

Physiology and Biophysics

1st Place – Angela Urdaneta



Angela Urdaneta came to PiBS program in 2015 from Ohio State University, where she majored in Physics with an outstanding academic record. Since joining David Atkinson's lab in 2016, she has done major work on the expression and purification of the lipid transporter, ABCA1, in HEK293 cells, and has developed a new larger-scale expression system in SF9 insect cells. Angela is now an authority in the construct design, expression and purification of ABCA1. Currently, she is working on the isolation of ABCA1 in lipid nanodisks for structural studies by cryo-electron microscopy. Angela is fully immersed in the methodology and practice of cryo-EM and image processing and has obtained her first moderate resolution ($\sim 10\text{\AA}$) reconstruction of ATP-bound ABCA1 transporter solubilized in detergent. In doing so, she has drawn on her background in physics to understand the image classification, clustering, and maximum likelihood and Bayesian statistics involved in structure determination by cryo-EM. This is an exciting time for both her and the laboratory in general. Angela has been supported by a cardiovascular T32 training grant.

2nd Place – Matthew Doran



Beginning as an undergraduate at Brandeis, Matt Doran developed a strong interest in structural biology and his well-rounded level of understanding of structure and function has increased as a graduate student in Bill Lehman's lab at BU. Matt joined PiBS program in 2017 and has been supported by a cardiovascular T32 training grant. He now is particularly focused on cryo-electron microscopy and high-resolution image reconstruction. Matt has a good acumen for the doable, great experimental technique and is fearless in taking on new challenges. Over the past year, Matt has generated the first high-resolution 3D image reconstruction of the cardiac muscle thin filament following myosin binding. In his future thesis work, this 4.5\AA resolution reconstruction will be used as a template to understand corresponding cardiomyopathies resulting from point mutations in sarcomeric proteins.

3rd Place – Olivia Chavez



Olivia Chavez joined PiBS program in 2016 with an MS from New Mexico Institute of Mining and Technology. She has been working towards her PhD in Biophysics since 2017 and is supported by a cardiovascular T32 training grant. Together with Drs. Shobini Jayaraman and Olga Gursky in the Department of Physiology & Biophysics, she explores how changes in low- and very-low-density lipoproteins that occur in diabetes and atherosclerosis influence lipoprotein structure, function and stability. To this end she uses a wide array of biophysical and biochemical methods, and her electron microscopic data made a key contribution to a recent publication. Olivia is passionate about science and her eclectic interests encompass astronomy, geology, plants and animals. She has a special knack for insects and reptiles and keeps a pet snake. Olivia also likes to belly-dance, paint, work on a ranch, and communicate science to kids and grown-ups.