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BYU Undergraduates Solving the Genetic Causes of Alzheimer’s Disease

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Project Justification and Overview

Successful enrollment in and completion of graduate programs requires a constellation of skills. Students must be prepared to plan and execute experiments, present their findings both verbally and in manuscript form and interact effectively with senior scientists in the field of their choice. In this MEG I will mentor three undergraduate students (Sheradyn Hamilton, Kristen Cockriel, and Moroni Chalita) as they develop skills in study design, data analysis, manuscript preparation, presentation and networking while identifying genetic factors that protect individuals from Alzheimer’s disease.

Evaluation of Academic Objectives:

This MEG was proposed with specific objectives associated with a five phase mentoring plan.

| Phase 1 (data analysis, proposal design) | Completion of ANNOVAR variant annotation training | Completion draft of ORCA proposal |
| Phase 2 (evaluation of experimental design) | Participation in weekly group meetings | Demonstration of leadership in the design of validation approach |
| Phase 3 (execution of analysis plan, writing a summary of results) | Submission of an abstract to an appropriate scientific meeting | Completion of draft manuscript describing research results |
| Phase 4 (presentation and networking) | Acceptance of the abstract to the scientific meeting | Presentation and participation in the scientific meeting |
| Establishment of contact with at least two potential mentors outside of BYU |
| Phase 5 (manuscript submission and publication) | Submission of manuscript for peer review | Acceptance/Publication of a manuscript |

Table 1. Mentoring Environment Grant Benchmarks for Student Progress

Progress:

Kristen completed all the phases of training and co-authored a manuscript. Sheradyn and Moroni completed phases 1-4 but did not have results that warranted publication.
Assessment of the Mentoring Environment:

The vast majority of the pre-established benchmarks for this training program were met. This presents a very positive assessment of the mentoring environment.

Budget Summary:

Funds from this MEG were used to fund salary for these undergraduates from award date to grant conclusion. The funds from this MEG have been completely spent.

Summary

This MEG has successfully provided students with training in analysis of data currently being generated in the study of human genetics, exposure to and interaction with other scientists in a professional setting, experience in the presentation of primary data at a conference, and experience in writing, submission, review, revision and publication of manuscripts. The awards, honors and academic products associated with this MEG illustrate both the excellence of the undergraduates that were part of this grant and the quality of the mentoring environment in the Kauwe lab.

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