

# ACCOMPLISHMENT REPORT

January 2013 - December 2014

## Bridging the Human Resource Competency Gaps in Support of the National R&D Agenda (A BCDA-funded Project)



Philippine Council for Industry, Energy and Emerging Technology Research and Development  
Department of Science and Technology

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## Introduction

As one of the sectoral planning councils of the Department of Science and Technology (DOST), the Philippine Council for Industry, Energy and Emerging Technology Research and Development (PCIEERD) has the mandate of a) formulating national policies, plans, programs and strategies; b) programming and allocating government and other external funds for research and development in industry, energy and emerging technologies and providing mechanisms for the assessment, evaluation and monitoring thereof; c) supporting the development of institutions and R&D human resource pool; and d.) developing and implementing programs for the optimal utilization, transfer and commercialization of technologies and other research outputs, among others.

To realize its mandate of developing a human resource pool, PCIEERD implements the PCIEERD Human Resource Development Program (HRDP), a local HRD program with five components namely: visiting expert program, research attachment, faculty immersion, attendance to seminars, conferences and trainings and conduct of seminars, conferences and trainings.

In 2012, DOST received its share of the proceeds from the sale of portions of Metro Manila Military Camps. The funds were distributed to the DOST Councils for foreign training on the basis of Republic Act No. 7917 “An Act Amending Section 8 of Republic Act 7227, otherwise known as the Bases Conversion Development Act of 1992.”

## Background and Rationale

Along with the formulation of the Harmonized Research and Development Agenda, several priority projects were identified by the DOST. While the country already has a considerable number of MS and PhD degree holders at present, there is still a perceived deficiency in the competencies necessary to implement certain priority projects.

Thus with the funding received from BCDA, PCIEERD proposed the implementation of the project, “Bridging the Human Resource Competency Gaps in Support of the National R&D Agenda” to be able to generate the necessary human resource for the implementation of the DOST priority projects.

## Project Information

To address the deficiency in human resources necessary to implement various programs supportive of the Harmonized Research and Development Agenda, the Department of Science and Technology (DOST) through the Philippine Council for Industry, Energy, and Emerging Technologies Research and Development (PCIEERD), is currently implementing the project **“Bridging the Human Resource Competency Gaps in Support of the National R&D Agenda.”** The project to date has supported young scientists, engineers, researchers, and students in various fields for short-term training in various parts of the world.

Specifically, the project aims to:

- Generate human resource essential for successful implementation of the Harmonized R&D Agenda through individual short-term training overseas, research attachments/sandwich program for the DOST scholars and post-doctoral fellowships;
- Raise the DOST RDI’s capabilities through benchmark and training activities
- Provide training to Grade 1 public school teachers on the use of existing digital mathematics courseware

The training opportunity was made open first, to scholars, faculty and research/technical personnel of the National Science Consortium (NSC) and the Engineering Research and Development for Technology (ERDT) Consortium. Recognizing that the realization of the Harmonized Research and Development Agenda is everybody's concern and not the exclusive responsibility of a selected few, the training opportunity was eventually made available to state universities and colleges (SUCs), the DOST agencies, namely, the R&D institutes (RDIs), the regional offices (ROs), the sectoral planning councils, and the service institutes.

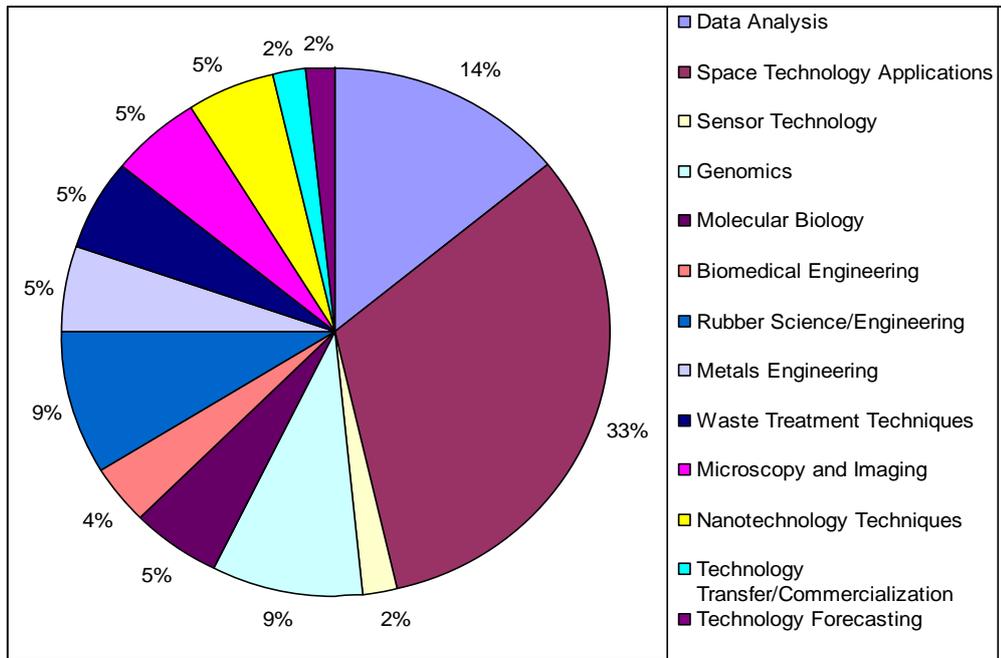
The areas identified as priority include but are not limited to:

- Numerical Modelling
- Data Analysis
- Space Technology Applications
- Sensor Technology
- Computer Vision Technology
- Photovoltaic and Solar Cell Technology
- Genomics
- Molecular Biology
- Biomedical Engineering
- Rubber Science/Engineering
- Metals Engineering
- Waste Treatment Techniques
- Microscopy and Imaging
- Nanotechnology Techniques
- Technology Transfer/Commercialization
- Intellectual Property Licensing (*new*)
- Taxonomy (*new*)
- Technology Forecasting

The implementation and monitoring of the project are being overseen by members of the BCDA Project Monitoring Working Group (PMWG) composed of Dr. Rowena Cristina L. Guevara (Executive Director, PCIEERD), Engr. Raul C. Sabularse (Deputy Executive Director, PCIEERD), Ms. Maridon O. Sahagun (Chief, DOST-SPD), and Engr. Ermie M. Bacarra (Chief, PCIEERD-HRIDD). The Advisory Board includes Usec. Fortunato T. dela Peña, Usec. Amelia P. Guevara and DOST Secretary Mario G. Montejo.

### **Accomplishments**

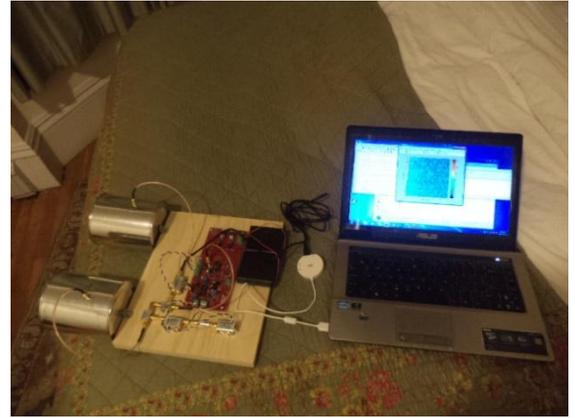
Since the project's implementation in 2012, the project has supported a total of 108 grantees. As can be seen from Fig. 1, a majority of applicants are in the field of space technology applications. This is in preparation for the implementation of the DOST-funded project, "Development of Philippine Scientific Earth Observation Microsatellite (PHL-MICROSAT)," which aims to develop and launch the first microsatellite of the Philippines, in collaboration with the Hokkaido University and Tohoku University in Japan. A majority of the grantees are from UP Diliman – Electronics and Electrical Engineering Institute (EEEI) (Figures 2-3). Other grantees are from Mapua Institute of Technology (MIT) and the Advanced Science and Technology Institute (ASTI). They were sent to Japan for research visits and research attachments to enable them to develop research capability in microsatellite development.



**Fig. 1** Percentage distribution of priority areas taken up by the grantees as of December 12, 2014.



**Fig. 2** Grantees from UP Diliman, MIT and ASTI, who were sent to Japan to undergo microsatellite development training with Japanese experts.



**Fig. 3** Mr. Jeark A. Principe with his radar during his training on “Build a Small Radar System” at the Massachusetts Institute of Technology, USA.

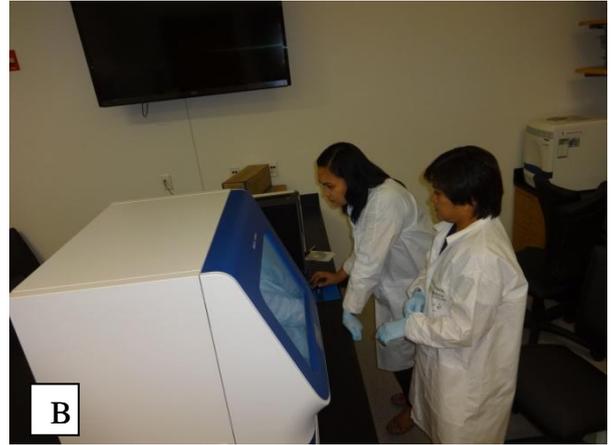
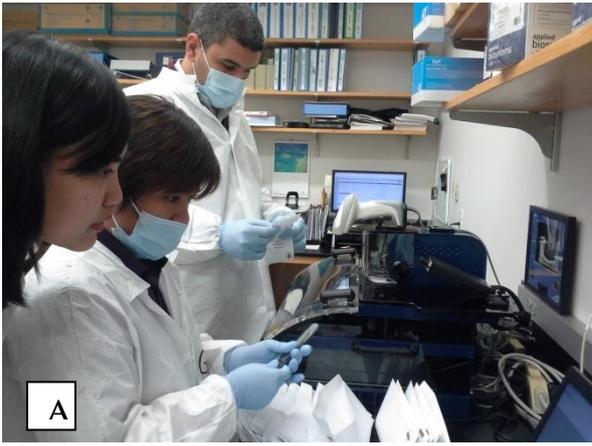
The second most subscribed area is data analysis accounting to fourteen percent (14%) of the total applications received. Topics for the said area cover video analytics, design and implementation of spatial databases, advanced statistics and data mining, reoptimization for closest substring problem, etc. which are considered necessary in processing satellite data as well as numerical modeling (see Figure 4).

Genomics and rubber science and engineering, follow at third rank. Interest in genomics has probably been triggered by the establishment of the Philippine Genome Center (PGC), a joint project of the University of the Philippines and DOST, aiming to tap genomics- the study of an organism’s complete set of DNA – to improve crops, conserve biodiversity, improve disease diagnostics, and aid in forensics (Figures 5-6).

Likewise, the high percentage in the uptake in the rubber science/engineering area can be linked to the goals of various government agencies including the DOST, finance institutions and other industry stakeholders to revive and double the production in the near future of the rubber industry in the desire to make the Philippines as one of the major natural rubber-producing countries in Asia.



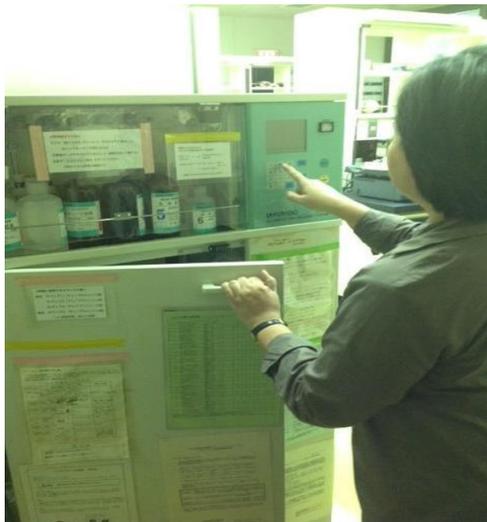
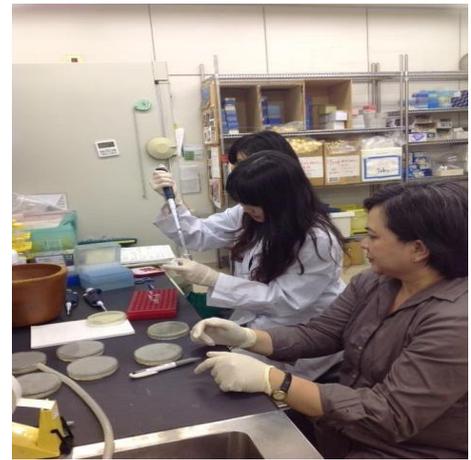
**Fig. 4.** Grantees under the data analysis priority area of the BCDA-funded project; (A) Dr. Prospero Naval (rightmost) with other trainees of “Advanced Statistics and Data Mining” held at the Escuela Tecnica Superior de Ingenieros Informaticos, Universidad Politecnica de Madrid, Spain; (B) Dr. Rhodora Gonzales during her training on “Design and Implementation of Spatial Databases” last June 9-27, 2014 at the University of Twente, Netherlands.



**Fig. 5** Photos of Ms. Jazelyn Salvador and Gayvelline Calacal (A-D) during their 4-week certificate training program in forensic genetics and DNA database technology at the University of North Texas Health Science Center, USA.



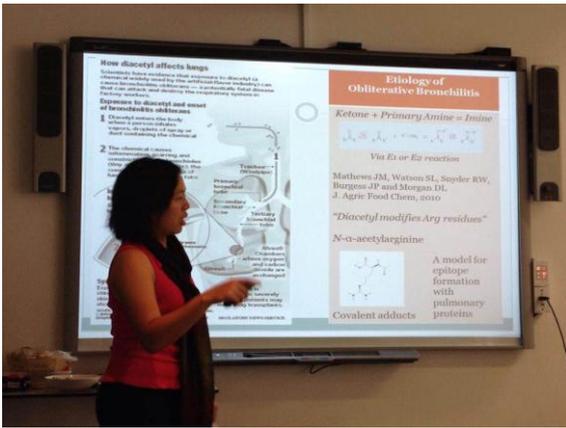
**Fig. 6** Dr. Kevin Yaptenco with Dr. Wetzler, an expert in NIR, during his training on “NIR and Chemometrics for Non-destructive Testing of Food and Food Products” at the USDA Engineering and Wind Erosion Research Unit (EWERU), Manhattan, Kansas, USA (Fig. 6A). Fig. 6B shows Dr. Yaptenco’s host, Dr. Paul Armstrong, demonstrating the use of a prototype single-kernel grain analyzer under development.



**Fig. 7** Photos of Ms. Shiela V. de Jesus during her training on Genome Analysis of Human Endogenous Retroviruses: A bioinformatics Approach last October 30-November 9, 2013 in Japan.



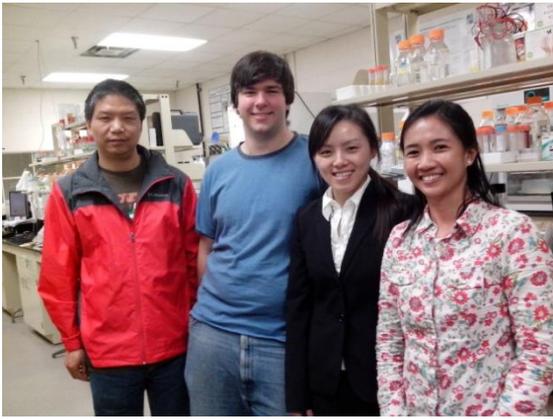
**Fig. 8** Group photo shared by Ms. Melissa Anne T. Gabriel during her training on Atomic Force Microscopes Applications Workshop at the Institute Pasteur de Lille, France.



**Fig. 9** Ms. Alma Lorelei Abejero presenting her toxicology laboratory results and case study during her training on "Utrecht Summer School in Toxicology and Environmental Health" at the Universiteit Utrecht, Netherlands last August 16-31, 2014.



**Fig. 10** Mr. Jose Bergantin performing some laboratory activities during his training on "Bioanalytical Nanotechnology Techniques" at the Universitat Autònoma de Barcelona, Bellaterra, Barcelona, Spain.



**Fig. 11** Dr. Lilia Fernando during her training on “Nano-Biosensors for Diagnostics” last April 4-June 2, 2014 at the Michigan State University, USA.



**Fig. 12** Ms. Lucy Lastimososa with other trainees on “Impact Evaluation of Technical Cooperation and Development Projects and Programmes” at ITC-ILO, Turin, Italy.

To date, no applications have been received for numeral modelling, computer vision technology, photovoltaic and solar cell technology, and metals engineering but applications are expected to pour in the first quarter next year. Taxonomy and intellectual property licensing, on the other hand, had been recently added to the list. The addition of taxonomy in the priority areas is in response to the shortage and declining number of taxonomists in the country. It is one of the issues being faced by the scientific community around the world as hundreds of newly discovered animals, plants and other organisms remain unclassified due to the scarcity of taxonomists. Likewise, intellectual property licensing was added in view of a more intensive effort to transfer and commercialize research outputs.

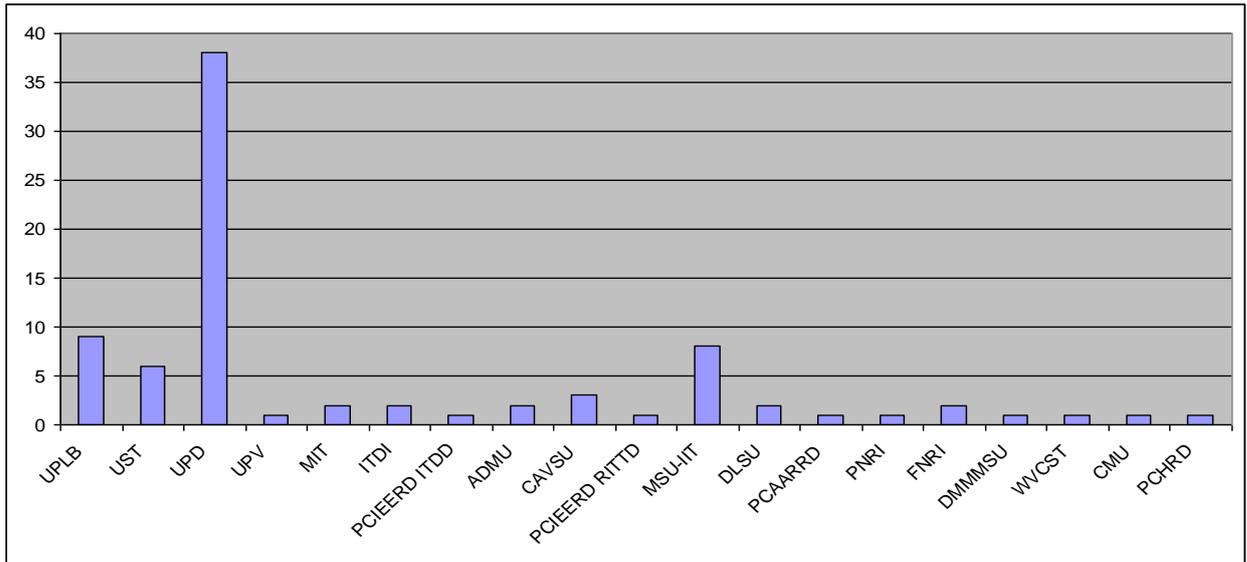


Fig. 12 shows the total number of grantees per institution.

Out of one hundred forty eight (148) applications received, eighty-eight (88) had been approved by the BCDA Project Monitoring Working Group (PMWG) for Individual Trainings, fifteen (15) for Sandwich Program and three (3) for Post-Doctoral Fellowship. As depicted in the graph, the University of the Philippines Diliman (UPD) has the highest number of applications approved, mostly under the space technology applications area (Figure 12). The volume of applications received from other institutions can be attributed to the Information Education Campaign (IEC) conducted by the staff of Human Resources and Institution Development Division (HRIDD) headed by Engr. Ermie M. Bacarra (see Appendix 2 - Table 1).

Likewise, a group training for Grade 1 public school teachers was also approved, attended by a total of five hundred sixty five (565) teachers from various public elementary schools in the country. The teachers were trained in the use of mathematical courseware under the SEI project “iTEACH Math (Improving Technology-Enhanced Activities for Creative Honing of Mathematics)” (see Figures 14-18).



Fig. 14 Participants in Baguio City during their pretest



**Fig. 15** Participants in Davao acted as Grade 1 pupils during NISMED's lesson-implementation incorporating an activity in the Courseware



**Fig. 16** Participants in Cebu City exploring the lessons in the Courseware



**Fig. 17** Participants in Cagayan de Oro City during their posttest



**Fig. 18** NISMED trainers facilitating post lesson discussion after the demonstration-teaching in Cebu and Cagayan de Oro

Total disbursements as of December 12, 2014 amount to Thirty Seven Million, One Hundred Thirty Two Thousand, Seven Hundred Ninety Eight and 09/100 Pesos (PhP 37,132,798.09) or thirty nine percent (39%) of the total amount released to PCIEERD. An addition of Fifteen Million, Five Hundred Fifty Eight Thousand, Nine Hundred Seven and 15/100 Pesos (PhP15,558,907.15) for twenty nine (29) applications approved as of December 12, 2014, brings the total amount released and committed at Fifty Two Million, Nine Hundred Seventy Eight Thousand, Eight Hundred Forty Four and 35/100 Pesos (PhP 52,978,844.35) or fifty five percent (55%).

#### Summary of amount disbursed and committed

<b>Total Amount Received</b>	<b>PhP 96,000,000.00</b>
Funds disbursed	PhP 37,132,798.09
Funds approved and committed as of Dec. 12, 2014	PhP 15,558,907.15
<b>Total Amount Released and Committed</b>	<b>PhP 52,691,705.24</b>
<b>Balance as of Dec. 12, 2014</b>	<b>PhP 43,308,294.65</b>

#### Challenges

The implementation of the project was met with a number of challenges. First, the requisite return service obligation posed a hindrance to a number of interested individuals. As provided by RA 7917 beneficiaries of the grant should render a three-year return service regardless of the duration of the training attended or the amount of grant received.

Secondly, for the first year of the project implementation, the grant was limited only to researchers, faculty and scholars of the National Science Consortium (NSC) and the Engineering Research and Development for Technology (ERDT) Consortium both of which have also their respective programs that allow certain faculty and graduate students to go abroad for trainings and or sandwich program.

Thirdly, the age limit of below fifty years old also marginalized active and prolific researchers who are above fifty years old. Thus uptake for the grant initially started at a very slow rate.

## **Actions Taken**

Due to the limited progress of the project and relatively small number of applications received during its first year, PCIEERD opened the BCDA programs not only to the faculty and scholars of the NSC and ERDT but to various State Universities and Colleges (SUCs) around the country as well and the DOST R&D Institutes (RDIs), Regional Offices (ROs), Sectoral Planning Councils, and Service Institutes in areas supportive of the National R&D Agenda where there is inadequacy of expertise in the identified areas.

With regard to the age requirement, the program was made open to all active and capable personnel of the abovementioned institutions as long as they can still put into practice the knowledge and skills that they have gained from their training abroad. Thus, the Implementing Guidelines of the BCDA-Funded Project was revised to “preferably, not more than 50 years old.”

Furthermore, with the aim to reach a wider participation and increase the number of potential applicants, Information Education Campaign (IEC) was conducted by the staff of Human Resources and Institution Development Division to various parts of the country (see Appendix 2, Table 1) in addition to information dissemination through posters and written communications.

## Appendix 1. GRANTEES WHO HAD COMPLETED THEIR TRAINING

 <p> <b>Name of Grantee:</b> Dr. Rhodora M. Gonzales  <b>Title of Training:</b> Design and Implementation of Spatial Databases  <b>Duration of Training:</b> June 9-27, 2014  <b>Venue:</b> University of Twente, Enschede, Netherlands  <b>Sending Institution:</b> UPD  <b>Discipline:</b> Data Analysis         </p>	 <p> <b>Name of Grantee:</b> Mr. Philip Christian C. Zuniga  <b>Title of Training:</b> Vienna Summer of Logic  <b>Duration of Training:</b> July 9-24, 2014  <b>Venue:</b> Vienna University of Technology, Austria  <b>Sending Institution:</b> UPD  <b>Discipline:</b> Data Analysis         </p>
 <p> <b>Name of Grantee:</b> Dr. Kevin F. Yaptenco  <b>Title of Training:</b> Training on Near Infrared Spectroscopy and Chemometrics for Non-destructive Testing of Food and Food Products  <b>Duration of Training:</b> June 1-August 15, 2014  <b>Venue:</b> USDA Engineering and Wind Erosion Research Unit (EWERU), Manhattan, Kansas, USA  <b>Sending Institution:</b> UPD  <b>Discipline:</b> Data Analysis         </p>	 <p> <b>Name of Grantee:</b> Ms. Ma. Shiela V. de Jesus  <b>Title of Training:</b> Genome Analysis of Human Endogenous Retroviruses: A bioinformatics Approach  <b>Duration of Training:</b> October 30-November 9, 2013  <b>Venue:</b> Nagoya City University, Graduate School for Medical Sciences, Nagoya, Japan  <b>Sending Institution:</b> UST  <b>Discipline:</b> Genomics         </p>
 <p> <b>Name of Grantee:</b> Dr. Prospero C. Naval, Jr.  <b>Title of Training:</b> Advanced Statistics and Data Mining (ASMA) 2014  <b>Duration of Training:</b> June 23-July 7, 2014  <b>Venue:</b> Escuela Tecnica Superior de Ingenieros Informaticos, Universidad Politecnica de Madrid  <b>Sending Institution:</b> UPD  <b>Discipline:</b> Data Analysis         </p>	 <p> <b>Name of Grantee:</b> Ms. Gayvelline Calacal  <b>Title of Training:</b> Forensic Genomics  <b>Duration of Training:</b> September 9- October 4, 2013  <b>Venue:</b> University of North Texas Health Science Center, USA  <b>Sending Institution:</b> UPD  <b>Discipline:</b> Genomics         </p>
 <p> <b>Name of Grantee:</b> Ms. Romarie Lorenzo  <b>Title of Training:</b> Training Workshop on Video Analytics  <b>Duration of Training:</b> September 9- October 19, 2013  <b>Venue:</b> Osaka University and Hokkaido University, Japan  <b>Sending Institution:</b> UPD  <b>Discipline:</b> Data Analysis         </p>	 <p> <b>Name of Grantee:</b> Ms. Jazelyn M. Salvador  <b>Title of Training:</b> 4-week Certificate Program in Forensic Genetics and DNA Database Technology  <b>Duration of Training:</b> September 9- October 4, 2013  <b>Venue:</b> University of North Texas Health Science Center, USA  <b>Sending Institution:</b> UPD  <b>Discipline:</b> Genomics         </p>



**Name of Grantee:** Ms. Grace F. Estillo  
**Title of Training/Research:** Fate and Transport of Heavy Metals in Groundwaters  
**Duration of Training:** November 11, 2013 – January 10, 2014  
**Venue:** Hokkaido University, Japan  
**Sending Institution:** UPD  
**Discipline:** Waste Treatment Techniques



**Name of Grantee:** Ms. Alma Lorelie DJ. Abejero  
**Title of Training:** Utrecht Summer School in Toxicology and Environmental Health  
**Duration of Training:** August 16-31, 2014  
**Venue:** Universiteit Utrecht, Utrecht, Netherlands  
**Sending Institution:** UPLB  
**Discipline:** Waste Treatment Technique



**Name of Grantee:** Dr. Lawrence V. Madriaga  
**Title of Training:** ASTM Standard Rubber Test Methods  
**Duration of Training:** October 2-11, 2013  
**Venue:** Akron Polymer Training Center, University of Akron, Ohio, USA  
**Sending Institution:** MIT  
**Discipline:** Rubber Science



**Name of Grantee:** Dr. Jose H. Bergantin, Jr  
**Title of Training:** Bioanalytical nanotechnology techniques  
**Duration of Training:** October 1-31, 2013  
**Venue:** Universitat Autònoma de Barcelona, Bellaterra, Barcelona, Spain  
**Sending Institution:** UST  
**Discipline:** Nanotechnology Technique



**Name of Grantee:** Dr. Bryan B. Pajarito  
**Title of Training:** ASTM Standard Rubber Test Methods  
**Duration of Training:** October 2-11, 2013  
**Venue:** Akron Polymer Training Center, University of Akron, Ohio, USA  
**Sending Institution:** UPD  
**Discipline:** Rubber Science



**Name of Grantee:** Dr. Lilia M. Fernando  
**Title of Training:** Nano-biosensors for Diagnostics  
**Duration of Training:** April 2- June 2, 2014  
**Venue:** Michigan State University, East Lansing, Michigan, USA  
**Sending Institution:** UPLB  
**Discipline:** Nanotechnology Technique



**Name of Grantee:** Ms. Brigida A. Visaya  
**Title of Training:** Rubber Benchmarking Mission and International Training Program: Advanced Training on Rubber Products Manufacture and Testing  
**Duration of Training:** March 23- April 5, 2014  
**Venue:** Rubber Research Institute of India (Kerala) Rubber Producers' Society Plantations and Nursery (Kerala) All India Rubber Industries Association (Mumbai)  
**Sending Institution:** ITDI  
**Discipline:** Rubber Science



**Name of Grantee:** Dr. Christine C. Hernandez  
**Title of Training:** High-Throughput Microscopy Imaging and LC-MS Dereplication Techniques for Natural Products Drug Discovery  
**Duration of Training:** December 3-21, 2013  
**Venue:** University of California Santa Cruz, California, USA  
**Sending Institution:** UPD  
**Discipline:** Microscopy Imaging



**Name of Grantee:** Ms. Melissa Anne T. Gabriel  
**Title of Training:** Atomic Force Microscopes (AFM) Applications Workshop  
**Duration of Training:** August 25-29, 2014  
**Venue:** Institute Pasteur de Lille, France  
**Sending Institution:** UPV  
**Discipline:** Microscopy Imaging



**Name of Grantee:** Dr. Eugene Rex L. Jalao  
**Title of Training:** Business Intelligence and Data Warehousing Program  
**Duration of Training:** September 23-December 13, 2013  
**Venue:** Online  
**Sending Institution:** UPD  
**Discipline:** Business Intelligence



**Name of Grantee:** Dr. Teddy F. Tepora  
**Title of Training:** Converting Technology to Wealth: Technology Transfer Training  
**Duration of Training:** October 21 – 30, 2014  
**Venue:** IC2 Institute, The University of Texas, USA  
**Sending Institution:** CavSU  
**Discipline:** Technology Transfer



**Name of Grantee:** Mr. Aldrin Calderon  
**Title of Training:** Converting Technology to Wealth: Technology Transfer Training  
**Duration of Training:** October 21 – 30, 2014  
**Venue:** IC2 Institute, The University of Texas, USA  
**Sending Institution:** CavSU  
**Discipline:** Technology Forecasting



**Name of Grantee:** Mr. Norly B. Villar  
**Title of Training:** Converting Technology to Wealth: Technology Transfer Training  
**Duration of Training:** September 1- November 2, 2014  
**Venue:** IC2 Institute, The University of Texas, USA  
**Sending Institution:** PCIEERD-RITTD  
**Discipline:** Technology Transfer



**Name of Grantee:** Mr. Percival Magpantay  
**Title of Training:** Resilient and Stable Sensor Networks for Energy and Environmental Monitoring  
**Duration of Training:** August 2-September 30, 2013  
**Venue:** University of California Berkeley, California, USA  
**Sending Institution:** UPD  
**Discipline:** Sensor Technology



**Name of Grantee:** Ms. Lucy A. Lastimosa  
**Title of Training:** Impact Evaluation of Technical Cooperation and Development Projects and Programmes  
**Duration of Training:** November 3-7, 2014  
**Venue:** Italy  
**Sending Institution:** PCAARRD  
**Discipline:** Technology Transfer



**Name of Grantee:** Mr. Jeark A. Principe  
**Title of Training:** Build a Small Radar System  
**Duration of Training:** June 10-14, 2013  
**Venue:** MIT Campus, Cambridge, MA, USA  
**Sending Institution:** UPD  
**Discipline:** Space Technology Applications



**Name of Grantees:** Mr. Juan Paolo Espiritu  
 Mr. Ariston Gonzales  
 Mr. Paul Leonard Hilaro  
 Mr. Roel John Judilla  
 Mr. Joel Joseph Marciano, Jr.  
 Mr. Julian Marvick Oliveros  
 Mr. Alvin Retaramar

**Title of Training:** Microsatellite Development  
**Duration of Training:** September 16- October 4, 2013  
**Venue:** Hokkaido University and Tohoku University, Japan  
**Sending Institution:** UPD  
**Discipline:** Space Technology Applications



**Name of Grantee:** Mr. Janno Vergara  
**Title of Training:** Microsatellite Development  
**Duration of Training:** November 14-28, 2014  
**Venue:** Hokkaido University, Japan  
**Sending Institution:** UPD  
**Discipline:** Space Technology Application



**Name of Grantee:** Ms. Ellen Mae Leonardo  
**Title of Training:** Microsatellite Development  
**Duration of Training:** November 14-28, 2014  
**Venue:** Hokkaido University, Japan  
**Sending Institution:** UPD  
**Discipline:** Space Technology Application



**Name of Grantee:** Ms. Kaye Kristine Vergel  
**Title of Training:** Microsatellite Development  
**Duration of Training:** November 14-28, 2014  
**Venue:** Hokkaido University, Japan  
**Sending Institution:** UPD  
**Discipline:** Space Technology Application



**Name of Grantee:** Mr. Raymund B. Rasco  
**Title of Training/Research:** Simultaneous Treatment of Perchlorate and Nitrate Using Sulfur-Oxidized Bacteria  
**Duration of Training:** December 14, 2013- May 31, 2014  
**Venue:** Dong-A University, Busan, South Korea  
**Sending Institution:** UPD  
**Discipline:** Sandwich Program



**Name of Grantee:** Ms. Siddartha B. Valle  
**Title of Training/Research:** Fate and Transport of Heavy Metals in Groundwaters  
**Duration of Training:** November 11, 2013 – January 10, 2014  
**Venue:** Hokkaido University, Japan  
**Sending Institution:** UPD  
**Discipline:** Sandwich Program



**Name of Grantee:** Ms. Meriam Gay V. Bautista  
**Title of Training:** Intensive Course on Electromagnetic SEMCAD Simulation Tool and Conference Organization  
**Duration of Training:** November 24- December 6, 2014  
**Venue:** WiMed Research Center, Dept. of Engineering, Macquarie University, North Ryde, Australia  
**Sending Institution:** MSU-IIT  
**Discipline:** Biomedical Engineering



**Name of Grantee:** Ms. Jaime M. Hendrix  
**Title of Training/Research:** Characterization and Treatment by Photocatalytic Oxidation of Indoor Air Pollutants in Laboratory Scale  
**Duration of Training:** December 14, 2013 – May 31, 2014  
**Venue:** Dong-A University, Busan, South Korea  
**Sending Institution:** UPD  
**Discipline:** Sandwich Program



**Name of Grantee:** Ms. Mae Lowe L. Diesmos  
**Title of Training:** Detection and Quantification of the Emerging Infectious Disease Chytridiomycosis in Amphibians Using Quantitative Polymerase Chain Reaction  
**Duration of Training:** November 14 to December 12, 2014  
**Venue:** Department of Biology, San Francisco University  
**Sending Institution:** UST  
**Discipline:** Molecular Biology



**Name of Grantee:** Mr. Reynold Curampez  
**Title of Training:** Synthesis of Nanocomposite Bipolar Membrane for Reverse Electrodialysis Application  
**Duration of Training:** October 7 – November 6, 2014  
**Venue:** USA  
**Sending Institution:** UPD  
**Discipline:** Biotechnology

## Appendix 2. GRANTEES WITH ON-GOING TRAINING

 <p> <b>Name of Grantee:</b> Atty. Anne Marie Celeste Jumadla  <b>Title of Training:</b> MSc in Global Innovation Management  <b>Duration of Training:</b> October 1, 2014 – September 30, 2015  <b>Venue:</b> Technology &amp; Innovation Mngt. Dept., Technical University of Hamburg-Harburg, Germany  <b>Sending Institution:</b> ADMU  <b>Discipline:</b> Technology Transfer         </p>	 <p> <b>Name of Grantee:</b> Mr. Benjamin Jonah Magallon  <b>Title of Training:</b> Special Research Attachment  <b>Duration of Training:</b> October 19 – March 31, 2015  <b>Venue:</b> Tohoku University, Japan  <b>Sending Institution:</b> UPD  <b>Discipline:</b> Space Technology Applications         </p>
 <p> <b>Name of Grantee:</b> Mr. John Leur Labrador  <b>Title of Training:</b> Special Research Attachment  <b>Duration of Training:</b> October 19, 2014 – March 31, 2015  <b>Venue:</b> Tohoku University, Japan  <b>Sending Institution:</b> UPD  <b>Discipline:</b> Space Technology Applications         </p>	 <p> <b>Name of Grantee:</b> Ms. Lielzel Atienza  <b>Title of Training:</b> Effectiveness of Bioactive Compounds in Indigenous Food for Prevention and Treatment of Diabetes Mellitus, Diabetes Induced Metabolic Disorders and Related Complications  <b>Duration of Training:</b> October 1, 2014 – September 30, 2015  <b>Venue:</b> Washington State University, Pullman, Washington, USA  <b>Sending Institution:</b> UPLB  <b>Discipline:</b> Biotechnology         </p>
 <p> <b>Name of Grantees:</b> Mr. Juan Paolo Espiritu            Mr. Ariston Gonzales            Mr. Gerwin Guba            Mr. Julian Marvick Oliveros            Mr. Harold Paler  <b>Title of Training:</b> Microsatellite Development  <b>Duration of Training:</b> October 19, 2014 – March 31, 2015  <b>Venue:</b> Hokkaido University and Tohoku University, Japan  <b>Sending Institution:</b> UPD  <b>Discipline:</b> Space Technology Applications         </p>	 <p> <b>Name of Grantee:</b> Mr. Ramer Bautista  <b>Title of Training:</b> Resilient and Stable Sensor Networks for Energy and Environmental Monitoring  <b>Duration of Training:</b> August 2 – September 30, 2013  <b>Venue:</b> University of California Berkeley, California, USA  <b>Sending Institution:</b> UPD  <b>Discipline:</b> Sensor Technology         </p>
 <p> <b>Name of Grantee:</b> Mr. Christian Adam Espiritu  <b>Title of Training:</b> DNA Aptamer Selection for Diagnostic Biosensor Devt. in Detection of Trichomonas Vaginalis  <b>Duration of Training:</b> September 1, 2014 – May 31, 2015  <b>Venue:</b> Universitat Rovira I Virgili, Spain  <b>Sending Institution:</b> UPD  <b>Discipline:</b> Molecular Biology         </p>	 <p> <b>Name of Grantee:</b> Ms. Loida Medina  <b>Title of Training:</b> Genetic Polymorphisms of Blomia tropicalis and IgE Reactivity in a Selected House Dust Mites Allergic Pop.  <b>Duration of Training:</b> November 30, 2014 – December 21, 2014  <b>Venue:</b> The Siriraj Dust Mite Center for Services and Research, Mahidol University, Bangkok, Thailand  <b>Sending Institution:</b> UST  <b>Discipline:</b> Molecular Biology         </p>

### Appendix 3. NEWLY APPROVED GRANTEES



**Name of Grantee:** Dr. Miriam Baltazar  
**Title of Training:** Next Generation Sequencing  
**Duration of Training:** April 12-21, 2015  
**Venue:** Wellcome Trust Genome Campus, Hinxton, Cambridge  
**Sending Institution:** CavSU  
**Discipline:** Genomics



**Name of Grantee:** Dr. Esperanza Maribel Agoo  
**Title of Training:** Technical Training at the Millenium Seed Bank  
**Duration of Training:** July 1 – 31, 2015  
**Venue:** Millenium Seed Bank, Kew Royal Botanic Gardens, London, UK  
**Sending Institution:** DLSU  
**Discipline:** Genomics



**Name of Grantees:** Ms. Donna May Papa  
**Title of Training:** Morphological, Molecular and Genomic Techniques in the Study of Bacterial Viruses  
**Duration of Training:** April 1 – June 30, 2015  
**Venue:** Universite Laval, Quebec, Canada  
**Sending Institution:** UST  
**Discipline:** Genomics



**Name of Grantee:** Mr. Jacus Nacis  
**Title of Training:** Molecular Genetics Training Workshop and Immersion Programme  
**Duration of Training:** 1<sup>st</sup> Quarter of 2015  
**Venue:** National University of Singapore, Singapore  
**Sending Institution:** FNRI  
**Discipline:** Genomics



**Name of Grantee:** Ms. Irene Pajares  
**Title of Training:** Yeast as Cell Factories for Production of Recombinant Proteins and Metabolites  
**Duration of Training:** May 1 – August 31, 2015  
**Venue:** Dept of Biotechnology and Bioscience, University of Milan Bicocca, Italy  
**Sending Institution:** UPLB  
**Discipline:** Genomics



**Name of Grantee:** Dr. Maria Cristina Ramos  
**Title of Training:** Use of Caenorhabditis elegans as a Model for Drug Discovery  
**Duration of Training:** June 15 – August 15, 2015  
**Venue:** Institute of Nutrition, Friedrich-Schiller-University Jena  
**Sending Institution:** UST  
**Discipline:** Genomics



**Name of Grantee:** Ms. Vanessa Joy Timoteo  
**Title of Training:** Molecular Genetics Training Workshop and Immersion Programme  
**Duration of Training:** 1<sup>st</sup> quarter of 2015  
**Venue:** National University of Singapore, Singapore  
**Sending Institution:** FNRI  
**Discipline:** Genomics



**Name of Grantee:** Ms. Raquel Rubio  
**Title of Training:** Advanced Genotoxicity Testing: Theoretical and Practical Training  
**Duration of Training:** May 1 – 29, 2015  
**Venue:** University of Oslo, Norway  
**Sending Institution:** UPD  
**Discipline:** Genomics



**Name of Grantee:** Dr. Gliceria B. Ramos  
**Title of Training:** Epigenetics  
**Duration of Training:** April 14-24, 2015  
**Venue:** National Institute of Health, Bethesda, Maryland, USA  
**Sending Institution:** DLSU  
**Discipline:** Genomics



**Name of Grantee:** Dr. Hosea Matel  
**Title of Training:** Post-doctoral Research on Cloning and Characterization of Enzymes from Yacon for Oligofructose Production  
**Duration of Training:** June 1 – November 30, 2015  
**Venue:** Dept. of Plant Sciences, University of California Davis, California  
**Sending Institution:** CavSU  
**Discipline:** Genomics



**Name of Grantee:** Mr. Alexander Mosqueda  
**Title of Training:** Hydrothermal Treatment of Municipal Solid Waste and Biomass  
**Duration of Training:** June 2 -29, 2015  
**Venue:** Tokyo Institute of Technology  
**Sending Institution:** MSU-IIT  
**Discipline:** Waste Treatment Techniques



**Name of Grantee:** Dr. Ruby Apilado  
**Title of Training:** Governance and Food Safety in Internation  
**Duration of Training:** March 9-27,2015  
**Venue:** Center for Devt. Innovation, Wageningen, Netherlands  
**Sending Institution:** FNRI  
**Discipline:** Nutrigenomics



**Name of Grantee:** Dr. Einstine Opiso  
**Title of Training:** Postdoctoral Fellowship on Physico-Chemical and Microstructural characterization of hardened cement paste blended with coal fly ash, bagasse ash and lime sludge  
**Duration of Training:** July 1, 2015 – March 31, 2016  
**Venue:** Laboratory of Environmental Geology, Hokkaido University  
**Sending Institution:** CMU  
**Discipline:** Waste Treatment Technique



**Name of Grantee:** Ms. Fatima Rodriguez  
**Title of Training:** Wastewater Treatment Plants Design and Engineering  
**Duration of Training:** March 30 – April 14, 2015  
**Venue:** UNESCO-IHE Institute of Water Education, Netherlands  
**Sending Institution:** DMMMSU  
**Discipline:** Waste Treatment Techniques



**Name of Grantee:** Mr. Macario Cordel, II  
**Title of Training:** Deep Learning in Artificial Neural Network  
**Duration of Training:** April 27-August 24,2015  
**Venue:** Katholieke Universiteit Leuven, Belgium  
**Sending Institution:** DLSU  
**Discipline:** Data Analysis



**Name of Grantee:** Ms. Jhoirene Clemente  
**Title of Training:** Reoptimization for Closest Substring Problem  
**Duration of Training:** January 10 – December 10, 2015  
**Venue:** Swiss Federal Institute of Technology, Zurich, Switzerland  
**Sending Institution:** UPD  
**Discipline:** Data Analysis



**Name of Grantee:** Mr. Edwin Arboleda  
**Title of Training:** Near Infrared Spectroscopy Application Training Course  
**Duration of Training:** 1<sup>st</sup> Part - April 21-25, 2015  
 2<sup>nd</sup> Part - May 10 – 15, 2015  
**Venue:** PDK Projects, Winnipeg, Canada  
 Eigenvector Research, Seattle, Washington  
**Sending Institution:** CavSU  
**Discipline:** Data Analysis



**Name of Grantees:** Dr. Ruel Mojica  
**Title of Training:** Techno 2015 – An Innovative Training Program  
**Duration of Training:** June 15 – August 15, 2015  
**Venue:** Impact Centre, University of Toronto – St. George Campus, Ontario, Canada  
**Sending Institution:** CavSU  
**Discipline:** Technology Transfer and Commercialization



**Name of Grantees:** Dr. Bernadeth Ticar  
**Title of Training:** High Yield Extraction, High Performance Anion-Exchange Chromatography with Pulsed Amperometric Detection for Fucoidan Composition Analysis its Bioactive Assessment  
**Duration of Training:** March 15 – April 30, 2015  
**Venue:** Gyeongsang National University Tongyeong Campus, South Korea  
**Sending Institution:** WVCST  
**Discipline:** Biomedical Engineering



**Name of Grantee:** Dr. Jaime Montoya  
**Title of Training:** Health Systems Management Program  
**Duration of Training:** May 6 – 20, 2015  
**Venue:** Galilee International Management Institute, Israel  
**Sending Institution:** PCHRD  
**Discipline:** Biomedical Engineering



**Name of Grantee:** Dr. Francisco Elegado  
**Title of Training:** Building Confidence on the Validity of Developed Nanobiosensors for Listeria and E. coli  
**Duration of Training:** March 1 – May 31, 2015  
**Venue:** Nanobiosensors Lab., Michigan State University, USA  
**Sending Institution:** BIOTECH-UPLB  
**Discipline:** Nanotechnology Techniques



**Name of Grantee:** Mr. Jordan Madrid  
**Title of Training:** Reversible Addition Fragmentation Chain Transfer Mediated Graft Polymerization onto Various Base/Trunk Polymers  
**Duration of Training:** March 3 – May 2, 2015  
**Venue:** Hacettepe University, Ankara, Turkey  
**Sending Institution:** PNRI  
**Discipline:** Nanotechnology Techniques



**Name of Grantee:** Mr. Jan Lorie Robil  
**Title of Training:** Molecular Genetics of Reproductive Devt in the Model Plant Arabidopsis thaliana  
**Duration of Training:** April 1 -31, 2015  
**Venue:** Nara Institute of Science and Technology, Japan  
**Sending Institution:** ADMU  
**Discipline:** Molecular Biology



**Name of Grantee:** Ms. Aileen Custodio  
**Title of Training:** Heterologous Expression and Synthetic Biology of Biosynthetic Gene Clusters in Actinobacteria  
**Duration of Training:** March 1 – June 28, 2015  
**Venue:** Manchester Institute of Biotechnology, University of Manchester, UK  
**Sending Institution:** BIOTECH-UPLB  
**Discipline:** Molecular Biology



**Name of Grantee:** Ms. Princess Angelie Casas  
**Title of Training:** Species Delimitation and Phylogeography of *Drepanosticta flavomaculata* Damselflies (Odonata, Zygoptera) of Mindanao  
**Duration of Training:** February 1 – July 31, 2015  
**Venue:** National Taiwan Normal University, Taiwan  
**Sending Institution:** MSU-IIT  
**Discipline:** Molecular Biology



**Name of Grantee:** Ms. Maureen Sabit  
**Title of Training:** Aeroallergen and Pollen Research Methods with Principles of Data Analysis and Quality Control  
**Duration of Training:** January 13 – March 17, 2015  
**Venue:** University of Cordoba, Spain  
**Sending Institution:** UST  
**Discipline:** Molecular Biology



**Name of Grantee:** Ms. Nyzar Mabeth Odchimar  
**Title of Training:** Ethnobotany, Toxicity, Phytochemical Pharmacological Screening of Natural and Callus Culture of Selected Medicinal Plants Used by Talaandig Tribe of Brgy. Songco, Lantapan, Bukidnon  
**Duration of Training:** March 20 – June 20, 2015  
**Venue:** University of Sri Jayewardenepura, Sri Lanka  
**Sending Institution:** MSU-IIT  
**Discipline:** Molecular Biology



**Name of Grantee:** Ms. Jhoan Rhea Pizon  
**Title of Training:** Ethnobotany, Cytotoxicity, Phytochemistry, Pharmacological Assessment of Natural and Callus Cultures of Selected Medicinal Plants Used by the Subanen of Lapuyan, Zamboanga del Sur  
**Duration of Training:** March 20 – June 20, 2015  
**Venue:** University of Sri Jayewardenepura, Sri Lanka  
**Sending Institution:** MSU-IIT  
**Discipline:** Molecular Biology



**Name of Grantee:** Ms. Dana Joanne Von Trono  
**Title of Training:** Ethnobotany, Phytochemistry, Pharmacology, and Toxicity Assessment of Natural and Callus Cultures of Selected Medicinal Plants Used by Manobo Tribe in Bukidnon  
**Duration of Training:** March 20 – June 20, 2015  
**Venue:** University of Sri Jayewardenepura, Sri Lanka  
**Sending Institution:** MSU-IIT  
**Discipline:** Molecular Biology



**Name of Grantee:** Mr. Philip Noel Banaag  
**Title of Training:** DNA Barcoding of Pholcid Spiders (Pholcidae: Araneae) at Mt. Pinukis, Pagadian, Zamboanga del Sur, Philippines  
**Duration of Training:** May 1 – 31, 2015  
**Venue:** Biodiversity Institute of Ontario, University of Guelph, Ontario, Canada  
**Sending Institution:** MSU-IIT  
**Discipline:** Molecular Biology



**Name of Grantees:** Mr. Eddie Mondejar  
**Title of Training:** DNA Barcoding of Pholcid Spiders (Pholcidae: Araneae) at Mt. Pinukis, Pagadian, Zamboanga del Sur, Philippines  
**Duration of Training:** May 1 – 31, 2015  
**Venue:** Biodiversity Institute of Ontario, University of Guelph, Ontario, Canada  
**Sending Institution:** MSU-IIT  
**Discipline:** Molecular Biology



**Name of Grantee:** Mr. Noel Tan Gana  
**Title of Training:** Fungal Biodiversity 2015  
**Duration of Training:** February 2 – 13, 2015  
**Venue:** Centraalbureau Voor Schimmelcultures (CBS) Fungal Biodiversity Center, Utrecht, Netherlands  
**Sending Institution:** UPLB  
**Discipline:** Molecular Biology



**Name of Grantee:** Dr. Rezin Bahia

**Title of Training:** Immunohistochemistry and Microscopy (IHCM) Course

**Duration of Training:** March 14 – 19, 2015

**Venue:** Marine Biological Laboratory, Woods Hole, Massachusetts, USA

**Sending Institution:** CavSU

**Discipline:** Microscopy and Imaging

## DOST RDIs

 <p><b>RDI: PNRI</b>  <b>Title of Training:</b> Capacity Building for Science, Technology and Innovation Towards a Self-Sustaining Research and Development Institute of the DOST  <b>Duration of Training:</b> Mission 1: April 14-18 and May 5-9, 2014  <b>Venue:</b> Mission 1: South Korea and Japan  <b>Participants:</b> Dr. Soledad Castañeda  Ms. Maria Celerina Saligan</p>	 <p><b>RDI: FNRI</b>  <b>Title of Training:</b> Capacity Building for Science, Technology and Innovation Towards a Self-Sustaining Research and Development Institute of the DOST  <b>Duration of Training:</b> Mission 1: April 14-18 and May 5-9, 2014  Mission 2: January 12-16, 2015  <b>Venue:</b> Mission 1: South Korea and Japan  Mission 2: Canada  <b>Participants:</b> Dr. Mario V. Capanzana  Ms. Teresa S. Mendoza</p>
 <p><b>RDI: PTRI</b>  <b>Title of Training:</b> Capacity Building for Science, Technology and Innovation Towards a Self-Sustaining Research and Development Institute of the DOST  <b>Duration of Training:</b> Mission 1: April 14-18 and May 5-9, 2014  <b>Venue:</b> Mission 1: South Korea and Japan  <b>Participants:</b> Dir. Celia B. Elumba  Ms. Nora B. Manganlindan</p>	 <p><b>RDI: MRIDC</b>  <b>Title of Training:</b> Capacity Building for Science, Technology and Innovation Towards a Self-Sustaining Research and Development Institute of the DOST  <b>Duration of Training:</b> Mission 1: April 14-18 and May 5-9, 2014  <b>Venue:</b> Mission 1: South Korea and Japan  <b>Participants:</b> Mr. Jonathan Q. Puerto  Ms. Mercedesita G. Abutal  Mr. Agustin M. Fudolig</p>
 <p><b>RDI: FPRDI</b>  <b>Title of Training:</b> Capacity Building for Science, Technology and Innovation Towards a Self-Sustaining Research and Development Institute of the DOST  <b>Duration of Training:</b> Mission 1: April 14-18 and May 5-9, 2014  Mission 2: January 12-16, 2015  <b>Venue:</b> Mission 1: South Korea and Japan  Mission 2: Canada  <b>Participants:</b> Dr. Romulo T. Aggangan  Mr. Alberto V. Nicolas</p>	 <p><b>RDI: ASTI</b>  <b>Title of Training:</b> Capacity Building for Science, Technology and Innovation Towards a Self-Sustaining Research and Development Institute of the DOST  <b>Duration of Training:</b> Mission 1: April 14-18 and May 5-9, 2014  Mission 2: December 7-13, 2014  <b>Venue:</b> Mission 1: South Korea and Japan  Mission 2: Singapore and Australia  <b>Participants:</b> Engr. Denis F. Villorente  Narcisa Juvilyn C. Castañeda</p>
 <p><b>RDI: ITDI</b>  <b>Title of Training:</b> Capacity Building for Science, Technology and Innovation Towards a Self-Sustaining Research and Development Institute of the DOST  <b>Duration of Training:</b> Mission 1: April 14-18 and May 5-9, 2014  <b>Venue:</b> Mission 1: South Korea and Japan  <b>Participants:</b> Ms. Lydia M. Ablaña  Ms. Annabelle V. Briones</p>	

**Appendix 2 - Table 1. IEC on BCDA, BSP and PCIEERD HRD Programs as of December 12, 2014**

DATE	LOCATION	INSTITUTION	NAME	APPLICATION RECEIVED		APPROVED APPLICATION		IN PROCESS	DIS APPROVED
				BCDA	HRDP	BCDA	HRDP		
13-Aug-14	DAVAO CITY	Ateneo de Davao University (ADDU)	Glenda Sacbibit						
20-Aug-14	CEBU CITY	University of San Carlos (USC)	Glenda Sacbibit	3	1	2		2	1
17-Sep-14	CAVITE	Cavite State University (CAVSU)	Ermie Bacarra Arnel Bisnar	5		2		3	
18-Sep-14	MANILA	Technological University of the Phil (TUP)	Jonathan Munoz Ermie Bacarra Glenda Sacbibit						
22-Sep-14	BENGUET	Benguet State University (BSU)	Glenda Sacbibit Annaliza Monterey						
24-Sep-14	NUEVA ECIJA	Central Luzon State University (CLSU)	Jonathan Munoz Arnel Bisnar		1	1			
25-Sep-14	BICOL	Bicol State University (BSU)	Glenda Sacbibit						
29-Sep-14	PALAWAN	Palawan State University (PSU)	Jonathan Munoz						
29-Sep-14	LEYTE	Visayas State University (VSU)	Arnel Bisnar		1	1			
1-2 Oct-2014	PANGASINAN	Pangasinan State University (PSU)	Ermie Bacarra Marie Christie Santos		1			1 (requested to submit requirements)	
	VIGAN	University of Northern Philippines (UNP)							
7-8 Oct-2014	ILIGAN CITY	Mindanao State University- IIT (MSU-IIT)	Ermie Bacarra	7	2	7			2
	BUKIDNON	Central Mindanao University (CMU)		1	2	1	1	1	
				<b>16</b>	<b>8</b>	<b>10</b>	<b>5</b>	<b>7</b>	<b>3</b>

## PROJECT MANAGEMENT STAFF



**Dr. Rowena Cristina L. Guevara**  
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**Ms. Marie Christie B. Santos**  
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**Ms. Mary Joy G. Borromeo**  
Senior SRS, HRIDD



**Ms. Annaliza R. Monterey**  
Project Assistant III, HRIDD



**Mr. Arnel M. Bisnar**  
SRS II, HRIDD