

WDCM Training Course for Microbial Data Analysis

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WDCM, Chinese Academy of Science, Institute of Microbiology

PERSONAL INTRODUCTION:

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I am, Nuramkhaan Marjangul, started out as a research fellow at the Laboratory of Microbiology, Institute of Biology, and Mongolian Academy of Sciences upon my successful graduation from the Mongolian National University in 2001. The key duties include the taxonomic, ecological studies of microorganisms from Mongolian various extreme environments and the screening of the feasibility of the industrial utilization of microorganisms. From 2012 I entered the University of Tsukuba, Japan and my master thesis was focused on indigenous bacterial strains having detoxification activity, which were isolated from wastewater containing hexavalent chromium of Mongolian tanning industry. Currently, PhD student in University of Tsukuba and focusing waste water treatment by aerobic granulation and microbial community analysis.

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ABSTRACT

Our earth has a plenty of microorganisms and one of the important goals of microbial researchers is to publish of their research result. The Global Catalogue of Microorganism 2.0 Type Strain Sequencing Project will be helping to clarify classification and identification of the microorganisms, throughout genome based microbial taxonomy analysis.

Key words: Microbial diversity, GCM 2 project, Culture collection

1. BRIEF INTRODUCTION OF OUR CULTURE COLLECTION

Mongolian National Culture Collection of Microorganisms:

Main research goals are research and generation of new knowledge on Mongolian microbial biodiversity and their genetic resources, establishment of National microbial culture collection (*ex-situ* conservation of microbial biodiversity), screening and utilization of industrially important microorganisms that support innovation and biotechnology. Within the scope of the goals, we carry out following research activities:

- ✚ Ecology and diversity of microorganisms in Mongolian natural environments and milk products;
- ✚ Genetic resources of microorganisms (antimicrobials, enzymes and biosynthetic genes);
- ✚ Plant-microbe interactions:
 - endophytic microorganisms of Mongolian plants and their bio-active compounds;
 - nitrogen-fixing bacteria;
 - rhizosphere actinomycetes and bacteria;
 - streptomycetes causing potato scab and their biological control agents;

 Isolation, *ex-situ* conservation and taxonomic identification of microorganisms;

Publications and other activities:

For over the 30 years of research, the researchers of the Laboratory has published 20 books and monographs (internationally 12, domestically 8), 252 research articles and abstracts in abstract books (internationally 128, domestically 124), edited 4 books, compiled and edited 2 abstract books and has developed 5 patents.

In collaboration with National University of Mongolia the Laboratory participates in teaching for BSc, MSc and PhD degrees with major in Microbiology and Biotechnology. Furthermore, the Laboratory organizes training workshops on “Identification of mitosporic fungi”, “Diagnosis of plant diseases caused by fungi” led by Japanese professors. This workshop has been organized annually since 2013, and young researchers, graduate students and young teachers at universities, and professional inspection officers are participated.

International cooperation:

The Laboratory has much experience in international cooperation: doing joint research and organizing international workshops. Since the 1980s, joint research projects were implemented in collaboration with Institute of Microbiology, Bulgarian Academy of Sciences, Institute of New Antibiotics, Russian Academy of Medical Sciences, Bach Institute of Biochemistry, Russian Academy of Sciences

(RAS), Institute of General and Experimental Biology, Siberian branch of RAS, National Institute of Technology and Evaluation of Japan. Training and international workshops were organized together with Asian Productivity Organization and Mahidol University, Thailand (Application of recombinant DNA and fermentation technologies in biotechnology, 1997), UNU/IAS, Tokyo (Access and benefit sharing, traditional knowledge and biosafety for Central Asian countries and Mongolia, 2002) and within the GEF-UNEP-TWINISO global project (Asian regional workshop on biodiversity of Asia's drylands, 2001). At the present, we have collaboration with National Institute of Technology and Evaluation, Japan, University of Tsukuba, Japan, International Center for Biotechnology, Osaka University, Japan and University of Szeged, Hungary through joint research project and/or human resource development.

Main research results:

Ecology and taxonomic identification of microorganisms

Within the framework of taxonomic study, in collaboration with Japanese researchers, over 8000 microbial cultures were isolated from soils, mineral springs, salt lakes, plants and dairy products, and preserved at -80°C. Over 5600 of them were identified by using molecular markers, and as the result, 178 genera of fungi, 22 genera of yeast, 6 genera of chromista, 66 genera of actinomycetes, 81 genera of bacteria, 5 genera of archaea were recognized. Among them, 1 new genus