

The Report of Training Course

Training course of microbial resources information management and utilization for developing countries

**At Institute of Microbiology, China Academy of
Science (MCAS), Beijing, China.**

September, 2nd-15th 2014

By

Mr.Krommavut Nongnuch

The National Center for Genetic Engineering and
Biotechnology (BIOTEC)

Training Course of Microbial Resources Information Management and Utilization for Developing Countries

Personal introduction

The course was wonderful. Very thankful for training course “Microbial Resources Information Management and Utilization for Developing Countries” It was really a great experience training with WFCC. I learned much from you about the use of biology and database management. Thank you for your instruction and advice. I guess I have learned how to be manage my data. all the best for all your future endeavours

ABSTRACT

WFCC-MIRCEN World Data Center for Microorganisms (WDCM) has arranged the training course on “Training Course of Microbial Resources Information Management and Utilization for Developing Countries” during September 2-15, 2014 in Beijing for aiming to promote of sharing and utilization of microbial information connecting around the world among the developed and developing countries. The training course program that contain of informative lectures in many fields of basic and advance in microbiology which also. The main training program are focusing in data management of microorganisms in

lecture and practice sessions. Those of all training program are superbly useful to our work for handling of culture collection management. The participants of the training course from culture collection organization around the world consisted of 23 persons from 16 countries namely, Argentina, Brazil, Ecuador, India, Iran, Kazakhstan, DRP Korea, Malaysia, Morocco, Philippines, Sri Lanka, Hungary, Senegal, South Africa, Thailand, and China. I come from BIOTEC culture collection or BIOTEC, which is a section in Bioresource Technology Unit. I have a good chance to join with the training course that I can gain more knowledge in many field of microbiology, particularly in microbial resource information management , utilization and bioinfomatic for applying at my Data Collections in Thailand.

Key words:

Training course, Biotec culture collection, Bioinfomatic, Data Collections

My Laboratory



The Information Systems Laboratory (ISL)



Dr. Supawadee Ingriswang
Research Scientist



Dr. Duangdao Wichadakul
Research Scientist



Mr. Somrak Numnark
Research Assistant



Mr. Krommavut Nongnuch
Research Assistant



Miss. Rattanawalee Khruasawat
Research Assistant



Miss. Nalinee Chawasutipongsa
Research Assistant

The Information Systems Laboratory (ISL) in the [Bioresources Technology Unit](#) of Biotec was formed to conduct research and development in information technology to establish and enhance the biological information infrastructure that provides the systematic collection, preservation and distribution of bioresources and facilitates the search-and-discovery of exploitable bioresources.

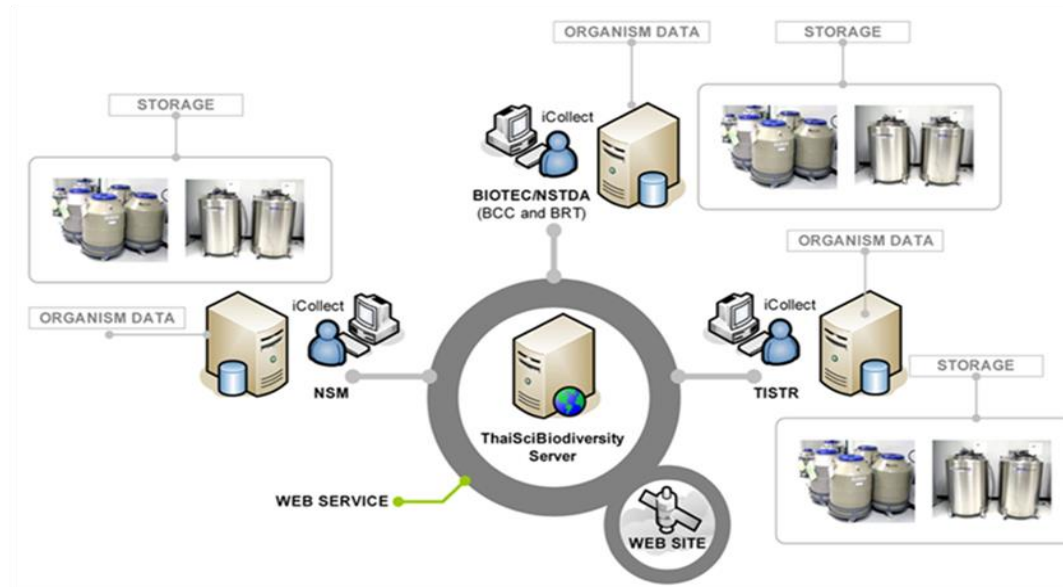
The information system laboratory is currently composed of 2 PhD researchers and 4 research assistants in master and bachelors degree of Biological Sciences and computer engineering, under the supervision of Dr. Supawadee Ingsriswang.

My work

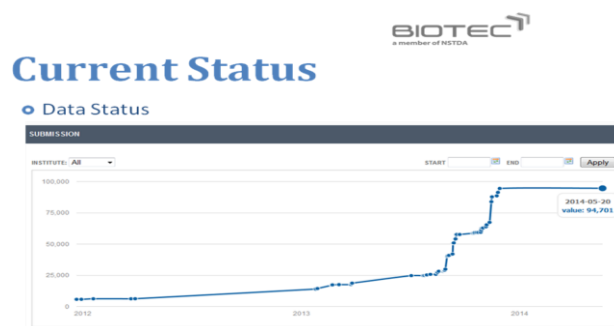


Overview

Digitization of Thai Science Bioresources and Biotechnology



*To maximize the future utilization of microbial resources in Thailand, **Digitization of Thai Science Bioresources and Biotechnology or Thai2bio project** was established. Thai2Bio is data warehouse of biomaterials. Of research, conservation and utilization of biodiversity of the country. Data warehouse is an important source of information to researchers, students, government agencies, the private sector, can access and use biological resources. considers its infrastructure to help research. Biotechnology to advance. This led to the development of the whole economy. Society and the lives of the people better.*

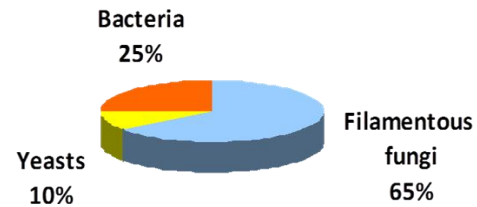


Culture collection data was imported to thai2bio project since 2012. The number of data continuously increased over time as shown in this graph and nowadays, currently data was about 94,701 specimens.

Culture Collection

- *Established in 1996*
- *Collect filamentous fungi, yeasts and bacteria classified in Risk Group 1 and 2*
- *Supply microorganisms for research and education in Thailand and overseas*
- *10% of microorganisms made available for public access*
- *ISO9001 certified since 2005*
- *Offer isolation, identification, lyophilization and training services*

> 70,000 strains (2,331 species of 1,125 genera)



- **4,000-5,000 strains per year for in-house research**
 - *Novel bioactive compounds against e.g. gram negative bacteria, plant pathogens*
 - *Industrial enzymes e.g. xylanase, amylase, cellulase*
 - *Probiotics, prebiotics, starter cultures*
 - *Bio-control agents*
 - **1,000-2,000 strains per year for public/collaborative research**
- **1,000-2,000 strains per year for public/collaborative research**

• Data Curation(con.)

Input Dataset (xls)



Species	Distribution	Other
...

Dacura System

Data Validation
Darwin Core standard
Location Validator
Etc.



Database
Thai2bio

Taxonomy
Validator

Data Published

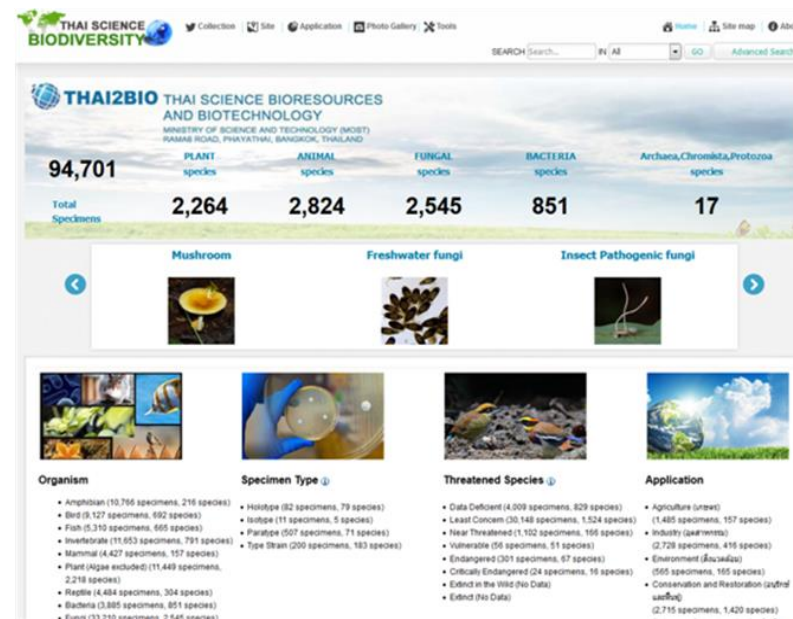


Owner
Data Approval



After the data providers submit their data into DaCURA system, the data verification and validation process will be performed. For example, Taxonomy Data will be verified and checked with reference database such as Species2000, NCBI Taxonomy Database, Genbank, index fungulum. Other types of data including location, IUCN categories and so on will be checked and validated as well

• Data Published



all the data after getting approval will be published online via the website www.thai2bio.net. the overall statistics of the thai2bio database are displayed on the top on how many specimens and species of each type of organisms are in Thai2bio database.

In the home page, users can browse the data from each category , go through each menu to explore the corresponding data ,and can search for the information of their interest.

Data Published(con.)

The screenshot displays the 'Data Published(con.)' page on the Thai2Bio website. It features a map of Thailand with a red dot indicating the location of the specimens. Below the map is a table of specimen records with the following columns: No., Location, Collection Number, Common Name (s), Common Name (eng.), Scientific Name, Type Specimens, and Province/Country.

No.	Location	Collection Number	Common Name (s)	Common Name (eng.)	Scientific Name	Type Specimens	Province/Country
1.	Chiangmai	BCC 2849	ยี่ห่วย	Yi Hway	Chironomus riparius (Linn.)	No	Chiangmai
2.	Bangkok	BCC 2850	ยี่ห่วย	Yi Hway	Chironomus riparius (Linn.)	No	Bangkok
3.	Bangkok	BCC 2851	ยี่ห่วย	Yi Hway	Chironomus riparius (Linn.)	No	Bangkok
4.	Bangkok	BCC 2852	ยี่ห่วย	Yi Hway	Chironomus riparius (Linn.)	No	Bangkok
5.	Bangkok	BCC 2853	ยี่ห่วย	Yi Hway	Chironomus riparius (Linn.)	No	Bangkok
6.	Bangkok	BCC 2854	ยี่ห่วย	Yi Hway	Chironomus riparius (Linn.)	No	Bangkok
7.	Bangkok	BCC 2855	ยี่ห่วย	Yi Hway	Chironomus riparius (Linn.)	No	Bangkok
8.	Bangkok	BCC 2856	ยี่ห่วย	Yi Hway	Chironomus riparius (Linn.)	No	Bangkok
9.	Bangkok	BCC 2857	ยี่ห่วย	Yi Hway	Chironomus riparius (Linn.)	No	Bangkok
10.	Bangkok	BCC 2858	ยี่ห่วย	Yi Hway	Chironomus riparius (Linn.)	No	Bangkok
11.	Bangkok	BCC 2859	ยี่ห่วย	Yi Hway	Chironomus riparius (Linn.)	No	Bangkok

Search result.

Where did it found ?

Data Published(con.)

The screenshot displays the 'Detail' page for the specimen *Codyceps nipponica* (Insect Pathogenic fungi), with Collection Code BCC 16410. The page features a navigation sidebar on the left with options: Overview, Map, Application and Utilization, Picture, and Audio. The main content area includes a map of Thailand, a taxonomy tree, and external database links. A callout box labeled 'How to use?' points to the navigation menu. Another callout box labeled 'Taxonomy' points to the classification tree. A third callout box labeled 'Linking to external databases search.' points to the 'Taxonomy Links' section, which includes links to Encyclopedia of Life, Catalogue of Life, Biodiversity Heritage Library, and NCBI Taxonomy Database. A fourth callout box labeled 'What does Codyceps nipponica look like?' points to a large image of the specimen, which is a golden-brown, branching, fungus-like structure. The image is labeled 'THAI SCIENCE BIODIVERSITY'.

User can find Taxonomy, location (on Map), Application and utilization , Image and audios of the selected specimen.

Moreover, it also present the Linking to external [Encyclopedia of Life](#) , [Biodiversity Heritage Library](#), [NCBI pubmed](#)

Brief introduction of your Culture Collection.

Currently, BCC has in the collection more than 74,000 strains of bacteria, yeasts and filamentous fungi. Approximately 25 percent of the Bacteria, 10 percent of yeast and 65 percent of filamentous fungi, which are taxonomically and ecologically diverse. The largest group is those isolated from insects (insect pathogenic fungi). The rest were isolated from soil, seeds, decayed wood, plants, lichens, dung, fresh water and sea water, etc. BCC also holds high diversity of ascomycetous and basidiomycetous yeasts. For bacteria, acetic acid bacteria, lactic acid bacteria and actinomycetes are the major groups.

Benefit from the training courses.

Benefits Training and Consulting is Bioresources management for my culture collection

Suggestion on WDCM work.

The World Data Center for Microorganisms, WDCM have superbly carried on the management of microorganism information systemically. WDCM also is providing of proper programs for handling to collect of all microbial data. Those program are workable, function very well and easily to use for accessing to all microbial strains. I am so admire to WDCM for those kind of works that have done and progress very well. I

have not yet found any difficulty to use the tools or programs to proceed to collect of all microbial data. I am so appreciated to the works that was delicate by WDCM

Comments or suggestion on the training courses.

I think I have a good opportunity to join the training program “Training Course of Microbial Resources Information Management and Utilization for Developing Countries in MCAS. The training course was excellently provide for everything such as the training program, keynote speakers, lecturers, the residence of very nice hotel and all expense during staying for the training course. I have gained a lot of new knowledge on the other fields that I have not so proficient namely, the data management of culture, the world wide information management and networking. Those of new knowledge and experience I do believe that those can be applied to improve or develop in our culture collection working process absolutely. In addition, I also have a good chance to get to know the other friends who conduct in culture collection around the world.

Suggestion on further cooperation between WDCM and your collections.

The further cooperation between WDCM with BIOTEC culture collection, in my opinion I do believe in the further cooperation and intend to have the further cooperation with WDCM in many ways as follows.

1. The cooperation in data information management.
2. The cooperation in culture collection management.
3. The cooperation in doing some research projects in Biotechnology.
4. The cooperation in some short-term technical training or on the job training program.
5. The cooperation in database for sharing collection.