

**International Workshop on
The “next” Biobank and Bioresource Standards
21 – 23 March 2018**

Lecture Session

The “next” Biobank and Bioresource Standards

21 March 2018

Royal Orchid Sheraton Hotel & Towers, Bangkok, Thailand

Laboratory Session

1. **Identification of Mitosporic Fungi**

22-23 March 2018, Thailand Science Park, Pathum Thani, Thailand

2. **Effective and Reliable Method of Microbial Biotyping by MALDI-TOF Mass Spectrometry**

22 March 2018, Thailand Science Park, Pathum Thani, Thailand

Organizes by

- Thailand Bioresource Research Center (TBRC), Thailand
- National Center for Genetic Engineering and Biotechnology (BIOTEC), Thailand
- National Science and Technology Development Agency (NSTDA), Thailand
- Ministry of Science and Technology (MOST), Thailand

In Collaboration with

- National Institute of Technology and Evaluation (NITE), Japan
- World Data Center for Microorganisms (WDCM), P.R. China
- ASEAN Network on Microbial Utilization (AnMicro)

Under Patronage of

United Nations Education, Scientific and Cultural Organization (UNESCO), Asia and Pacific Regional Bureau for Education, Bangkok, Thailand

Rational Background

Nowadays, the term ‘biobank’ is not limited only to a repository for human specimen. It has expanded its definition into a repository of non-human specimen such as plants, animals, cell, DNA and microorganism. Moreover, Biobanks have changed vastly from small, university-based repository for specific research into institutional and government support repositories, commercial biorepositories, population-based biobank and even virtual biobanks. Albeit the different type of biobank, the ultimate goal is the same where it is a place to collect, store, and distribute biological resource and related data. With advance technology, the data associated with preserved biological resources have increased in complexity from basics such as date and places collected to extensive information such as characteristics, properties, genetics or proteomics. Thus, biobanks play an essential role in scientific community by increase large number of samples with consistency quality and data that easily access and fit purpose.

In order to provide high quality bioresource with well-characterize data, biobanks follow standard operating procedures for quality assurance including systems for storage, quality of facilities coding, and documentation. Biobank must follow best practices and adopt general laboratory standards, such International Organization for Standardization (ISO) series. This international standard has been developed to establish criteria for quality assurances and efficiencies of their samples and data and ultimately to promote the confidence in biobanks to provide bioresource for research and development.

With the aim of creating an integrated and open platform for effective management of biological resources, Thailand Bioresource Research Center (TBRC) is established to preserve, provide, and distribute biological information and resources. Currently, TBRC has expanded the bioresource collection not only for microorganism but also for animal cells, recombinant cells, hybridoma, antibody and viruses. Being multidisciplinary and dynamic that involves the collection and preservation of several type of bioresources, TBRC functions as one of biobank and implements ISO series as well as national and international regulations to assure the accessibility of high-quality bioresource and relevant data.

Yet, no single bioresource is capable of providing all kind of comprehensive material and service to the community, which is why networks of bioresources are essential – nationally and internationally. Therefore, TBRC together with the National Institute of Technology and Evaluations (NITE), World Data Center for Microorganisms (WDCM), and ASEAN Network on Microbial Utilization (AnMicro) aim to connect research and analysis in many scientific disciplines as well as in international standard to meet the concept of biobank.

Objective

1. To identify the key roles and management systems of bioresource research centers
2. To update the new knowledge and technology on microbial utilization
3. To provide and disseminate information on International Standard for biobanks
4. To train wide-range concepts such as the technical and morphological skills which is required for fungal morphological identification for the participants
5. To provide basic knowledge and offer tools to not only to the beginner but also to the intermediate mycologist or researcher based on preliminary molecular identification

Target Group

- Lecture session – scientist, researcher, student, others who may interest in bioresources management and utilization
- Workshop session – scientist and researcher who may interest in mitosporic fungi identification technique for Workshop I and MALDI-TOF identification technique of microorganisms for Workshop II

Number of Participants

- Lecture session – 80 participants
- Laboratory session 1 – 12 participants
- Laboratory session 2 – 20 participants

Language All lectures will be given in English without translation.

Registration Deadline 28 February 2018

Registration Fees

For those who would like to attend laboratory session are required to attend the lecture session.

- Lecture session – General 1,500 Baht
- Lecture session – Student 1,000 Baht
- Laboratory session I 2,500 Baht
- Laboratory session II 2,000 Baht

These fees are inclusive of 7% VAT, lunch and refreshment each day. However, all of the participants must be responsible for their own accommodation and transportation.

Payment

Payment method is wire transfer, please make a payment to;

Bank Name: Bangkok Bank
Branch: Thailand Science Park
Savings Account Name: BIOTEC - National Center for Genetic Engineering and Biotechnology
Account No.: 080-000280-0
Swift Code: BKKBTHBK
Bank Address: 111 Phahonyothin Road, Khlong Nueng, Khlong Luang,
Pathum Thani 12120

General Information

Public transportation to the venue

Air-conditioned bus routes:

- No. 29 (Bangkok Railway Station - Thammasart University, Rangsit)
- No. 39 (Grand Palace - Thammasart University, Rangsit)
- No. 510 (Victory Monument - Thammasart University, Rangsit - Thai Market)

Air-conditioned van routes:

- No. 118 (Mo Chit BTS Sky Train Station - Thailand Science Park)
- No. 85 (Victory Monument - Thammasart University, Rangsit)

Accommodation

You are responsible for making your own arrangements.

Suggested accommodation:

- Sirindhorn Science Home (Located in Thailand Science Park)
Dormitory (2 beds) 1,000 Baht/ night including Breakfast
Dormitory (4 beds) 1,500 Baht/ night including Breakfast
Deluxe room (2 beds) 1,500 Baht/ night including Breakfast
Tel: (66) 2529 7100 ext. 77235 Fax: (66) 2529 7147
Website: http://www.nstda.or.th/ssh/service/service_1.php
- Institute of East Asian Studies (A 10-minute-walk from Thailand Science Park)
Twin room (2 beds) 950 Baht/ night not include Breakfast
Tel: (66) 2564 5000 – 3
Website: http://www.asia.tu.ac.th/ieas/ieas_buiding.htm

For more information, please contact

Technical Training Unit

National Center for Genetic Engineering and Biotechnology (BIOTEC)

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Email: ttu@biotec.or.th

Tentative Program**Lecture Session****Date:** 21 March 2018**Venue:** Royal Orchid Sheraton Hotel & Towers, Bangkok, Thailand**Welcome and Introduction Session**08.00 – 09.00 **Registration**09.00 – 09.15 **Welcome Remarks**

By Dr. Lily Eurwilaichitr

National Center for Genetic Engineering and Biotechnology, Thailand

09.15 – 09.30 **Remarks from NITE****Microbial Management and International Standard**09.30 – 10.10 **Culture Collection Management and International Standard**

By Dr. Philippe Desmeth

Belgian Coordinated Collections of Microorganisms, Belgium

10.10 – 10.40 Coffee Break

10.40 – 11.20 **Yeast Culture Collection: Challenges and Opportunities**

By Dr. Kyria Boundy-Mills

Phaff Yeast Culture Collection, University of California Davis, USA

11.20 – 12.00 **Nestle Singapore Culture Collection**

By Dr. Jeroen Muller

Leader of Nestle Biotransformation Network;

Group Leader Biotransformation / Analytical Laboratory,

Nestle Development Centre, Singapore

12.00 – 13.30 Lunch

Microbial Preservation13.30 – 14.10 **Preservation and Maintenance of Anaerobic Microorganisms**

By Dr. Jung-Sook Lee

Korean Collection for Type Cultures (KCTC), Biological Resource Center, Korea Research Institute of Bioscience and Biotechnology, Republic of South Korea

Microbial Emerging Technologies14.10 – 14.50 **Rapid Microbial Identification and Confirmation Using MALDI-TOF**

By Dr. Danièle Sohier

Manager, Industrial Microbiology, Bruker Daltonics Ltd., Germany

Dr. Dr. Gongyi Shi

Director of Scientific Affairs in the Microbiology business of

Bruker Daltonics, Germany

14.50 – 15.20 Coffee break

15.20 – 16.00 **Microbiome**

By Dr. Juncai Ma

Institute of Microbiology, Chinese Academy of Sciences (IMCAS), P.R. China

16.00 – 16.40 **PacBio Sequencing for Full-length 16s rRNA Gene Classification**

By Dr. Sithichoke Tangphatsornruang

National Center for Genetic Engineering and Biotechnology

16.40 – 17.00 Closing

Laboratory I: Identification of Mitosporic fungi**Date:** 22 – 23 March 2018**Venue:** Thailand Science Park, Pathum Thani, Thailand**Rational Background**

Mitosporic fungi are a group of fungi that composed of asexual states of mostly Ascomycota and some Basidiomycota. Traditionally, they also referred to as fungi imperfecti, anamorphic fungi, anamorphs, Deuteromycota, Deuteromycotina, Deuteromycetes and asexual morphs. Identification of the fungi is based on the presence of conidia (spore), kind of conidia (shape, color, size), and whether or not the conidia are produced in fungal structures (i.e. conidial ontogeny, conidiophore cell structure & arrangement/development of conidigenous) called conidiomata. Conidiomata may have the generalized shape of a flask made of fungal tissue (a pycnidium); a pin cushion (sporodochium); or a mass of conidiophores located under either the epidermis or cuticle of a plant host (aecervulus). The course is intended for PhD/Msc students, faculty staffs, microbial technicians and scientists (microbiologists, biologists & mycologists) in both private and governmental sections who would like to obtain a fundamental understanding of mitosporic fungi. All participants will examine provided fungal samples to develop or increase familiarity with different fungal genera, species levels and their related structures through the practical steps in identification using illustrations and keys.

Date: 22 March 2018

08.30 – 09.00	Registration
09.00 – 09.10	Welcome remarks
09.10 – 10.30	Lecture on morphological identification of mitosporic fungi
10.30 – 11.00	Coffee break
11.00 – 12.00	Introduction of fungal observation method
12.00 – 13.00	Lunch
13.00 – 15.00	Practice on morphological identification of mitosporic fungi
15.00 – 15.30	Coffee Break
15.30 – 17.00	Continuation of morphological identification of mitosporic fungi

Date: 23 March 2018

09.00 – 09.30	Lecture on Diversity of soil-born fungi in Asia
09.30 – 10.30	Practice on morphological identification of soil-born and mitosporic fungi
10.30 – 11.00	Coffee break
11.00 – 12.00	Continuation of morphological identification
12.00 – 13.00	Lunch
13.00 – 15.00	Continuation of morphological identification
15.00 – 15.30	Coffee Break
15:30 – 16.30	Explanation of the results of the identification of mitosporic fungi
16.30 – 16.50	Discussion
16.50 – 17.00	Closing

Important Information

- **Aims of workshop**

1. To train broad concepts for participants in the technical, and morphological skills required for fungal morphological identification
2. To provide basic knowledge and offer tools to the beginner to intermediate mycologist or researcher based on preliminary molecular identification

- **Targeted groups**

The workshop is designed for those who may be involved in the identification and documentation of mitosporic fungi (asexual morphs) or who might encounter mitosporic fungi in the course of their work or research

- **Fungal workshop assistant and facilitator**

1. Dr. Katsuhiko Ando, National Institute of Technology and Evaluation (NITE), Japan
2. Dr. Nattawut Boonyuen & Ms. Salilaporn Nuankaew, National Center for Genetic Engineering and Biotechnology (BIOTEC), Thailand

Laboratory II: Effective and reliable method of microbial biotyping by MALDI-TOF Mass Spectrometry

Date: 22 March 2018

Venue: Thailand Science Park, Pathum Thani, Thailand

Introduction

Given the high level of microbial biodiversity in Thailand and the prevalence of microbial utilization in industry, research, and medicine, precise and reliable characterization of these strains is highly valuable. Biotyping (intraspecific identification and characterization) of – microbial strains provides much needed information for industrial quality control, routine clinical diagnosis, phenotypic prediction (e.g. drug resistance), microbial systematics, environmental microbiology, and epidemiological studies. Matrix-assisted laser desorption/ionization time-of-flight mass spectrometry (MALDI-TOF MS) has recently emerged as a powerful and attractive method for rapid microbial biotyping by offering rapid, robust, labor-economical, and cost-effective microbial characterization with peptide mass fingerprinting in comparison to conventional phenotypic and molecular techniques such as sequencing. Currently, the technique has been successfully employed for bacteria, yeasts and filamentous fungi, as well as insect and mammalian cell lines. The technique can be used with microbial samples with minimal pretreatment for distinguishing microorganisms at the level of species or strains with the purpose of discovery of the effective strain, maintenance of the functional strain, detection of contaminants, verification of desired strain, and protection of patented strains. The “fingerprints” commonly refer to peptide patterns unique for each microbial strain, but can also extend to unique patterns of lipids, biomolecules, synthetic macromolecules, or polymers as well. In addition, a database of fingerprints for local microorganisms can be constructed to add a large wealth of information to the existing fingerprint libraries currently available. Thus, the prospect of using this technique in various microbial applications is promising. In particular, hand-on experience with biotyping by MALDI-TOF MS will provide great opportunity for open or enhance potential of microbial-based bio-industry and medicine.

22 March 2018

08.45 – 09.00	Registration
09.00 – 10.00	Introduction of MALDI – Biotyper program and sample analysis By Dr. Jaran Jainhuknan Bruker BioSpin AG
10.00 – 10.30	Coffee break
10.30 – 11.15	Rapid identification of <i>Leptospira</i> spp. using whole cell matrix assisted laser desorption/ionization time-of-flight mass spectrometry (MALDI-TOF MS) By Dr. Piengchan Sonthayanon, Mahidol University
11.15 – 12.00	Maldi-TOF MS and its application By Dr. Sittiruk Roytrakul
12.00 – 13.00	Lunch
13.00 – 14.00	Sample preparation
14.00 – 15.00	Sample analysis
15.00 – 15.30	Coffee break
15.30 – 16.30	Discussion and conclusion of the workshop

Important Information

• Objectives

1. Introduction to MALDI-TOF MS principles
2. Explanation of MALDI-TOF MS applications for microbial biotyping
3. Hand-on experience to MALDI-TOF MS analysis

- **Output**

1. Boosting knowledge and obtaining hand-on experience with MALDI TOF MS tool
2. Experiencing and understanding microbial biotyping and characterization by MALDI-TOF MS
3. Creating network between microbiologists, industrial technologists and allied professions interested in MALDI TOF MS

- **Target group**

1. Academic researchers who are interested in microbial biotyping.
2. Biotechnologists interested in utilizing MALDI-TOF MS
3. Industrial sectors interested in biotyping of microorganisms used in industrial process