

Fellowship Profile

IAEA PROGRAMS
AT ARGONNE NATIONAL LABORATORY

Crop Production

TRAINING SUMMARY

Through the fellowship associated with the COL-5026 project titled “Enhancing Crop Productivity of Creole Potato Using Nuclear and Related Techniques”, I made progress in training in the orphan culture laboratory of Brigham Young University (BYU), I focused on the analysis of the data associated with the sequencing of the cultivar *Solanum tuberosum*, phureja group, a species of interest for the research project. This project aims to improve and identify the genes associated with the dormancy of the native potato during its vegetative cycle.

I had the opportunity of sequencing a sample of *Solanum tuberosum*, phureja group, and put all topics of training program in practice with the data set from our cultivar, and the final result is a new version of assembly for genome sequence for all twelve chromosomes. In addition, I compared two protocols of DNA isolation, the first with a commercial kit from Mobio and a kit for High Molecular Weight (HMW) isolation for start a HiFi sequencing in PacBio technology, the long fragments obtained by Mobio kit was about 8kb when the HMW protocol obtained fragments of around of 16kb. The capacity of laboratory in BYU and the High-Performance Computing Center (HPC) let me reach the objectives proposed at the start of review with my tutor, Dr. Jeff Maughan and his team of collaborators.

WHATS NEXT?

I am currently working as a full-time teacher in the Forest Engineering curricular project, and I have started a new subject called agrigenomics biotechnology, which improves cultivars by applying different modern breeding techniques, including the impact of the use of ionizing energies to generate genetic variability. Additionally, I support the sequencing unit in the biology laboratories, both activities are carried out at the Francisco José de Caldas District University. Finally, I am part of the Biomol research group which collaborates which is a collaborator of the project COL5026.



“I have only gratitude for this fellowship with the laboratory staff of BYU, the support from the IAEA and the administrative personnel from Argonne National Laboratories.”

Duver Martinez Pacavita- Colombia

June 5th - August 4th 2023

Hosted by: Brigham Young University