THP-1 Abstract:

Alpha Gal Syndrome (AGS) is a type 1 hypersensitivity to the oligosaccharide galactose-alpha-1,3-galactose (α-gal). This carbohydrate is present in most mammals but is absent in humans. Thus, AGS typically manifests as an allergy to red meat. Research suggests that exposure to the carbohydrate alone is insufficient to provoke an allergic response; rather the phenotype is linked with the bite of the *Amblyomma americanum*. The molecular causative agent(s) of this response are unknown, however previous allergenomics have pointed to the potential existence of salivary proteins in the tick that are injected into the host during the bite that induces sensitization. Therefore, we hypothesize that a protein decorated with the α-gal carbohydrate is lysed by macrophages, which present α-gal as an epitope for which IgE is produced. Once sensitized, the α-gal epitope is recognized on digested lipids that are decorated with α-gal and induce the type 1 hypersensitivity response. In this study we use THP-1 monocytes to screen tick homogenate for potential allergenic proteins by measuring their potential to initiate differentiation. We further analyze tick homogenate to which THP-1 cells are exposed pre- and post-exposure via size exclusion chromatography. Future studies will aim to characterize the protein(s) identified in the current study in anticipation that they may be useful in future challenge studies.