

# 中文目次

## 综述

- 1771** 微生物源挥发性物质防治采后果蔬病害的研究进展  
钟涛, 王智荣, 杜木英
- 1786** 好氧反硝化菌代谢机制及其与重金属相互作用的代谢特征  
朱婉瑜, 侍浏洋, 赵维, 黄志勇, 王兴彪
- 1799** 代谢组学技术在微藻研究中的应用  
赵燕妮, 李悦, 安靖, 刘欢, 王希越
- 1816** 肠道菌群多糖利用及代谢  
刘昭曦, 王禄山, 陈敏
- 1829** 猪链球菌生物被膜形成的耐药机制  
靳曼玉, 李金朋, 易力, 汪洋
- 1839** 抗细菌药物默诺霉素的化学生物学研究进展  
李兴, 欧一新, 康前进, 白林泉, 邓子新
- 1856** 铜绿假单胞菌锌离子摄取系统的研究进展  
牛艳婷, 王帅涛, 成娟丽, 林金水
- 1873** 病毒工厂: 病毒复制的关键场所  
王冰, 吴红霞, 仇华吉, 孙元
- 1882** cGAS-STING信号通路: 免疫监视的重要机制  
周萍萍, 王涛, 孙元, 仇华吉
- 1896** 果蝇肠道共生菌对宿主作用的研究进展  
杜艳娇, 田瑶, 袁志霄, 杨明耀

## 研究报告

- 1910** 基于基因组序列的脑膜炎奈瑟菌分型方法  
袁梦, 张雯, 胡鹏威, 俞慕华, 陈辉, 徐丽, 高源, 朱兵清, 段永翔, 邵祝军
- 1920** 基于内源III-B型CRISPR-Cas系统构建超嗜热火球菌*Pyrococcus yayanosii* A1的基因敲降系统  
陈柔珂, 吕永新, 张欢欢, 宋庆浩, 徐俊
- 1933** 宏基因组技术研究泥岩母质发育的三种不同pH紫色土硝化微生物群落演变规律  
王智慧, 蒋先军
- 1945** CRISPR/Cas9介导的RPSA基因敲除细胞系的建立及其应用  
高利利, 王聪聪, 杨帆, 曹伟军, 张向乐, 刘湘涛, 朱紫祥, 郑海学
- 1957** 一株新型云南牛环状病毒的分离鉴定  
杨振兴, 李占鸿, 廖德芳, 高翔, 胡忠燕, 谢佳芮, 李华春, 杨恒
- 1971** 裂解性多糖单加氧酶HcLPMO与纤维素酶协同降解纤维素  
黄天晨, 杨建花, 唐梓静, 高乐, 张东远, 侯颖, 朱蕾蕾
- 1983** 丙氨酸消旋酶C-端结构域重组体的构建及其功能初探  
何广正, 韩卿卿, 翟添佐, 徐书景, 鞠建松

- 1997** 紫色红曲霉Mp-21胞内次级代谢产物的分离纯化与活性研究

丁允章, 倪峰, 赵鑫, 张奕嘉, 蒋冬花

- 2007** 一株林麝肺源创口博德特氏杆菌全基因组及细胞致死性肿胀毒素分析

曾红梅, 赵位, 王翔, 晏仕强, 杨泽晓, 罗燕, 程建国, 王印, 姚学萍

- 2018** EAEC噬菌体PNJ1809-11和PNJ1809-13作为环境消毒剂的杀菌效果评估

钱新杰, 李一昊, 曾頲, 殷哈杰, 王瑜欣, 黄豪圣, 巩倩斐, 李德志, 薛峰, 汤芳, 戴建君

- 2031** 日粮添加复合饲用益生菌对肉牛生长性能及肠道微生物的影响

王磊, 曹锡, 吴国芳, 陈永忠, 孟茹, 吴英, 王淑琴, 严德青, 张科, 张成图

- 2043** 一株金黄色葡萄球菌噬菌体的裂解谱特异性和分子分类研究

张志宏, 杨娇, 张海鹏, 钟佑宏, 王鹏

- 2053** 牛痘病毒感染人巨噬细胞基因表达谱的RNA-Seq分析

霍姚姚, 孙钦秒, 王晓娜

- 2065** 镇江香醋核心酿造微生物醋酸杆菌和乳酸杆菌共培养对生长代谢的影响

孙红, 柴丽娟, 陆震鸣, 张晓娟, 吉晋波, 史劲松, 许正宏

- 2077** 短梗霉产liamocins研究进展

武利勤, 杨素玲, 亓丽梅, 刘桂君, 顾海科

- 2091** Cr<sup>3+</sup>和Cd<sup>2+</sup>对普通小球藻生长及抗氧化酶活性的影响

蕙玉琴, 赖金霞, 张明旭, 任春燕, 孔维宝, 贾凌云

- 2101** 海南地区与环渤海湾美人鱼发光杆菌美人鱼亚种水产动物分离株的表型与遗传特征分析

刘潇, 张正, 王丽芳, 于永翔, 王印庚, 廖梅杰, 谢国驷, 邢婧, 张浩, 王凯, 许悦

- 2112** 黄芩苷对嗜水气单胞菌生物膜形成的影响及体内外的抑菌作用

蒋长军, 管翠翠, 胡小敏, 姚伦广, 阚云超, 邱初

- 2121** 亮斑扁角水蛇卵共生菌*Bacillus velezensis*的鉴定和产酶特征及其对幼虫分解餐厨垃圾效率的影响

陈想, 赵思捷, 梁婷婷, 张继冉, 陈红歌, 杨森

- 2136** 野生建兰根系共生真菌群落结构及生物学功能

周杰, 谢泰祥, 刘江枫, 兰琳英, 徐艳芳, 刘志毅, 艾叶, 张清华

## 其他

- 封二** 《微生物学报》2020年度“优秀论文”名单

- 文后** 《微生物学报》征稿简则

- 封三** 欢迎订阅《微生物学报》

## 广告

- 文前(I/II)** 国家微生物科学数据中心

- 文前(III/IV)** 镇江东方生物工程设备有限公司

# CONTENTS

## REVIEWS

- 1785 Control of postharvest fruits and vegetables diseases by microbial volatile compounds  
Tao Zhong, Zhirong Wang, Muying Du
- 1798 Metabolic characteristics of aerobic denitrifiers and their interactions with heavy metals  
Wanyu Zhu, Liuyang Shi, Wei Zhao, Zhiyong Huang, Xingbiao Wang
- 1815 Application of metabolomics approaches in microalgae research  
Yanni Zhao, Yue Li, Jing An, Huan Liu, Xiyue Wang
- 1828 Glycan utilization and metabolism by gut microbiota  
Zhaoxi Liu, Lushan Wang, Min Chen
- 1838 Biofilm-associated drug resistance in *Streptococcus suis*  
Manyu Jin, Jinpeng Li, Li Yi, Yang Wang
- 1855 Advances in chemical and biological research of the antibacterial drug moenomycins  
Xing Li, Yixin Ou, Qianjin Kang, Linquan Bai, Zixin Deng
- 1872 Zinc uptake systems in *Pseudomonas aeruginosa*  
Yanting Niu, Shuitao Wang, Juanli Cheng, Jinshui Lin
- 1881 Viral factory: a critical site for virus replication  
Bing Wang, Hongxia Wu, Hua-Ji Qiu, Yuan Sun
- 1895 cGAS-STING signaling pathway: important mechanisms of immune surveillance  
Pingping Zhou, Tao Wang, Yuan Sun, Hua-Ji Qiu
- 1909 Research progress on the effect of symbiotic bacteria in *Drosophila* gut on its host  
Yanjiao Du, Yao Tian, Zhixiao Yuan, Mingyao Yang

## RESEARCH ARTICLES

- 1919 Whole genome sequence-based typing methods for *Neisseria meningitidis*  
Meng Yuan, Wen Zhang, Pengwei Hu, Muhua Yu, Hui Chen, Li Xu, Yuan Gao, Bingqing Zhu, Yongxiang Duan, Zhujun Shao
- 1932 An endogenous type III-B CRISPR-Cas based gene knockdown system in *Pyrococcus yayanosii* A1  
Rouke Chen, Yongxin Lv, Huanhuan Zhang, Qinghao Song, Jun Xu
- 1944 Metagenomics-centric assembly of nitrifying communities in three pH-distinct soils with the same origin of parent material  
Zhihui Wang, Xianjun Jiang
- 1956 Construction of RPSA gene knockout BHK21 cell line using the CRISPR/Cas9 system  
Lili Gao, Congcong Wang, Fan Yang, Weijun Cao, Xiangle Zhang, Xiangtao Liu, Zixiang Zhu, Haixue Zheng
- 1970 Identification of a novel *Orbivirus* strain isolated from sentinel cattle in Yunnan Province  
Zhenxing Yang, Zhanhong Li, Defang Liao, Xiang Gao, Zhongyan Hu, Jiarui Xie, Huachun Li, Heng Yang
- 1982 Synergistic degradation of cellulose by lytic polysaccharides monooxygenase *HcLPMO* and cellulase  
Tianchen Huang, Jianhua Yang, Zijing Tang, Le Gao, Dongyuan Zhang, Ying Hou, Leilei Zhu
- 1996 Study on the construction and function of C-terminal domain recombinant of alanine racemase  
Guangzheng He, Qingqing Han, Xizuo Zhai, Shujing Xu, Jiansong Ju
- 2006 Separation, purification and bioactivity analysis of intracellular secondary metabolites from *Monascus purpureus* Mp-21  
Yunzhang Ding, Feng Ni, Xin Zhao, Yijia Zhang, Donghua Jiang
- 2017 Whole genome sequence and cytolethal distending toxin analysis of a *Bordetella trematum* from the lung of a forest musk deer  
Hongmei Zeng, Wei Zhao, Xiang Wang, Shiqiang Yan, Zexiao Yang, Yan Luo, Jianguo Chen, Yin Wang, Xueping Yao
- 2030 Evaluation of sterilization efficiency of EAEC phage P NJ1809-11 and P NJ1809-13 as environmental disinfectants  
Xinjie Qian, Yihao Li, Hang Zeng, Hanjie Yin, Yuxin Wang, Haosheng Huang, Qianwen Gong, Dezhi Li, Feng Xue, Fang Tang, Jianjun Dai
- 2042 Effects of probiotics supplementation in feed on cattle growth and gut microbiota  
Lei Wang, Xi Cao, Guofang Wu, Yongzhong Chen, Ru Meng, Ying Wu, Shujin Wang, Deqin Yan, Ke Zhang, Chengtu Zhang
- 2052 Host range and molecular classification of a *Staphylococcus aureus* bacteriophage  
Zhihong Zhang, Jiao Yang, Haipeng Zhang, Youhong Zhong, Peng Wang
- 2064 RNA-Seq analysis of gene expression profile of human macrophages infected by vaccinia virus  
Raorao Huo, Qinmiao Sun, Xiaona Wang
- 2076 Effect of co-culture of *Acetobacter* and *Lactobacillus* strains on growth and metabolism of the key functional microbes during Zhenjiang aromatic vinegar fermentation  
Hong Sun, Lijuan Chai, Zhenming Lu, Xiaojuan Zhang, Jinbo Ji, Jinsong Shi, Zhenghong Xu
- 2090 Liamocins produced by *Aeruobasidium* spp.  
Liqin Wu, Suling Yang, Limei Qi, Guijun Liu, Haike Gu
- 2100 Effects of Cr<sup>3+</sup> and Cd<sup>2+</sup> on the growth and antioxidant enzyme activity of *Chlorella vulgaris*  
Yuqin Xi, Jinxia Lai, Mingxu Zhang, Chunyan Ren, Weibao Kong, Lingyun Jia
- 2111 Phenotypic and genetic diversity of *Photobacterium damsela* subsp. *damsela* isolated from aquatic animals in Hainan Province and Bohai Sea region  
Xiao Liu, Zheng Zhang, Lifang Wang, Yongxiang Yu, Yingeng Wang, Meijie Liao, Guosi Xie, Jing Xing, Hao Zhang, Kai Wang, Yue Xu
- 2120 Bacteriostatic and antibiofilm effects of baicalin on *Aeromonas hydrophila*: *in vitro* and *in vivo* evaluation  
Changjun Jiang, Cuicui Guan, Xiaomin Hu, Lunguang Yao, Yunchao Kan, Reng Qiu
- 2135 Identification and enzyme profiling of black soldier fly egg commensal *Bacillus velezensis* and its effect on food waste bioconversion  
Xiang Chen, Sijie Zhao, Tingting Liang, Jiran Zhang, Hongge Chen, Sen Yang
- 2153 Community structure and biological function of the root symbiotic fungi of wild *Cymbidium ensifolium*  
Jie Zhou, Taixiang Xie, Jiangfeng Liu, Linying Lan, Yanfang Xu, Zhiyi Liu, Ye Ai, Qinghua Zhang

(本期责编：李磊)