Enrichment of Uncultured Ammonium Oxidizing and Denitrifying Bacteria from Antarctic Soil

Ahnna Cho, Yong-Joon Cho, and Ok-Sun Kim^{*}

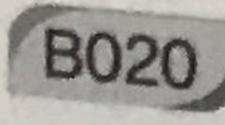
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Bacteria are contribution a large role in the nitrogen cycle of ecosystems, especially in limited habitat, such as Antarctica. For the cultivation of bacteria involved in the nitrogen cycle of the Antarctica, three soils of King George Island were enriched for nitrogen fixation (NF), ammonium oxidation (AO) and denitrification (DN). Changes in N₂O gas, ammonium, nitrite and nitrate concentrations were measured every 14 days. Ammonium oxidation and denitrification were confirmed by measuring changes in nitrogen concentration, and 16S rRNA gene was amplified and analyzed for bacterial communities. Functional gene *amoA*, which is an ammonium oxidizing gene, and *nirK*, *nirS* and *nosZ*, denitrifying genes, were confirmed. As a result of the bacterial community analysis, it was found that the culture of ammonium oxidizing bacterium were cultivated with *Micavibrio, Oxalobacteraceae* and *Pseudomonadaceae*. *Oxalobacteraceae, Pseudomonadaceae* and *Propionibacteriaceae* were cultivated in denitrifying bacteria enriched culture. The denitrification pathway and the dissimilatory nitrite reductase pathway were found in the DN_1B and DN_3A denitrifying bacterium cultured in the SEED profile. The ammonia assimilation pathway was more abundant in AO_2C cultured with ammonium oxidizing bacteria. And environmental genetic analysis of the cultures obtained by enrichment will help to understand the ecological function and role of bacteria in the ecosystem. [Supported by the Korea polar Research Institute (Grant PE19090)]

B015 Enrichment of Uncultured Ammonium Oxidizing and Denitrifying Bacteria from Antarctic Soil Ahma Cho, Yong-Joon Cho, and Ok-Sun Kim* Division of Polar Life Sciences, Korea Polar Research Institute (KOPRI)

B016

A Novel Bacterial Strain from the Tomato Rhizosphere Resistant to Bacterial Wilt Has an Antagonistic Activity against Ralstonia solanacearum Hyein Park¹, Min-Jung Kwak¹, Jidam Lee¹, Soon-Kyeong Kwon^{1,2}, Ju Yeon Song¹, Seon-Woo Lee³, and Jihyun F. Kim¹*



Nematocide Active Substances for Bursaphelenchus xylophilus Isolated from Actinomycetes Min-Kyoung Kang^{1,2}, Min-Jiao Liu^{1,3}, Hae-Ryong Park^{1,4}, Jong Min Lee¹, Chun-Zhi Jin^{1,3}, Dong Hyo Kang^{1,3}, Dong-Jin Park¹, Young Ho Kim², and Chang-Jin Kim^{1,3}*

Poster /

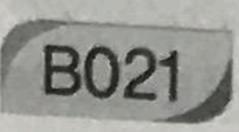
¹Industrial Bio-materials Research Center, Korea Research Institute of Bioscience and Biotechnology, ²College of Pharmacy, Chungnam National University, ³Department of Bio-Molecular Science, KRIBB School of Bioscience, Korea University of Science and Technology (UST), ⁴Department of Food Science and Biotechnology, Kyungnam University

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B017

Microbial Mercury Transformations in Methane Hydrate Sediments of Arctic Sea Minkyeong Jeon¹, Hyeyoun Cho², Jihee Kim¹, Jung-Ho Hyun², and Seunghee Han¹*

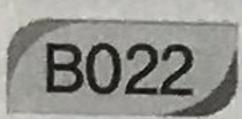
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Comparison of Enkephalin and Gramicidin-S as Internal Standard in Measuring Microcystins from Cyanobacterial Biomass

Ji-Min Hwang, Bo-Ri Kim, Ji-Soo Shin, Jae-Hun Lee, Hye-Ryoung Kim, Kyoung-Hee Oh, and Young-Cheol Cho*

Department of Environmental Engineering, Chungbuk National University



Distribution of Antibiotic Resistance Genes within Viral Metagenomes of Urban Wastewater Treatment Plants Kira Moon¹, Ilnam Kang¹, Chang-Jun Cha², and Jang-cheon Cho¹*

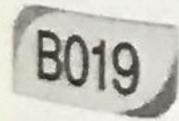
¹Department of Biological Sciences, Inha University, ²Department of Systems Biotechnology and Center for Antibiotic Resistome, Chung-Ang University



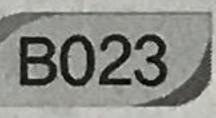
Evaluation of the Nematicidal Activity of Endophytic Bacterial Populations from Pinus spp. and Isolation of Bioactive Metabolites from Streptomyces sp. AE170020 against Bursaphelenchus xylophilus

Min-Jiao Liu^{1,2}, Chun-Zhi Jin^{1,2}, Dong-Jin Park¹, Min-Kyoung Kang^{1,3}, Jun-Heon Kim⁴, Sang-Hyun Koh⁴, and Chang-Jin Kim^{1,2}*

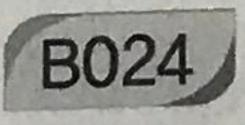
¹Industrial Biomaterial Research Center, Korea Research Institute of Bioscience and Biotechnology (KRIBB), ²Department of Bio-Molecular Science, KRIBB School of Bioscience, Korea University of Science and Technology (UST), ³College of Pharmacy, Chungnam National University, ⁴Forest Insect Pests and Diseases Division, National Institute of Forest Science



Rapid Determination of Salmonella enterica Serotypes Using Pan-genome Based on Real-Time PCR Method



Development and Optimization of Methods to Quantify Microcystins in Fish Tissues and Cyanobacterial Biomass Ji-Min Hwang, Min-Jeong Park, Bo-Ri Kim, Ji-Soo Shin, Jae-Hun Lee, Hye-Ryoung Kim, Kyoung-Hee Oh, and Young-Cheol Cho* Department of Environmental Engineering, Chungbuk National University

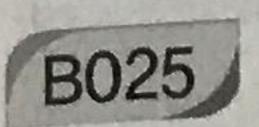


Transcriptomic Response of Bacillus mesoane H20-5 to Salt Induced Osmotic Stress Shailesh Sawant, Songhwa Kim, Ju Hee An, Mee Kyung Sang, Hang-Yeon Weon, and Jaekyeong Song* Agricultural Microbiology Division, National Institute of Agricultural Sciences,

RDA

So-Young Lee, Yun-Kyung Ki, Hoon-Jae Jeong, Joon-Gi Kwon, You-Tae Kim, and Ju-Hoon Lee*

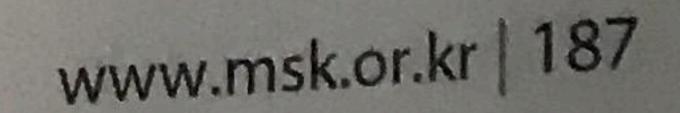
Department of Food Science and Biotechnology, Graduate School of Biotechnology, Kyung Hee University



Relationship between Cyanobacterial Numbers and Cyanobacterial Biomass Determined by Phycocyanin

Concentration

Jae-Hun Lee, Ji-Min Hwang, Ji-Soo Shin, Hye-Ryoung Kim, Bo-Ri Kim, Kyoung-Hee Oh, and Young-Cheol Cho* Department of Environmental Engineering, Chungbuk National University



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