



June 8 through June 14, 2016 - Newsletter 3

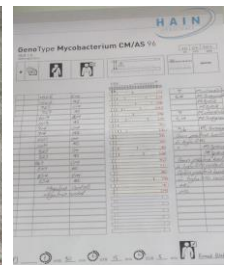
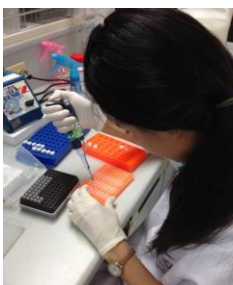
STARTING RESEARCH IN THE LABORATORY

After 2.5 weeks at their foreign sites, MHIRT students have now begun working in the laboratory on their research projects. Interestingly, many of the students are learning similar laboratory techniques and figuring out to deal with the language barrier in the laboratory. They have experienced many cultural differences and are now dealing with differences between living in Hawai'i and living in Cameroon, Thailand and India. The first few weeks have been a bit stressful with all the new adjustments, but most students are beginning to feel comfortable living abroad. This newsletter focuses on research. The next issue will chronicle some of their cultural experiences.

Working in the laboratory in Cameroon, **Jessie** reports: *"I was constantly asked this week why I'm doing research in Cameroon where there's very little resources and funds."* Many of you readers may have also wondered why students are going abroad to do research when research in Hawai'i provides an excellent training opportunity. The MHIRT program is sponsored by the National Institute of Minority Health and Health Disparities, National Institutes of Health, and encourages students who come from under-represented ethnic, economic and rural backgrounds to seek careers in biomedical research, so they can help solve health problems related to health disparities. For example, cardiovascular disease, obesity, and cancer affect some groups of people in Hawai'i more than others. By spending time abroad, the NIH feels students will gain a better perspective about global health disparities, and hopefully will someday help solve them through research. So, Jessie's answer (*"I told the inquisitive lab techs I'm here to broaden my perspectives and increase my exposure to global, diverse lab techniques"*) caught the true spirit of the program.

Tiffany, Ernest, Gabby, and Michael spent the week doing PCR assays. The first steps of their assays are similar. The photos show Ernest (Cameroon) and Gabby (Thailand) setting up their assays. Then, they place the tubes in a thermocycler where DNA is amplified (photo right – Cameroon, photo below – Thailand). Clearly, they are using similar equipment.

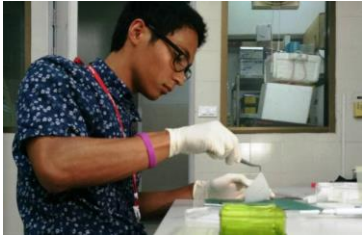
Ernest then hybridizes his amplified DNA to strips to determine the species of Mycobacteria the patient is infected with. The hybridized strips are aligned on a template to identify if any of the 40 species of mycobacteria are present. **Gabby** is amplifying human DNA and will use the PCR product in a SNP assay, to help determine if humans infected with the bacterium *B. pseudomallei*, have good or poor prognosis. Sorry, we don't have photos of Gabby's results. Stay tuned.



Michael F. (Cameroon) related that *"The way that the virology unit trains new people is very methodical and done in 3 steps. The first step is to shadow a technician while listening to explanations. The second step is to do the procedures under the supervision of the technician and the last step is to do it without supervision. This week I completed steps 2 and 3 for RNA isolation from HIV and HCV infected plasma. I had an awesome time learning from one of the technicians named Martin because he could speak English. At the end of the week, I was able to move on to the next phase of training - nested PCR to amplify the NS5B and capsid regions of HCV. I worked with a technician named Robert who was very*

helpful. Overall I think this week was pretty productive”. One of Michael’s goals in Cameroon is to learn some French, so he has a great opportunity.

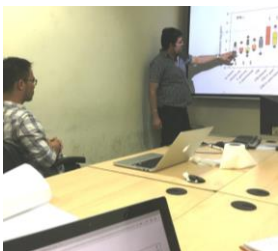
Tiffany (Thailand) found that *“This week went by quickly and I am getting things started for my project [on JC and BK viruses]. Dr. Som had me screen my own urine using two DNA extraction kits.”* “...both DNA extraction kits showed negative results, phew! Tiffany is also working with 5 medical students who will help her screen 100 urine samples for JC and BK virus.



While the others were doing PCR, **Meno** (Thailand) says *“This week in the laboratory has been very productive. It’s been filled with long nights of finishing western blots and learning how to culture the hybridomas. I also learned how to set up an immunofluorescence assay for antibody selection. My PI (who lives in Japan) just recently came back, and we had a lab meeting the next day. He also brought back antibodies from Japan, to perform the IFA. Once our western blot technique is optimized, we will start*

western blotting the antibodies he brought.” If you don’t know what a western blot is, the blot is the white piece of paper Meno is holding with the forceps.

Jeff (Thailand) has a community-based/statistical data analysis project and this week he joined colleagues visiting the Rainbow Sky Association of Thailand, an MSM and TG clinic (right photo). Jeff reports that he *“started working on the PrEP Substudy dataset to prepare me to start working on the Princess PrEP dataset, which are two different programs offered by the Thai Red Cross. Having no prior knowledge to Stata, the statistical program I’m using, it was little rough in the beginning. Luckily, I came prepared with a beginner’s manual and I am working with Mai, my biostatistician mentor. I managed to run basic commands but the data set they gave me contained so many variables it was hard to keep track. I did manage to complete the analyses that were asked of me and I will now start working on the Princess PrEP dataset this week. Dr. Nittaya, was actually very shocked by how much I had already completed prior to starting.”* Yea! Keep it up.



In India, **Tiana** reports that, *“We finished all of our reading assignments this past week, gave an informal presentation and started hands-on learning in the laboratory. This week we learned two methods of RNA isolation, cDNA synthesis, PCR, and running a gel electrophoresis. We are in the stages of culturing H. pylori and will learn how to split those cells next week. Dr. Tandon is introducing us to new information and techniques in a pace where I’m not overloaded with information and will actually understand what I’m doing. He also continues to give us lectures, which help piece together all of the information needed to understand my project more in depth. We will be doing more bench work this upcoming week and I think all the reading, lectures, and presentations definitely provided me a solid foundation of understanding!”* Photo on the left shows Dr. Tandon discussing data with John. **John**, on the other hand, experienced a few setbacks with the RNA sequences sent to a company for analysis comparing the expression of U1 cells infected with *H. pylori* and an uninfected control. He reports: *“...there was no data about HIV expression. The company assumed that it would only be the human genome and only ran a search against that, which tells me an important lesson: also be clear with your work, especially if it is sent to a third party.”* Just try again, John!

So, that summarizes this week in science. Next week: photos and comments on cultural similarities and differences, AND who is the best bargainer?

