

Dr Margaret Currie

Exercise as a cancer therapy

I've previously worked as a researcher in the Biochemistry and Cell Biology Department at the Royal College of Surgeons, Lincoln's Inn Fields in London in the early 90's. I now work at the University of Otago, Christchurch.

I am interested in how a tumour's environment alters the way a tumour grows, spreads and responds to therapy. With this project we are focusing on obesity and exercise and the role they have on the effectiveness of chemotherapy in breast cancer patients.

Many studies have shown increased physical activity improves survival outcomes for breast cancer patients, with the magnitude of this effect similar to that gained from chemotherapy. This makes the idea of using moderate exercise as an integral part of cancer therapy very appealing. However, we still don't understand how exercise leads to better outcomes and survival. We don't know how best to 'prescribe' exercise as part of cancer therapy, what type of exercise is best for breast cancer patients, what intensity/duration is most beneficial and when is it safe for patients to exercise during treatment.

The funding from the Canterbury Medical Research Foundation gives us the opportunity to perform our first patient feasibility study. This is part of a growing collaboration between researchers and clinicians at the University of Otago Christchurch, the Canterbury Regional Cancer & Haematology Service (CDHB) and St George's Cancer Care Centre. This 18-month

project aims to test the feasibility of taking measurements of obesity, inflammation, exercise and chemotherapy effectiveness in breast cancer patients as they undergo standard chemotherapy treatment. We also intend to gather preliminary patient data that will support ongoing collaborative studies and major funding applications for this research.

Specialist exercise programs are not yet widely available to all cancer patients as part of standard cancer care. Our work will contribute to a better



understanding of how obesity and exercise impact chemotherapy outcomes in breast cancer patients and begin to answer some of these questions. I hope to see exercise therapy offered to all cancer patients as part of their standard cancer care and specialist exercise therapists included as part of each patient's multi-disciplinary clinical cancer care team.

This research is unique to New Zealand. For many years, chemotherapy and radiation therapy have been the gold-standards for cancer treatment, with incremental steps being made to improve treatment regimes. An increased understanding in the importance of the tumour microenvironment in tumour biology has recently led to the discovery of exciting new therapies like immunotherapy providing huge benefit to some cancer patients.



A greater understanding of the tumour microenvironment will allow us to develop more targeted therapies and move towards personalised cancer treatments.

Funding is our biggest challenge! We have many skilled and knowledgeable people who want to collaborate to establish exercise as an integrated part of cancer care in Christchurch. However, we need funding to perform the research that provides evidence for using exercise as a complimentary cancer therapy and to provide qualified specialist exercise practitioners and tailored exercise programs for cancer patients. In New Zealand, there is currently a number of existing exercise programmes available for cancer survivors but not yet available in all locations.

I believe we can make the Mackenzie Cancer Research Group (MCRG) and the University of Otago Christchurch a centre of excellence for clinically relevant translational cancer research and postgraduate study. At the MCRG, our focus is high quality translational research that is relevant to the Oncology clinic. Our group has two major advantages in performing clinically relevant cancer research; the availability of the Cancer Society Tissue Bank, which is a world-class repository of cancer patient samples housed at the University of Otago Christchurch (UOC) that is unequalled anywhere in New Zealand. The second is the close physical location of UOC and Christchurch Hospital. This has led to strong clinical research collaborations between our lab and the regional Oncology service. These are now being extended to include the St George's Cancer Care Centre.

In the future, I would like to carry out clinical trials in different patient groups, with more national and international collaborations, all with the intention of improving patient outcomes and quality of life.

I would not have been able to do this research without funding from the Canterbury Medical Research Foundation. Please continue to support the CMRF, as medical research really does save lives.