

# Contents

## Part I Microbial Genetics and Breeding

<b>1</b>	<b>Inheritance Analysis for Exserted Stigma Rate in <i>Japonica</i> Rice</b> . . . . .	<b>3</b>
	Ruhua Wang, Na Yan, Xueyan Gao, Jie Yu, Fang Wang and Zetian Hua	
<b>2</b>	<b>Cloning and Expression of <math>\beta</math>-Glucosidase from Cassava in <i>Pichia pastoris</i> GS115</b> . . . . .	<b>11</b>
	Dongheng Guo, Hongming Tian, Yanshan Xu and Suiping Zheng	
<b>3</b>	<b>Construction of L-tert-Leucine Producing Strain by Expressing Heterologous Leucine Dehydrogenase and Formate Dehydrogenase in <i>Escherichia coli</i></b> . . . . .	<b>21</b>
	Junzhen Bai, Yajian Song, Xuegang Luo, Haixu Yang, Wen Du and Tongcun Zhang	
<b>4</b>	<b>The Distribution Characteristics of <i>Microcystis novacekii</i> Based on 16S rDNA Sequence</b> . . . . .	<b>31</b>
	Da Huo, Yang Luo, Yunsi Nie, Jing Sun, Yanan Wang and Zhiyi Qiao	
<b>5</b>	<b>The Distribution and Molecular Identification of the <i>Microcystis aeruginosa</i> in Yuqiao Reservoir</b> . . . . .	<b>43</b>
	Zhiyi Qiao, Da Huo, Jun Zhang, Jing Sun, Yunsi Nie and Yanan Wang	
<b>6</b>	<b>The Improved Stress Tolerance of <i>Escherichia coli</i> by Directed Evolution of IrrE</b> . . . . .	<b>53</b>
	Jianmei Luo, Jiajia Liu, Yuanyuan Zheng and Min Wang	

<b>7</b>	<b>Cloning and Characterization of the <i>TMEPAI</i> Gene Promoter</b> . . . . .	<b>67</b>
	Ailong Guo, Ping Qin, Weiwei Shi, Yuyin Li and Aipo Diao	
<b>8</b>	<b>Cloning and Expression of a Novel Xylanase Xyn11-1 from Alkaline Soil.</b> . . . .	<b>75</b>
	Kun Li, Zhongyuan Li, Xuegang Luo, Cuixia Feng, Cuiqiong Wang, Minghui Zhang and Tongcun Zhang	
<b>9</b>	<b>To Establish the Regeneration System of Sweet Sorghum Immature Embryos.</b> . . . .	<b>83</b>
	Xiaomu Chen, Oujing Li, Lili Shi, Xianhua Wu, Boxian Xia and Zhongyou Pei	
<b>10</b>	<b>Cloning and Sequence Analysis of a Novel ACC Oxidase Gene from Peanut (<i>Arachis hypogaea</i> L.)</b> . . . . .	<b>93</b>
	Quanxi Sun, Xiuzhen Wang, Yueyi Tang, Qi Wu, Yunyun Wang, Qingyun Zhang, Guangying Cao, Shuo Meng and Chuantang Wang	
<b>11</b>	<b>Genetic Diversity Among the Microorganisms in Daqu Used for Beidacang Liquor as Revealed by RAPD Analyses</b> . . . .	<b>99</b>
	Shi-Wei Wang, Qing-Hui Wang, Li-Ping Zhai, Jun Liu, Zhi-Dan Yu, Mao-Mao Zheng and Fang Wang	
<b>12</b>	<b><i>Stenotrophomonas maltophilia</i> Having Decolorization Capability of Azo Dye Isolated from Anaerobic Sludge.</b> . . . .	<b>109</b>
	Wei Feng, Peng Song, Yang Zhang and Zixing Dong	
<b>13</b>	<b>In Silico Cloning and Sequence Analysis of F3H Gene in <i>Raphanus sativus</i> L.</b> . . . .	<b>117</b>
	Guang Ma and Jiping Guo	
<b>14</b>	<b>The Comparative Study of Fermentation Capability of Wheat Beer Yeast.</b> . . . .	<b>125</b>
	Jinxu Sun, Yue Wang and Cuicui Wang	
<b>15</b>	<b>Screening of Dual Defects Strain and Effects on L-Isoleucine Production in <i>Escherichia coli</i> NML</b> . . . . .	<b>135</b>
	Linan Yu, Huiyan Liu, Haitian Fang and Qing Wu	
<b>16</b>	<b>Effect of <i>MIG1</i> Gene Deletion on Lactose Utilization in Lac<sup>+</sup> <i>Saccharomyces cerevisiae</i> Engineering Strains.</b> . . . .	<b>143</b>
	Jing Zou, Xuewu Guo, Jian Dong, Cuiying Zhang and Dongguang Xiao	

<b>17 Enzyme Activity Analysis of Protease Produced by Marine Bacteria . . . . .</b>	<b>153</b>
Qi Zhang, Xihong He and Hao Liu	
<b>18 Expression of Gene <i>uvrA</i> from <i>Acetobacter pasteurianus</i> and Its Tolerance to Acetic Acid in <i>Escherichia coli</i> . . . . .</b>	<b>163</b>
Yu Zheng, Xingjing Chen, Jing Wang, Haisong Yin, Liqing Wang and Min Wang	
<b>19 Construction of <i>Escherichia coli</i>-<i>Staphylococcus</i> Shuttle Vector for EGFP Expression and Potential Secretion via Tat Pathway . . . . .</b>	<b>171</b>
Bao-yin Xu, Yi-bing Cheng, Lin Wang, Hao Zhou, Lin Huang, Xiao-yan Tang and Qiang Gao	
<b>20 SNP Affects the Mobility of Breast Cancer Cells and the Expression of Metastasis-Related Genes. . . . .</b>	<b>181</b>
Juan Hu, Hongpeng He, Hao Zhou, Dandan Wang, Yijie Wang, Xuena Liu, Yongwei Lai and Tongcun Zhang	
<b>21 Molecular Cloning and Characterization of Glycerol Dehydrogenase from <i>Klebsiella pneumoniae</i> . . . . .</b>	<b>189</b>
Yanhua Liu, Li Zhao, Jianguo Zhang and Yu Zheng	
<b>22 Expression of Glucose-6-Phosphate Dehydrogenase and 6-Phosphogluconate Dehydrogenase Improve L-Citrulline Biosynthesis in <i>argG</i>-Deleted <i>Corynebacterium glutamicum</i> . . . . .</b>	<b>197</b>
Zhaoxing Liu, Luping Chen, Ning Hao, Lin Xu, Yan Li, Ming Yan and Pingkai Ouyang	

## **Part II Optimization and Control of Biological Process**

<b>23 Production of Amino Acids by Mixed Bacterial Strains-Mediated Solid State Fermentation of Feathers and Dynamic Changes to the Fermentation System . . . . .</b>	<b>207</b>
Yu Li, Dunji Hu, Sheng Chen, Xiangnan Lei, Xiangjin Zhang, Xiaoguang Liu and Fuping Lu	
<b>24 Effects of Culture Medium on PUFAs Production by <i>Mortierella isabellinas</i> . . . . .</b>	<b>219</b>
Dengyue Sun, Cuixia Zhou, Chuanhe Zhu and Yanru Sun	

<b>25</b>	<b>A Simple Mechanochemical Cycle Model for Dynein . . . . .</b>	<b>229</b>
	Xiaoyang Zhao, Wei Sun, Junping Zhang, Tala Lei and Weisheng Guo	
<b>26</b>	<b>The Research on Biotransformation Pathway of Digitoxin by <i>Aspergillus ochraceus</i> and the Analysis of Products Activity . . . . .</b>	<b>237</b>
	Jianmei Luo, Ting Song, Fangfang Cui, Yanbing Shen and Min Wang	
<b>27</b>	<b><i>Astragalus membranaceus</i> Polysaccharide-Enhanced Lymphocytes Proliferation of Yellow Drum <i>Nibea albiflora</i> In Vitro . . . . .</b>	<b>249</b>
	Huilai Shi, Fangping Yu and Qingkui Wang	
<b>28</b>	<b><i>Aspergillus niger</i> Pellets Absorbed <i>Bacillus</i> sp. Isolated from Soybean Wastewater Sludge . . . . .</b>	<b>255</b>
	Ningning Diao, Xiaowei Wu and Jianguo Zhang	
<b>29</b>	<b>Expression, Purification and Characterization of Maltase from “Quick” Baker’s Yeast . . . . .</b>	<b>265</b>
	Cui-Ying Zhang, Hai-Yan Song, Xue Lin, Xiao-Wen Bai and Dong-Guang Xiao	
<b>30</b>	<b>Evaluation of an Ethanol-Tolerant <i>Acetobacter pasteurianus</i> Mutant Generated by a New Atmospheric and Room Temperature Plasma (ARTP) . . . . .</b>	<b>277</b>
	Xiaoying Wu, Yuqiao Wei, Zeming Xu, Lingpu Liu, Zhilei Tan and Shiru Jia	
<b>31</b>	<b>A Thermotolerant <i>Acetobacter pasteurianus</i> T24 Achieving Acetic Acid Fermentation at High Temperature in Self-Adaption Experiment . . . . .</b>	<b>287</b>
	Yuqiao Wei, Xiaoying Wu, Zeming Xu, Zhilei Tan and Shiru Jia	
<b>32</b>	<b>Optimization of Cultural Conditions for Extracellular Polymeric Substances (EPS) Production by <i>Burkholderia</i> Using Response Surface Methodology . . . . .</b>	<b>295</b>
	Baojiang Sun, Peipei Han, Ruyi Tao, Qixiu Pang and Shiru Jia	
<b>33</b>	<b>Effects of pH, Temperature, Storage Time, and Protective Agents on Nisin Antibacterial Stability. . . . .</b>	<b>305</b>
	Zhilei Tan, Jing Luo, Fang Liu, Qian Zhang and Shiru Jia	

<b>34</b>	<b>Enhanced Solvent-Stable Alpha Glycosidase Production by <i>Bacillus licheniformis</i> JXC-1 by Optimization of Feeding Strategies</b> . . . . .	313
	Jun Fang, Qunfang Tang, Long Liu and Jianghua Li	
<b>35</b>	<b>The Effect of Different Activated Carbon and Bleaching Temperature on Kojic Acid Bleaching</b> . . . . .	325
	Wu Meng, Cuiying Zhang and Dongguang Xiao	
<b>36</b>	<b>Effect of Iodine on the Growth and Quality of <i>Nostoc flagelliforme</i></b> . . . . .	335
	Honglei Fu, Yujie Dai, Yue Han, Lifang Yue, Feng Xia and Shiru Jia	
<b>37</b>	<b>The Replacement of Phe28 by Ser Enhances the Stability of the GLP-1 Analog During Fermentation</b> . . . . .	343
	Peng-Yan Li, Xue-Gang Luo, Qian Li, Wei Zhao, Hao Zhou and Tong-Cun Zhang	
<b>38</b>	<b>Optimization of Fermentation Condition of Man-Made Bee-Bread by Response Surface Methodology</b> . . . . .	353
	Chuanren Duan, Yongfen Feng, Hao Zhou, Xiaohua Xia, Yaning Shang and Yamin Cui	
<b>39</b>	<b>Prediction of Lysine Acetylation Sites in <i>Porcine Pancreas</i> Lipase Modified by the Ionic Liquids Using Molecular Dynamics Simulations</b> . . . . .	365
	Yi-Gang Jia, Yang Zhang, Hong-Man Zhang, He Huang, Lu-Jia Zhang and Yi Hu	
<b>40</b>	<b>Effect of Oxygen on Fermentation Characteristics of Three Non-<i>Saccharomyces</i> from Hengshui Laobaigan</b> . . . . .	381
	Huixia Zhu, Yuhang Zhang, Zexia Li, Yawei Guo, Zongzhi Cheng, Dongguang Xiao and Zhimin Zhang	
<b>41</b>	<b>Microbial Transformation of Antitumor Isatin Derivatives by Fungi</b> . . . . .	391
	Xiaolin Peng, Kailin Han, Yan Wang, Peng Yu and Hua Sun	
<b>42</b>	<b>Effect of Ultrasound on Lysine Muriate Crystallization</b> . . . . .	397
	Aijun Hu, Zili Chen, Shuting Jiao, Huanqin Peng, Yanshu Fan, Lin Chen, Meiling Liu and Jie Zheng	

<b>43</b>	<b>Isolation and Identification of a <i>Bacillus amyloliquefaciens</i> Strain Against Grape Downy Mildew and Optimization for Its Liquid Fermentation Medium . . . . .</b>	<b>409</b>
	Jiping Guo, Guang Ma, Huixia Zhu and Junfan Fu	
<b>44</b>	<b>The Adsorption Properties of Macroporous Resin for Fusel Oil of Luzhou—Flavor Liquor . . . . .</b>	<b>419</b>
	Jinxu Sun	
<b>45</b>	<b>Low Labeling <math>^{13}\text{C}</math> Metabolic Flux Analysis of <i>Saccharomyces cerevisiae</i> Using Gas Chromatography–Combustion–Isotope Ratio Mass Spectrometry . . . . .</b>	<b>427</b>
	Qi-ding Zhong, Guo-hui Li, Dong-dong Zhao, Dao-bing Wang, Shi-gang Shen and Zheng-he Xiong	
<b>46</b>	<b>A Comparative Study on the Antioxidant Activity of Two Polysaccharides from <i>Ganoderma lucidum</i> . . . . .</b>	<b>441</b>
	Ruyu Tao, Limin Hao, Shiru Jia, Xin Zheng, Jianyong Yu and Qingwu Jiang	
<b>47</b>	<b>Biofortification Using Bacteria Containing an Atrazine-Degrading Gene and Its Effects on Reactor Operating Efficiency . . . . .</b>	<b>451</b>
	Yue Wang and Jinxu Sun	
<b>48</b>	<b>A Novel One-Pot Five-Component Synthesis of Tetrahydro-pyrrolo[3,4-<i>b</i>]pyridine-5-one via Ugi/Aza-Diels–Alder Tandem Reaction . . . . .</b>	<b>461</b>
	Yan Liu, Tianyi Shang, Chuanming Xu, Hui Yang, Peng Yu and Kui Lu	
<b>49</b>	<b>Study on Preparation and Application of High Esterification Green-Liquor Daqu . . . . .</b>	<b>467</b>
	Xiao-Dan Wang, Bei Xiao, Shi-Dong Ban, Si-Xia Xu, Xi-Cui Shen and Shu-Yi Qiu	
<b>50</b>	<b>Metabolomics Analysis Between Wild-Type and Industrial Strains of <i>Streptomyces avermitilis</i> Based on Gas Chromatography–Mass Spectrometry Strategy. . . . .</b>	<b>477</b>
	Gang Guo, Ping-ping Tian, Dan Tang, Xiaoxia Wang, Hong-jin Yang, Peng Cao and Qiang Gao	

<b>51 Application of Orthogonal Design to Optimize Fermentation Conditions of <i>Bacillus amyloliquefaciens</i> BI<sub>2</sub>. . . . .</b>	<b>487</b>
Yajun Wang, Zhanglei Cao, Miao Yu and Depei Wang	
<b>52 Optimization of Fermentation Medium for Citric Acid Production by <i>Aspergillus niger</i>. . . . .</b>	<b>497</b>
Jianhua Zhang, Kun Li, Juan Huang and Depei Wang	
<b>53 Study on the Soxhlet's Extraction of Star Anise Oil and Preliminary Investigation of Its Antibacterial Activity . . . . .</b>	<b>509</b>
Lin Tian and Ping Li	

### **Part III Biological Separation and Biological Purification**

<b>54 Production of Diosgenin from <i>Dioscorea zingiberensis</i> by Mixed Culture of Three Filamentous Fungi. . . . .</b>	<b>521</b>
Hua Xiao, Linlin Huang, Jinxia Xie, Songtao Bie and Yu Li	
<b>55 Characterization of Volatile Constituents of Chinese Hawthorn (<i>Crataegus</i> spp.) Fruit Juices . . . . .</b>	<b>533</b>
Yuping Zhao, Yangyang Wang, Jiwu Wang, Zhilian Wu, Zuli Sun, Tiantian Tian, Hao Niu, Lili Jing, Zhengyu Fang and Jianrong Yang	
<b>56 Optimization of Extraction Conditions for Crude Antibacterial Proteins/Peptides from <i>Clarias gariepinus</i> By-products . . . . .</b>	<b>547</b>
Yan Wang, Yunxia Xu, Junyan Mei, Chengxun Chen and Xiaomei Wang	
<b>57 Screening, Isolation, and Identification of <i>Bacillus coagulans</i> C2 in Pu'er Tea . . . . .</b>	<b>557</b>
Cuixia Feng, Zhongyuan Li, Kun Li, Minghui Zhang, Cuiqiong Wang, Xuegang Luo and Tongcun Zhang	
<b>58 Production and Identification of Antifungal Compounds Produced by <i>Bacillus subtilis</i> B579. . . . .</b>	<b>563</b>
Fang Chen, Yu Zheng, Jianmei Luo, Deduo Han and Min Wang	

<b>59</b>	<b>Application of Molecularly Imprinted Polymers in Purification and Separation for Epothilones . . . . .</b>	<b>571</b>
	Ruicheng Sun, Lin Zhao, Jikun Yang, Naiqiang Wang and Xinli Liu	
<b>60</b>	<b>Identification of Peanut Intersectional Hybrids with SSR Markers . . . . .</b>	<b>581</b>
	Shuo Meng, Xiu Zhen Wang, Yue Yi Tang, Qi Wu, Quan Xi Sun, Chen Jiang, Chuan Tang Wang and Li Feng Liu	
<b>61</b>	<b>Partial Purification and Chemical Characterization of a Bioemulsifier and Its Application in MEOR . . . . .</b>	<b>587</b>
	Dayuan Dong, Xingbiao Wang, Mingyu Cai, Jingjing Wang, Yifan Han, Xiaoxia Zhang and Zhiyong Huang	
<b>62</b>	<b>Optimization of a Whey Containing Medium for <math>\beta</math>-Galactosidase Production by <i>Lactobacillus reuteri</i>. . . . .</b>	<b>599</b>
	Mengfei Li, Huiming Zhu, Huibin Qin, Yan Zhang and Hongjiang Yang	
<b>63</b>	<b>Enzymatic Bioconversion for <math>\gamma</math>-Aminobutyric Acid by <i>Lactobacillus brevis</i> CGMCC No. 3414 Resting Cells . . . . .</b>	<b>609</b>
	Xiu-feng Shi, Bo Zheng, Chuan-you Chang, Peng Cao, Hong-jin Yang and Qiang Gao	
 <b>Part IV Progress of Biotechnology</b>		
<b>64</b>	<b>[FeFe]-Hydrogenase: Catalytic Center and Modification by Genetic Engineering . . . . .</b>	<b>621</b>
	Jiayi He and Chunfei Wu	
<b>65</b>	<b>Characteristics of <i>Staphylococcus aureus</i> Isolates from Raw Milk. . . . .</b>	<b>629</b>
	Xiaomei Zhang, Qian Li and Hongjiang Yang	
<b>66</b>	<b>EST-SSR Marker-Based Assay for Purity Identification of Melon “Green Angle” . . . . .</b>	<b>637</b>
	Ou-Jing Li, Xiao-Mu Chen, Pu-Xian Xia, Zhong-You Pei, Yong Wang, Qing-Kuo Lan and Ruo-Wei Zhang	

**67 Exposure to Static Magnetic Fields Affects Insulin Secretion  
in INS Cells . . . . . 643**  
Libin Mao, Zhixia Guo, Huiqin Wang, Qiongyao Wu,  
Nan Wang and Tong-Cun Zhang

**68 The New Strategy of Breeding Cytidine Excessive  
Biosynthesis Mutants by *pyr* Operon Rearrangement  
of *Bacillus amyloliquefaciens* . . . . . 649**  
Qing Wu, Huiyan Liu, Haitian Fang, Jianguo He,  
Xiaoguang He and Linan Yu

Advances in Applied Biotechnology  
Proceedings of the 2nd International Conference on  
Applied Biotechnology (ICAB 2014)-Volume II  
Zhang, T.-C.; Nakajima, M. (Eds.)  
2015, XV, 656 p. 277 illus., Hardcover  
ISBN: 978-3-662-46317-8