

Biobanking -- The Ally of Tomorrow's Research

Tommy K. Chen

Department of Genomics - Biobank Core Facility, Boston Children's Hospital, Boston, MA



Introduction

I spent my Fall 2015 co-op working as a Research Assistant for the Biobank Core Facility at Boston Children's Hospital. The Biobank Core Facility was under the Department of Genomics at the hospital. The Biobank Core Facility was tasked with providing researchers and laboratories across the country who comes to us with their samples, help in tracking, processing, storing, extracting, and retrieving samples. Operating state of the art technology and our own freezer farm we kept our lab modernized so that we can provide our researchers with the best quality of service. We allowed researchers to carry out their research while providing them a mind of ease that their samples are safe with us. Some of the ongoing studies I was a part during my time there included the Framingham State Food Study and the Manton Center for Orphan Disease Research.



Activities

As a Research Assistant to the Biobank Core Facility, my roles consisted of sample processing, extracting, aliquoting, and data entry. I would make daily sample pick ups from the main hospital for the protocols that we were working on and bring them back into the lab to be logged and processed in our database. After they were processed I would proceed to make labels from parent blood samples and create child samples, which would sometimes contain the DNA, buffy coat, and plasma from the parent sample bloods. After DNA has been extracted, I would always perform quality control tests on it to make sure there was sufficient DNA available for use. Sometimes samples would be dropped off at our lab and I, along with the other research assistants, would process them throughout the day. Aside from blood samples, I also extracted DNA from saliva samples.



Figure 1. This is the autopure LS machine that is used to automatically extract DNA from blood samples.



Figure 2. This is the FLUOstar Omega machine that we use for DNA quality control. We use this to measure DNA quantification by using fluorescent dye to distinguish between RNA and other proteins.

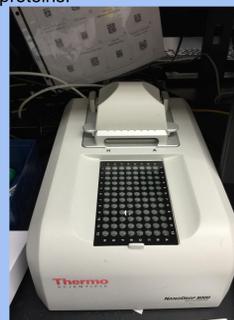


Figure 3. This is the Nanodrop 8000. It is also used for DNA quality control. It performs a spectral measurement and quantification of our samples as well, however it isn't as specific as the FLUOstar Omega in distinguishing DNA from other proteins. It separates samples from broad to high sensitivity DNA samples

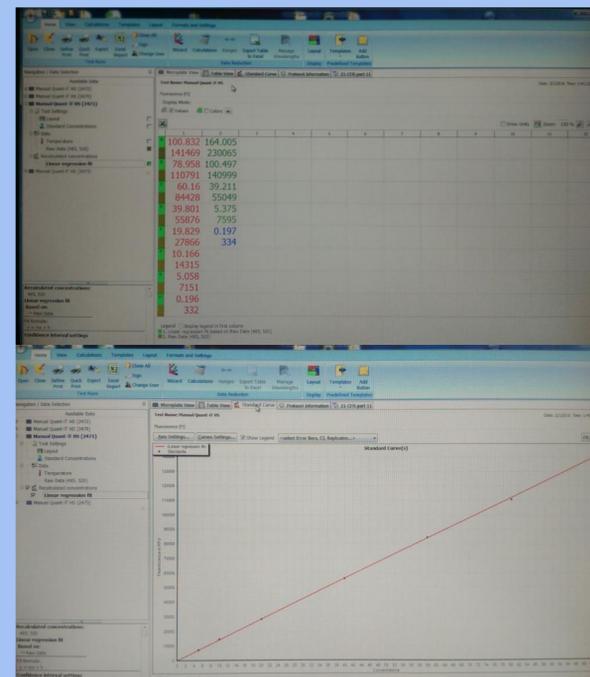


Figure 4. An example of a sample run on the FLUOstar Omega.

Outcomes

During my time at the Biobank Core Facility, the size of the team had gone through a dramatic change since my start and departure. We had gone from six person team to a three person team and then into a ten person team. I had worked with several different research assistants in completing different assessments of samples from the Framingham State Food Study. I was able to complete the assessment from the previous year and also lead in processing the assessment from last Fall. I was able to work with other research assistants in creating a new protocol in how we proceeded with incoming assessments and sharing it with other research assistants in the lab. Our protocol allowed for a more systematic approach in terms of organization and efficiency.

Reflections

My time at the Biobank Core Facility taught me many new laboratory skills and interpersonal skills. Not only have I learned how important it is to be meticulous in the lab setting, I've also learned to think and question before I do anything. When I first started, I just followed the protocol given to me without questioning why certain procedures were performed. I was able to utilize my knowledge in principles of biology and chemistry in facilitating my work and understanding of different protocols. I also learned how valuable and important communication is within the team. Communication in the lab allows work to be completed properly and efficiently. I've learned to develop proper work ethics, communication skills in the lab, and also critical thinking skills for myself. My exposure in the lab has allowed me to appreciate the lab setting more and has encouraged me to pursue another research assistant position in my next co-op.

Acknowledgments

First, I would like to thank Michelle Israel, my co-op advisor, in helping me with the co-op process. Then I would like to give a special thank you to Tram Tran, my manager, Elizabeth Duffy, my supervisor, and Matthew Derrig, my mentor and co-worker. I would also like to thank Ben Rosen, Ben Trapp, Conor Sullivan, Dane Sands, Gabi Joseph, Kelly Aldridge, and Maria Khan, whom I've all worked closely with during my time at the Biobank Core Facility.

For further information

Please contact BiobankCore-dl@childrens.harvard.edu for more information on their work and related projects.

(FS)² Framingham State Food Study
eat well. advance science.

Volunteers Needed for Nutrition Study

Boston Children's Hospital and Framingham State University are teaming up to bring a landmark nutrition study to the FSU campus.

You may be able to participate in this study if you are

- 18 to 55 years of age
- Interested in healthful weight loss
- Willing not to drink alcohol during the study
- Planning to be part of the FSU community for the academic year

You would receive

- All meals, snacks, and beverages prepared specifically for you for an entire academic year
- Financial compensation for your time
- A personalized health report including changes in body fat, lean mass, blood pressure, and cholesterol levels

For more information, please:

Call 617-919-7305
Email fs2@childrens.harvard.edu
Visit www.childrenshospital.org/fs2