Lung Biology Research & Trainee Day
June 7, 2021

Category: Postdoc
Name: Courtney Jackson
PI: Kirsi Jarvinen-Seppo
Title: Early life influences on developing infant B cell immunity
Abstract: There has been an increased prevalence of allergic disease globally. However, this does not appear to occur among individuals who are raised and live on farms such as the people of the Old Order Mennonite (OOM) community. There have been several immunological mechanisms proposed that may contribute to this protective phenotype of people raised on farms (diverse microbiome, primed innate immunity, and enhanced regulatory T cells). However little research has been done on the impact of the farming lifestyle on the developing B cell population. There is some data suggesting that enhanced B cell maturation and IgA immunity are associated with less atopic disease, but a more in-depth characterization of B cell populations has yet to be done. Data from our laboratory suggest that there is prenatal priming of B cell IgA and IgG class-switching among OOM infants. This leads us to hypothesize that OOM infants have a more mature B cell compartment compared to infants that do not live on a farm. I am characterizing infant B cell populations utilizing spectral flow and antibody responses within our OOM infant birth cohort. We found increased circulating levels of IgA and IgG among OOM infants at 6 and 12 months of age compared to Rochester high-allergy risk infants. I have also measured food antigen-specific IgG responses, and found an elevated response to ovalbumin in OOM at 6 months, while non-farming Rochester infants had an elevated response to peanut antigen Ara h2 at 12 months; these responses may be reflective of differences in environmental and dietary exposures during early infancy. Overall, there appears to be a more mature total antibody response in OOM infants; of which food antigen responses may only be partially responsible for this difference. Future studies will determine B cell populations and whether other antigens (microbes, animals, environmental) could be driving this accelerated antibody production.