

Monthly Status Report - November 2013
ASTRO Team - MIT - Payload 06
22 November 2013

Team Information:

Updates:

- Verified gDNA (genomic DNA) MicroPrep Protocol worked and determined yield of process execution. Yield was calculated by running positive control tests on E. Coli. Yield determined to be 60 percent, assuming E.Coli have replicate of genome present at time of gDNA extraction.

In order to perform this yield assessment of gDNA MicroPrep, executed the following steps:

- E. Coli Cultivation
- OD Measurements
- Obtained in order to determine biomass of cells in control sample and calculate theoretical genomic DNA content within a given volume of E.Coli cells.
- gDNA MicroPrep sample processing to extract genomic DNA from E.Coli cells. I then determined the final concentration of the gDNA extract.

Next, I verified our PCR process using the E. Coli gDNA extract. This would thereby verify that the primers we have amplify the desired gene segment (of length ~400 base pairs). Verification confirmed by run on gel electrophoresis, which separates the genetic material by base pair content.

Issues Encountered:

- The primary issue is the delay in receipt of a master mix necessary for PCR runs of our ASTRO samples. The shipment from the manufacturer was delayed for two weeks. This delay results in the prevention of performing PCR and sequencing until mastermix arrival. Arrival date of MasterMix: November 22, 2013.
- PCR completion of all 25 samples now set for November 25, 2013.

Milestones:

- Completed genomic DNA extraction from all 25 samples collected from HASP flight (includes control canister on side of HASP and two powered collection chambers) and from laboratory controls (canister remained in benchtop Laminar Flow Hood in order to determine baseline contamination levels in controlled environment)

Members and Roles

Jessica Sandoval (Biological Engineering, 2015) - Team leader, Mechanical Build/Design, Recovery Team member, Biological analysis of samples

Ethan DiNinno (Aeronautical and Astronautical Engineering, 2016) - Electrical Design

Rodrigo Gomes (Computer Science, 2015) - Programming/Website Development, Recovery Team member

Jeremy Kaplan (Computer Science, 2015) - Programming/Website Development

Christopher Carr - Research advisor for ASTRO team