

# Fiji-USP Culture Collections & WDCM Training Course for Microbiome Data Sharing 2017.

## *Personal introduction.*

Bula Vinaka and Greetings.

My name is Dr. Samson Viulu, I currently work for The University of the South Pacific (USP) in Laucala campus, Suva, Fiji Islands.

I have a Bachelor Degree in Agriculture Science, a MSc. in Applied Biological Sciences, a PhD in Agricultural Sciences and Postdoctoral from USP/Samoa and Gifu University/Japan respectively.

In 2016 I joined USP as a Research Fellow in Microbiology and Drug Discovery.

My responsibilities include implementing the NIH-funded ICBG and UNDP-funded GEF projects in our center, enforcing proper Lab SOPs, supervising graduate students and assisting the center's manager.

## *Name of your culture collection*

Center of Drug Discovery and Conservation (CDDC),  
Institute of Applied Science (IAS),  
Faculty of Science, Technology and Environment (FSTE),  
The University of the South Pacific (USP),  
Laucala Campus, Suva, Fiji

## **ABSTRACT**

A two weeks long training on Microbiome data sharing was hosted by the World Data Center for Microorganisms (WDCM) at the Chinese Academy of Sciences (CAS) in Beijing city from October 16 - 27, 2017.

The training covered a wide variety of topics mainly on data management and sharing, bioinformatic tools, techniques for molecular analyses including genome mining and many other microbial taxonomic platforms. There were many different presenters explaining the many different

platforms that exist in CAS and their global relevance. I am most impressed with the amount of work and technology that are available in CAS and the opportunities for joint collaborations with participants.

It was also very interesting to know of the many different projects and researches occurring around the globe through the presentations of fellow participants.

The high technology facilities available at CAS and IMCAS is one of the very best in the world and hopefully through WDCM, participants will access these facilities for research purposes.

I have observed in CAS that research plays a pivotal role in the scientific development of China and consequently contributes to the economic growth of China.

China is an important player in the global advancement of Microbiome studies and is poised to become a top leader in the development of technology for Microbiome analyses.

The University of the South Pacific (USP) is owned by 12 member island countries in the Oceania region. It has campuses in all 12 member countries and enrolled about 29, 690 students in total inclusive of all levels of degrees and 1,500 staffs (600 academic, 900 non-academic).

While USP does not have similar high tech facilities compared to CAS, we can boast about the vast amount of natural resources and biological materials that can be utilized for Microbiome studies. This is clearly demonstrated by the large number of marine invertebrates and microbial library cultures that we have at our disposal.

Additionally, the Oceania region as a whole is a scarcely studied site and not much is known about its Microbiome status let alone published literatures. Given the appropriate opportunity and capacity building, the Oceania region may become a gold mine for new information on Microbiome studies.

With this understanding, USP is seeking possible collaborative projects with CAS, not only on Microbiome related areas but other human development aspects as well.

It is our hope that through our attendance in this WDCM training, such collaborations can be initiated and the vast Chinese technology relevant to our development is accessed.

**Key words: drug discovery, marine microbes, invertebrates, ICBG , GEF.**

### **1. Brief introduction of your Culture Collection.**

Our center of drug discovery and conservation (CDDC) in the institute of applied sciences (IAS), within the faculty of science, technology and environment (FSTE) houses the microbial culture collection of the South Pacific region.

Currently it has a growing number of more than 4000 marine bacterial type strains preserved in glycerol at -80 degree Celsius and more than 1000 marine invertebrates including algae, sponges and soft corals. All of the type strain bacteria are isolated from marine invertebrates or marine sediments from a shallow depth of few centimeters into deep waters.

CDDC has two major concurrent projects, one with the National Institute of Health (NIH) under the International Consortium of Biodiversity Group (ICBG) with US collaborators in Georgia Institute of Technology (GIT) and Scripps Institution of Oceanography (SIO) of the University of California (UC).

The second major project in CDDC is an Access Benefit Sharing (ABS) project with the Fiji government and funded by the UNDP/GEF programme.

Under both projects, joint research on the biosynthesis of secondary metabolite potentials of marine organisms including microbes for pharmaceutical purposes is conducted. These include sample collections

in the independent states of Fiji and Solomon Islands, extraction and purification of bioactive ferments from marine invertebrates and Microorganisms, Bioassays, marine conservation awareness in communities, library construction and reporting to relevant stakeholders.

Many of the type strains have antimicrobial resistance activity while few have tuberculosis, anti malarial, anti cancer and neurodegenerative activities. There are ongoing initiatives to also introduce dengue assays and other neglected tropical diseases in the near future.

Our culture collection center consists of 8 staffs, two with PhDs, four with MSc., and two with lower degrees. We also have 6 MSc., students who are in the completion stage of their research studies.

## **2. Benefit from the training courses.**

I have learned many new things particularly on bioinformatics technology, the importance of data management and sharing, microbial taxonomic platforms, the importance and advancement of Microbiome technology and research, the high tech facility and work done in IMCAS , the huge culture collections in WDCM and the opportunities for collaboration with IMCAS for joint research and projects.

Most important benefit that CDDC obtained from attending this training is the establishment of networking between us and all the participants and the initiation of communication between us with IMCAS key state laboratories.

CDDC hopes to utilize these new found contacts to establish long term beneficial collaborations for quality research in the Oceania region and beyond, to increase the accessible published information.

## **3. Suggestion on WDCM work.**

- Establish collaboration with institutes where participants come from and expand the WDCM network.
- Explore new projects in regions where there is still less literature

available.

- Conduct similar training in a developing country setting to understand and appreciate the difficulties experienced by member institutes who are from a developing country.

#### **4. Comments or suggestion on the training courses.**

- A. Too much data practice with less lab visits; increase the number of lab visits according to the participants' areas of interests.
- B. Too many changes to the training program; limit the changes if possible.
- C. Provide copy of ppt presentation files to participants at the end of each day so that participants can review the ppt presentations and if they have specific questions, they can seek answers from responsible presenters.
- D. Training should be participant oriented or based on the need of the participants. The training program should be sent to participants in advance prior to commencement of training, and should have the opportunity for feedback before it is finalized. In this way, the interests of all participants can be captured in the training.
- E. The training should include few days of group discussion where participants can freely discuss their shortcomings and receive advices or suggestions from fellow participants with fine input from IMCAS professionals.

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

- Joint collaboration research to include the followings;
  - A. Establish a central data center for CDDC.
  - B. CDDC will deposit its microbial type strains with WDCM and be part of the Global Catalogue of Microorganisms.
  - C. Deposited strains will be selected for sequencing under the GCM 2.0 Type Strain Sequencing Project.

- D. NMR and HPLC analyses of purified compounds by WDCM obtained from the deposited strain by USP.
- E. Training on new bioassay techniques and microbial biosynthesis of natural products.
- F. Joint research including sample collections and isolations.
- G. Joint scientific publications of results from these deposited strains and joint submission on research funding applications.

**Submitted by Dr. Samson Viulu this day, 25th of October 2017.**