SABBATICAL REPORT
JONATHAN D. AWAYA, PH.D.
ASSOCIATE PROFESSOR, BIOLOGY, CAS

6-MONTH SABBATICAL PROJECT: JULY 2014-DECEMBER 2014

Working with and in the laboratory of:
Shaun Lee Ph.D.
Assistant Professor, Molecular Microbiology
University of Notre Dame, Biological Sciences

Objectives:

1. Research development- work continuously in a tier-one research lab and produce results which lead to high impact journal articles.

Previous in vitro reconstitution studies demonstrate that this mechanism of bacteriocin biosynthesis to could be used to generate a library of artificial peptide antibiotics, many of which will undoubtedly have novel therapeutic value (Lee et al. 20008). I focused my research project by characterizing the genetic and biochemical pathways to discovery other similar peptidic antibiotics (from microbial pathogens). I had the opportunity to culture and manipulate MRSA, methicillin resistant Staphylococcus aureus, and learn new techniques to handle and conduct molecular techniques and skills that I have never had done prior to the sabbatical. I have similar research objectives at UH Hilo, and the sabbatical will lead future collaborations and increased skill set to advance research projects at UH Hilo.

Efforts in Dr. Lee’s lab has had a direct impact on my research because both labs are involve important multidisciplinary avenues—chemical approaches for structural identification of secondary metabolites, various screening methods to identify active antibiotic candidates, as well as molecular and microbiology-based approaches to better understand how microorganisms biosynthesize and utilize these unique compounds. My lab has been productive since I have been back and will be submitting several papers this year.

2. Professional development- Understand the Biology curriculum at Notre Dame and how student/curriculum assessment at the program level is achieved/developed

I did not have a chance to talk extensively with ND Biology faculty about changes to the Biology curriculum but had the opportunity to talk with Dr. Shaun Lee and Dr. Michelle Whaley, teaching professor, about assessment and curriculum review procedures at the department level. I sat in on two upper division biology courses and had talked with undergraduates and graduate students about the curriculum and Biology program at a private institution.

In the past I have sent three undergraduate UH Hilo students to conduct biomedical research at the University of Notre Dame. All three students were a part of the REU (Research Experience for Undergraduates) at Notre Dame which opened up an avenue for UH Hilo Biology students to conduct research at top tier research labs. I had the opportunity to have several meetings with Dr. Michelle Whaley who is the coordinator of the REU program and wishes to continue this pathway for UH Hilo students to attend their summer doing research at ND.
3. Teaching development- Presenting seminars or guest lectures within the Biological Sciences Dept at Notre Dame.

As a lab we met on a weekly basis and presented our research and problems to the group. I only gave one seminar to the Biology program about the research that I am conducting at UH Hilo. There seems to be a potential collaboration between the two labs (Lee and Awaya) to investigate microbial pathogen reservoirs and new antimicrobial biosynthesis from environmental microbes.