification of antialgal substances in green alga *Ulva prolifera* for antialgal activity against the common harmful red tide microalgae [J]. *Environmental Science and Pollution Research*, 2016, 23(2): 1449-1459

28. Sun Ying-ying, Wang Hui, Guo Gan-lin, Pu Yin-fang, Yan Bin-lun, **Wang Chang-hai**. Green alga *Ulva pertusa*—a new source of bioactive compounds with antialgal activity. *Environmental Science and Pollution Research*, 2015, 22(13):10351-10359

29. Yi-ZhouWang, shan-Mei Zou, Mei-LinHe, **Chang-Hai Wang\***. Bioethanol production from the dry powder of Jerusalem artichoke tubers by recombinant *Saccharomyces cerevisiae* in simultaneous saccharification and fermentation.

Journal of Industrial Microbiology & Biotechnology, 2015, 42 (4): 543-551

30. Xiaodi Dong, Rujia Pan, **Changhai Wang\***. Oxidative Degradation of Polysaccharides from Sea Cucumber *Holothuria nobilis*. Process Biochemistry, 2015, 50 (2): 294-301

31. Dorothy Kemuma Nyabuto, Kewei Cao, Alfred Mugambi Mariga, Grace Wanjiru Kibue, Meilin He, **Changhai Wang\***. Growth performance and biochemical analysis of the genus *Spirulina* under different physical and chemical environmental factors. African Journal of Agricultural Research. 2015, 10 (36) :3614-3624

32. Yuting Chen, Abel Santos, Ye Wang, Tushar Kumeria, **Changhai Wang\***, Junsheng Li and Dusan Losic. Interferometric nanoporous anodic alumina photonic coatings for optical sensing. Nanoscale, 2015, 7, 7770-7779 , DOI: 10.1039/C5NR00369E (SCI, IF:7.394)

33. Yuting Chen , Abel Santos , Ye Wang , Tushar Kumeria , Junsheng Li , **Changhai Wang\*** and Dusan Losic. Biomimetic Nanoporous Anodic Alumina Distributed Bragg Reflectors in The Form of Films and Micro-Sized Particles for Sensing Applications. ACS APPLIED MATERIALS & INTERFACES, 2015 , 7(35):19816-19824 (SCI, IF:6.732)

34. Yuting Chen, Abel Santos, Ye Wang, Tushar Kumeria, Daena Ho, Junsheng Li, **Changhai Wang\*** and Dusan Losic. Rational Design of Photonic Dust from Nanoporous Anodic Alumina Films: A Versatile Photonic Nanotool for Visual Sensing. Scientific Reports, DOI:10.1038/srep12893, 2015, 5, (IF:5.578)

35. Yuting Chen, Abel Santos, Daena Ho, Ye Wang, Tushar Kumeria, Junsheng Li, **Changhai Wang\*** and Dusan Losic. On The Generation of Interferometric Colors in High Purity and Technical Grade Aluminum: An Alternative Green Process for Metal Finishing Industry. Electrochimica Acta, 2015, 174:672-681

36. Zhao G.M., Han Y., Sun X., Li S.H., Shi Q.M., **Wang C.H.\*** Salinity stress increases secondary metabolites and enzyme activity in safflower. Industrial Crops and Products, 2015, 64: 175-181.

37. Wang, Ya; Wang, Shu; Xu, Pingping; Liu, Cong; Liu, Misha; Wang, Yulan; **Wang, Changhai**; Zhang, Chunhua; Ge, Ying. Review of arsenic speciation, toxicity

and metabolism in microalgae. *REVIEWS IN ENVIRONMENTAL SCIENCE AND BIO-TECHNOLOGY*, 2015, 14(3):427-451

38. Xiaodi Dong, Rujia Pan, Xiangyuan Deng, Yuting Chen, Gengmao Zhao, **Changhai Wang\***. Separation, purification, anticoagulant activity and preliminary structural characterization of two sulfated polysaccharides from sea cucumber *Acaudina molpadioidea* and *Holothuria nobilis*. *Process Biochemistry*, 2014, 49(8):1352-1361

39. Xianfa Meng, Dekai Yan, Xiaohua Long, **Changhai Wang\***, Zhaopu Liu, Zed Rengel. Colonization by endophytic *Ochrobactrum anthropi* Mn1 promotes growth of Jerusalem artichoke. *Microbial Biotechnology*, 2014, 7 (6): 601-610

40. Zhao G.M., Shi Q.M., Han Y., Li S.H., **Wang C.H.** The Physiological and Biochemical Responses of a Medicinal Plant (*Salvia miltiorrhiza* L.) to Stress Caused by Various Concentrations of NaCl. *PLoS ONE*, 2014, 9(2): e89624.

41. Yingying He, Xiaolin Xu, Siyu Wang, **Changhai Wang**, Bin Dai. Optimization of dilute alkali extraction of crude polysaccharides from mixotrophic *Chlorella* sp.-XJY. *Food science and technology research*, 2014, 20 (1), 51-58.

42. Yingying He, Lin Zhou, Xiaolin Xu, Siyu Wang, **Changhai Wang**, Bin Dai. Uniform design for optimizing biomass and intracellular polysaccharide production from self-flocculating *Scenedesmus*. *Annals of Microbiology*, 2014, 64, (4), 1779-1787

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## 十、专利成果

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## 十一、其他

1. 2013 年, 入选南京市领军型科技创业人才。
2. 2012 年, 入选江苏省六大高峰人才。
3. 2010 年, 烟台大学十一五科研先进个人。
4. 2008 年, 烟台大学 2006-2007 年度优秀共产党员。
5. 2005 年, 烟台大学第三届科技拔尖人才。
6. 2004 年, 山东省实验教学与实验技术成果二等奖。
7. 2002 年, 烟台大学的二届科技拔尖人才。
8. 1999 年, 烟台大学首届拔尖人才。
9. 1998 年, 中国科学院化工冶金研究所优秀博士论文。
10. 1997 年, 烟台大学科研先进个人。
11. 1991 年, 烟台大学教学优秀教师。