PCL/21/03 - The role of NFκB signalling in immune checkpoint expression and myeloid cell function in colorectal cancer.

Colorectal cancer is a major source of death in Scotland, and despite successful outcomes after surgery in early stages, 5-year survival for all patients remains around 60%. Patients with more advanced cancer, even if it is able to be removed by surgery, undergo chemotherapy as they are at higher risk of recurrence. However, this treatment is not effective for everyone. Depending on the tumour type, some patients can benefit from targeted therapy. Immunotherapy, drugs that activate the immune system, have revolutionised cancer treatment but for colorectal cancer only 10-15% of patients will respond. We know that cancers that have increased levels of inflammation are often more aggressive and our data shows that increases in a specific pathway of inflammation, NFκB, is associated with more patients vulnerable to dying of their cancer. Our data also shows a link between this inflammation pathway and certain markers for immunotherapy treatments including PD-L1. This research project is designed to investigate this link between the NFκB pathway in cancer cells and how the surrounding immune cells behave to support progression of the cancer. I am interested in studying one of the most important types of immune cell in fighting off cancer, like it does with infection, called the macrophage. By closely studying immune cell functions in the environment surrounding cancer tissue, we hope to better understand whether this NFκB pathway causes worse inflammation, stops these macrophages from working properly and causes cancer progression. We want to find out if treatments to block this inflammation pathway (NFκB) will influence the function of macrophages and stop tumour growth. I will assess if using immunotherapy (anti-PD-L1) is more effective in boosting the immune cells to fight off the cancer.