



**FACULTY OF SCIENCE, ENVIRONMENT AND
TECHNOLOGY**

Institute of Applied Sciences

Centre of Drug Discovery and Conservation

WDCM WORKSHOP REPORT (9th – 23rd of September, 2016)

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Improvements for the CDDC Culture Collection

Personal Introduction

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My name is Mr. Joape Ginigini and I am from the islands of Fiji in the South Pacific. I am the microbiologist for the University of the South Pacific's (USP) Centre of Drug Discovery and Conservation (CDDC) and also the curator for the culture collections at CDDC in Fiji. I graduated in 2006 with a BSc majoring in Biology and Chemistry at the University of the South Pacific and later received a scholarship for my MSc at the Institute of Applied Science (IAS) graduating in 2012. I am happy to say here that I won a prestigious award for the best Master of Science Thesis in 2012 to 2013 to which I received a gold medal as the award. I have since accumulated an experience and knowledge spanning a period of 9 years in the field of Natural Products Microbiology and 3 of which have been together with work in an industrial microbiological laboratory at IAS. Apart from this, I have also acquired molecular phylogenetic skills and improved chemistry knowledge through my research and now my involvement as lead scientist for the Cosmetopoeia project's Fiji aspect.

Name of Collection: *CDDC-GEF culture collections*

ABSTRACT

The advancement of the cataloging of microbiological organisms at the Institute of Applied Science's CDDC unit has been slow if not stagnant for the last decade. Thanks to the assistance of the Chinese Academy of Sciences and its Institute of Microbiology through the current Director Dr. Juncai Ma, the CDDC's GEF microbiological collection has finally been included into an online catalogue.

Key areas that the CDDC culture collections needs to improve on are numerous and its inclusion into the WDCM network can help to improve these key areas. Although the WDCM is immense and draws a myriad of databases and expertise to its services, there are areas that may need improvement. A perfect example of this would be the design of its training courses and the cross-linkage of Institutes for collaborative benefits. All of this and more will discussed in the coming sections.

(Times New Roman, 14)

Key words:

Cataloging, myriad, cross-linkage

Contents	4
Personal Introduction	2
Name of Collection	3
Abstract	3
Key words:	3
1. Brief introduction of your Culture Collection	5
2. Benefit from the training courses.	6
A. Importance of Electronic Cataloging and its effect.....	6
B. Technological advances	6
3. Suggestion on WDCM work.	7
4. Comments or suggestion on the training courses.	8
5. Suggestion on further cooperation between WDCM and your collections.	9
6. Aknowledgements	10

1. Brief introduction of your Culture Collection.

The University of the South Pacific's Institute of Applied Sciences has been involved in applied scientific research for the Faculty of Science, Technology and Environment from 1976 to date. In addition, the Centre of Drug Discovery and Conservation (CDDC) which is one of its 6 units, has been mainly involved in bioprospecting research in the last decade from 2004 to the present day. As there have been many reported cases of re-isolations of natural products from the terrestrial environment, there has been a paradigm shift in the strategies used for source material collection of importance to natural products chemistry and drug discovery as a whole. The CDDC unit is not an exception to this shift as we have been collecting marine invertebrate and algae to isolate symbiotic bacteria apart from isolating compounds from each of these organisms. At the moment, the unit is currently linked to 3 projects, the International Cooperative Biological Diversity Group (ICBG), the Global Environment Facility (GEF) ABS project, and the Fonds de Pacifique sponsored Cosmetopoeia project. There are two culture collections and they are the ICBG and GEF bacterial culture collections. The ICBG project is a collaborative project between the USP, Georgia Institute of Technology (GIT) and Scripps Institute of Oceanography from the University of

California San Diego both from the USA. On the other hand, the GEF is funded by the Global Environment Facility for bioprospecting of marine resources and includes the establishment of in country policies and regulations on ABS according to the Nagoya protocol.

2. Benefit from the training courses.

There are numerous benefits from this training course. Below are those that directly apply to the Centre of Drug Discovery and Conservation:

A. Importance of Electronic Cataloging and its effect

- The use of an e-cataloging system is an easier way to transfer data from a drive to an internet email and send data about a specific sample.
- Can be converted into any format and fed into an online system such as WDCM.
- Can be expanded due to update of IT technology to include specific tools and fields tailored for the culture collections e.g. Biolomics or iCollect software's.
- Assists curators in setting up a Clearing house system which includes items such as Microbial Transfer Agreements and Material Access Agreements in line with accepted ABS practices. Most importantly, it creates a better visibility of the lab internationally enabling the lab to collaborate with interested researchers.

B. Technological advances

- The introduction of sophisticated accepted tools for database management of a culture collection in accordance with the Nagoya Protocol through ABS best practices e.g. NIEMA, MIRRI and especially WDCM.
- Some collections have highly advanced technical equipment's which was very informative to our collection especially when CDDC is planning to expand in this area.

3. **Suggestion on WDCM work.**

- A. A more thorough update of species and genus classification must be done as there appears to be differences in some cases on species classification due to the presence of new sequence types and sub-species as seen in JGI work from the USA.
- B. A cataloging system that is universal in terms of sample Id's for each collection with special link to the collection site Id or sediment sample (source Id) for improved sample trace.
- C. An important aspect of most collections which allows exchange of isolates is that these samples are sequenced to give definitive results of genus and species description. Assistance to collections from undeveloped countries may assist and boost the global

catalogue as well especially if they are already included into the system.

- D. The two regions Europe and Asia are well advanced in culture collection establishment with their systems and legislations set in legislations. The Oceanic and America's to an extent have yet to establish a network. Again the WDCM resource network would only be increased with greater coverage from these two regions thus assistance or increased collaborations would be a way to solve this. The WFCC-WDCM network can help to foster the establishment of these new networks.

4. Comments or suggestion on the training courses.

- A. Recommend a more interactive course to be assimilated would assist the learning process for the participants with hands-on activities.
- B. A tour of more facilities would also be a more effective method of disseminating the information/content for the course especially if the technology at the host institution is advanced and can be a better way for establishing collaborations with those not highly advanced in technology.
- C. For data practice online, internet access is vital thus allocations for internet for trainees must be done to allow a smooth learning

experience. This was a key problem during the training.

5. Suggestion on further cooperation between WDCM and your collections.

- A. A new collaboration has been initiated during this trip and involves the Bio-resource team for actinomycete genome mining research lead by Prof Yihua Chen of the Institute of the Microbiology and the USP's Institute of Applied Sciences.
- B. Sequencing assistance is also been sort for rare or interesting actinomycete taxa from the above collaboration for genome sequencing through Prof Chen's team.
- C. Capacity building for the planned genome mining project for a CDDC staff to come to IMCAS would be an excellent way to improve the project, build capacity and allow for more collaborations in the future.
- D. The CDDC unit can assist in setting up a collaborative project under ABS accepted practices for sampling of microorganisms in the Fiji Islands for collaborators provided that there is a mutual benefit to both Institutes and larger parent organizations.

6. Acknowledgement's

I would like to express my sincere gratitude to the Chinese Academic of Sciences especially the Institute of Microbiology (IM) and Dr. Juncai Ma for his invitation to the symposium and the workshop as well. It was a tremendous learning experience for me. The people, the scenery and the food was magnificent. A special thankyou to Dr. Jang and Dr. Maria from the Institute of Microbiology for their wonderful support throughout the course.

I am also grateful to all other IM staff for their presentations and their willingness to share their research with me. On behalf of the University of the South Pacific's Institute of Applied Sciences and its directors, I would like to say vinaka vakalevu (*Thankyou*) and moce mada (*Bye for now*) Beijing!!!.