

微生物保存機関巡り (25)

The Philippine National Collection of Microorganisms (PNCM): From Endangered Culture Collection to International Depository Authority Aspirant

PNCM Profile

The PNCM traces its roots to the Microbial Culture Collection of the National Institute of Molecular Biology and Biotechnology (BIOTECH) which was established in 1981 at the University of the Philippines Los Baños (UPLB). The laboratory then served as an in-house collection that serviced the different research programs and activities of the institutes.

With growing demands from the academe, the industries and the local communities, and with its expertise in the field of microbiology, in 1987, the laboratory was converted into a service laboratory and renamed as the BIOTECH Microbial Culture Collection and Service Laboratory (MCCSL) providing microbiological services to its clients. In 1995, the laboratory was provided with a three-year grant by the DOST through the Philippine Council for Advanced Science and Technology Research and Development (PCASTRD) that upgraded the laboratory into a national repository of microorganisms and was thus renamed the Philippine National Collection of Microorganisms (PNCM).

After a year, the PNCM established the Philippine Network of Microbial Culture Collections, Inc. (PNMCC) with three other culture collections namely: UP Culture Collection of the Natural Sciences Research Institute in the University of the Philippines Diliman (UPCC), the Biofertilizer Germplasm Collection of the International Rice Research Institute, and the Microbial Culture Collection of the Museum of Natural History at the University of the Philippines Los Baños (MCC-MNH). The PNMCC permanently holds its headquarters at the PNCM. At present the network has six affiliate culture collections (with the exception of the IIRRI Biofertilizer Germplasm Collection and the Mushroom Mycelium Bank of the Plant Pathology Department of UPLB who are now non-existent) they are: the UPCC; the MCC-MNH; the Industrial

Technology Development Institute Microbial Culture Collection (ITDI-MCC); the University of Santo Tomas Collection of Microbial Strains (UST CMS); the Ecosystems Research and Development Bureau Endomycorrhizal Germplasm Collection; the UNILAB Clinical Culture Collection and the Dela Salle University Collection. The PNMCC also has around 200 individual members, who are researchers, microbiologists, teachers, students or anyone with a special interest in culture collection.

The PNCM is a member of the World Federation of Culture Collections (WFCC) since 1983 having the WFCC Registration Number BIOTECH 620. It is also a member of the Asian Consortium for the Sustainable Use of Microbial Resources (ACM) and has communication linkages with other microbial culture collections abroad apart from those in the ACM.

As of 2015, the PNCM has over 4000 culture holdings in the collection. The holdings of the PNCM include bacteria, yeasts, filamentous fungi, and a few micro-algae and cyanobacteria. Most of these holdings are deposited by colleagues from within BIOTECH and some by researchers and students from other units in the UPLB and other campuses. A few are submitted by individuals from outside the University. Sometime in 2002, about a thousand cultures isolated from mangrove ecosystems were added into the collection. At the moment several agriculturally important isolates from an on-going project with the Philippine Council for the Advancement of Agricultural and Development (PCAARD) of the Department of Science and Technology are being identified by polyphasic taxonomy and will be accessioned into the PNCM at the end of the project. Over half of the PNCM accessions are from the Philippines.

Doubling as a service laboratory and providing quality results, it has been recognized by different government agencies and received several accreditations to date from when it received its first accreditation given by the country's Department of Health as a food- and water-testing laboratory. The Bureau of Animal Industry (BAI) and the Fertilizers and Pesticides Authority (FPA) currently recognize it as a feed- and biofertilizer-testing laboratory. Recently this year, the Philippine Accreditation Bureau (PAB) has formally awarded the PNCM with

ISO/IEC 17025:2005 Accreditation as a Biological Testing Laboratory for 18 scopes of tests and parameters. It is the first culture collection in the country and the first biological testing laboratory in the University of the Philippines System to have gained ISO 17025 Accreditation (Fig. 1).

The PNCM Mission, Challenges, and Strategies

“The PNCM is the national repository of microorganisms and a laboratory that endeavors to provide microbiological services of high quality to the public” is the PNCM’s mission statement. As such, as a national repository, it is tasked with the primary function to accession and preserve microbial deposits from different sources, and also to guarantee that these deposits remain viable and stable, with little changes in their original characteristics, for a long period of time. These characteristics are inputted in the PNCM database, which is secure and duly backed-up, for easy retrieval and referencing.

Despite the national repository status, the PNCM struggles with its modest annual budget from the

University. In 2006, the PNCM received an Endangered Culture Collection Grant from the Society for Applied Microbiology (SfAM) that saw the upgrading of PNCM equipment and its capacity to preserve biological materials (Fig. 2). It is through these collaborations, external research grants and income from microbiological services to the private sector that the PNCM has been able to continue its basic operations sans sufficient budget. Research projects the PNCM was involved in include screening and identification of microorganisms for antimicrobial compounds, degradative enzymes, bio-control potential, bio-remediation potential, bio-fertilizer potential, etc.

Apart from culture distribution, the PNCM also conducts a number of microbiological analyses. Clients come from schools, the industry, and private individuals. These services include microbial test of waters, microbial counts in food and other samples, detection and count of indicator microorganisms or pathogens in food and other samples, test for effica-



Fig. 1 (A) PNCM-BIOTECH Staff posing in front of the laboratory. Fourth from right is the PNCM Head Curator and Laboratory/ Technical Manager, Dr. Rosario G. Monsalud. (B) Dr. Monsalud (third from right) accepting the laboratory’s certificate of ISO 17025:2005 accreditation from Director Hernani Dionisio of the Philippine Accreditation Bureau (PAB) of the Department of Trade and Industry. With them (L-R) are UPLB’s Vice Chancellor for Research and Extension Prof. Rex B. Demafeliz, former BIOTECH Director Dr. Reynaldo V. Eborra, Chancellor Dr. Fernando C. Sanchez Jr. (2nd from right), and Laboratory Accreditation Manager of the PAB, Ms. Perla Bajé (extreme right).



Fig. 2 The PNCM is housed in the National Institute of Molecular Biology and Biotechnology (BIOTECH).

cy of biocides, microbial tests on packaging materials, mutagenicity assays, lyophilization of cultures, culture safety deposits of cultures, and identification of microorganisms. The laboratory also welcomes contract researches.

In 2014, of the 408 services provided by the PNCM about 48% of PNCM services was sought for by the private sector, majority of which are corporations, 31% was requested by educational institutions, 18% by government institutions, and 3% by different laboratories within BIOTECH. The PNCM also conducts short training courses on culture collection and related activities. On average it conducts 3 trainings annually.

Aspiring for International Depository Authority Status

There are several types of patents and they include microbiological processes, microorganisms, and other biological materials. These are central to biotechnological and genetic engineering processes that are gaining importance in industries around the world and even in the Philippines. With the current rise of Philippine economics, touted as the second-fastest in the world as of this writing, the different industries are aggressively working on keeping up with this upward trend. It is understandable that in the near future the number of patents registered in the Philippines will also rise.

However, the Philippines does not have its own IDA to support this and thus the PNCM is aspiring to be one in the near future. Presently, there are only 44 International Depository Authorities or

IDAs in the world. Only four countries in Asia have their own IDAs but sadly, none can be found in the ASEAN region even though it boasts of a huge number of accessioned biological materials in several of its countries' culture collections. There are two IDAs in China, two in Japan, three in Korea, and one in India (WIPO, 2015).

With the changing times, the PNCM has survived and thrived despite the many challenges it has faced. The current University administration has recognized the importance of the PNCM and its initiatives that a building for the PNCM has now been put in the pipeline. After the ISO 17025:2005 accreditation, the PNCM is now working for ISO 9001 certification to support its aspiration to become the Philippines' first IDA.

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