Musliyana Mansor
Microbial Culture Collection Unit (UNiCC), Institute of Bioscience, UPM
• Introduction to Microbial Culture Collection Unit (UNiCC)

• Objectives of UNiCC

• Management of Microbial Culture

• Activities
• The lost of culture is a serious problem for researchers and the relevant industries in Malaysia.

• Re-isolation can be carried out but time and money must be taken into consideration.
• Replacement of strains may be requested from culture collection centres (if it has been deposited).

• Effective system for culture maintenance is important.
Microbial Culture Collection Unit (UNiCC)

- Microbial Culture Collection Unit (UNiCC), Institute of Bioscience, UPM was initiated in 2008.
- The initial main objective of the collection unit is to maintain and manage a duplicate of available important microbial strains in UPM. UNiCC also aspires to provide strains for researchers and teaching laboratories in Malaysia.
OBJECTIVES

• To establish and maintain a microbial culture collection centre using a management system.

• To provide deposition of microbial cultures for Malaysian researchers and industries.

• To stimulate and support the study and research work related to microbial diversity and taxonomy in UPM and Malaysia.
• Focusing on microbes isolated from food, agriculture and the environment of hazard level 1 and 2.

• Since its initiation, the laboratory has been equipped with freeze-dryer, biosafety cabinet level 2, -80°C freezer, refrigerated centrifuge, laminar air flow, phase-contrast microscope, autoclaves, incubators and other equipment.

• For long term preservations, UNiCC applies freeze-drying technique.

• For short term preservations, freezing technique (-80 degree) and preserving in paraffin oil (for fungi) are used.
• Collections’ acronym : UPMC

• Public/Safe Depository: To date, a total of 1051 microbial strains consisting of 917 bacterial strains, 130 fungal strains and 4 yeast strains have been deposited.

• We have approximately 300 strains of bacterial isolates ready to be identified.

• Contract for preservation service with industries.
• **Early establishment (2008 – 2010):**
  - Ninth Malaysian Plan – equipment
  - Agribio Resource Division (currently known as Edu Park), UPM - equipment, chemicals and consumables

• Support from the University and generating our own income to sustain the culture collection activities.
Local Collaboration:

- Adopted by Edu-Park UPM (previously known as Agribio Resource Centre).
- Service collaboration for Next Generation Sequencing (NGS) with Laboratory of Vaccine and Immunotherapeutic (LIVES), Institute of Bioscience, Universiti Putra Malaysia.
International Collaboration:

- **Ms. Wanchern Potacharoen** – Advisor, BIOTEC Culture Collection (BCC), Thailand (2008)
International Collaboration:

- Affiliate Member of World Federation of Culture Collection (WFCC).

- WFCC-MIRCEN World Data Center for Microorganisms (WDCM)
  - We are the member of WDCM with the registration number WDCM 988.
  - MoU signing between Universiti Putra Malaysia and WFCC-MIRCEN World Data Center for Microorganisms (WDCM) in September 30th, 2013
  - We are also one of the participant for WFCC Global Catalogue of Microorganism (GCM).
Laboratories

• For accession, supply, preservation, quality checking, services:
  - Microbiology lab (Bacteria)
  - Microbiology lab (Fungi)

• Media and reagent preparation
  - Media preparation Lab
Equipment

• Freeze Dryer
• Freezer -80°C
• Chiller
Preservation Techniques

- Freezing in –80°C
Preservation Techniques

- Freeze Drying (suitable for bacteria, yeast and sporulating fungi)
Storage of Freeze Dried Samples

- We support the `go-green’ campaign by reusing pieces of cut boxes for packaging.
The development of UNiCC are referring to:

- BIOTEC Culture Collection, Thailand set-up, and

UNiCC operates according to the documents that we have developed:

- Procedure of Management of Culture Collection
- Procedure of Supply of Microorganisms
- Several guidelines and forms to fulfill the requirement of the procedures.
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<td>UPM/IBS/UNiCC/Culture (Serial No.)</td>
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<td>UPM/IBS/UNiCC/LB 2</td>
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<td>Quality Checking Form</td>
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<td>Quality Checking Form</td>
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Accession form or Material Acquisition Agreement (MAA)

Important issues:

- Scientific Name of the isolate
- Hazard Level (L1, L2)
- Agreement between depositor and contracting parties prior deposit
- Deposit condition
  - Safe/Public depository
- Name and address of the depositor
- Information related to the strain
Certification

• UNiCC is certified for ISO 9001:2008 for the scope of Management and Implementation of Research.
SERVICES PROVIDED BY UNICCC

- Public Depository
- Safe Depository
- Lyophilization of Microorganism
- Microorganism Supply
- Identification of Bacteria and Fungi (Molecular Method)
- Antimicrobial Assay Screening
- Minimum Inhibitory Concentration Test (MIC) and Minimum Bactericidal Concentration Test (MBC)
- Next Generation Sequencing (NGS)
- Training and Consultancy
Organizing workshops/trainings:
• Microbial Preservation Workshop (2008)
• Training for Basic Aseptic Technique & Handling of Fungi (2010)
• Microbial Preservation Workshop Series 1 & 2 (2012)
• Biosafety Training Workshop 2013
• Management of Culture Collection Seminar and Workshop 2013
Public Lectures:

- Establishment of Microbial Culture Collection Management (2008)
- Quality Management of Microbial Culture Collection: Biotec’s Experience (2008)
- Introduction of Microbial Culture Collection (2012)
- Management of Microbial Resources for Long Term Storage (2012)
- Management of Culture Collection Seminar and Workshop 2013
MoU Signing Between Universiti Putra Malaysia and WFCC-MIRCEN World Data Center for Microorganisms (WDCM)  
September 30\textsuperscript{th}, 2013
Industrial Training:

• Universiti Malaysia Sabah (2 students)
• Universiti Teknologi Malaysia (2 students)
• Universiti Perdana (3 students)
• Universiti Malaysia Pahang (2 students)
Visitors
• To build up networking within the institutions and universities in Malaysia.

• MoU signing with BIOTEC, Thailand.
Thank You