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My Research:

Our lab studies the adaptor protein Actin Filament Associated Protein 110 (AFAP1). Recently, two related protein family members, AFAP1L1 and AFAP1L2 were discovered to have similar structure to AFAP1 but had not been characterized. My goal was to characterize AFAP1L1 and to compare and contrast its protein structure and function with AFAP1. By creating a novel antibody to AFAP1L1, I was able to determine the cellular location of AFAP1L1 to be cytoplasmic as well as associated with stress fibers and cortical actin. Upon overexpression, AFAP1L1 was able to induce actin filament rearrangement and invadosome formation where AFAP1L1 localized. Using a panomics screen, GST fusion proteins and immunoprecipitation, I found that AFAP1L1 was able to interact with the protein cortactin. Immunohistochemical analysis of AFAP1L1 identified a unique staining pattern of AFAP1L1 in the dentate nucleus. My work compared and contrasted the adaptor proteins AFAP1 and AFAP1L1 and identified that AFAP1L1, while similar in overall structure to AFAP1, has a unique function in invadosome formation, has unique expression in the dentate nucleus and is a novel cortactin binding partner.

Future Plans:

I have accepted a post-doctoral fellowship position at West Virginia University in the lab of Dr. Lan Guo where I currently do my research at the National Institute for Occupational Safety and Heath Morgantown campus. My goal is to study the effects of lung epithelial cell exposure to multi-walled carbon nanotubes and how this affects the underlying vasculature.