



23 January 2023

ACFRT Top Up Scholarship – Six month report

**Project Title: The impact of helpful and harmful immune response in the CF lung**

Emma Ledger

Over the past six months I have continued my research investigating the prevalence, impact, and mechanisms of ‘cloaking antibodies’ that have the potential to enhance, rather than clear bacterial infection in people with cystic fibrosis (pwCF). Thus far, we found 30.2% (13/43) of pwCF have high levels of these ‘bad antibodies’ in their blood that bind to sugars (polysaccharide) on the bacterial surface of *Pseudomonas aeruginosa* and can interfere with immune killing of the patients’ infecting strains. These antibodies were also discovered for the first time within lung secretions where the bacterial infection is localised. Additionally, high levels of antibodies in both blood and lung secretions that bind to *P. aeruginosa* polysaccharide directly correlated to worse lung function. These findings indicate dysregulation in the antibody immune response to *P. aeruginosa* in CF that I will continue to research throughout the course of my PhD. This research is critical for the development of targeted therapies to neutralise these ‘bad antibodies’, clear persistent multi-drug resistant lung infections and improve patient outcomes further in this post-modulator era.