

Jacob Fyda '22

Summer 2019

I used my Byrne Funds to spend 8 weeks this past summer doing research at the Wenner-Gren Institute for Molecular Biosciences at Stockholm University in Stockholm, Sweden. My research involved molecular and evolutionary biology, and I worked with PhD student Michael Gaudry under the supervision of principal investigator Dr. Martin Jastroch.

My work primarily involved brown adipose tissue, a heat producing organ found in placental mammals and commonly referred to as “brown fat,” and its thermogenic protein, UCP1. The UCP1 gene is found in many animals besides placental mammals, yet it only produces heat in certain groups of placental mammals. My research had two primary goals: attempt to identify when the UCP1 gene appeared in animal lineages and confirm and identify new species whose UCP1 protein does not function in a heat-producing capacity. Our findings helped provide insight into the evolution of this important gene, with an eventual goal of applying functional and molecular knowledge of UCP1 to enhance treatment of metabolic diseases, including obesity and diabetes. My work involved the analysis and annotation of the genomes of several hundred representative animal species, as well as phylogenetic analysis, selection pressure analysis, and the construction of evolutionary trees.

I had the incredible opportunity to experience a foreign country and actively participate in a productive, high-impact lab. I was able to participate in fascinating research, and I was also able to attend talks, symposiums, lab meetings, research seminars, and academic retreats to get a feel for life in academic research. I am grateful for the generosity of Jack and Dorothy Byrne which allowed me to pursue this incredible experience, and I plan on continuing to use my funds to further both my academic goals and the goals of the Jack Byrne Scholars Program.