

## Dr Elin Gray's CRT post-doctoral research fellowship 2014 - 2019

Associate Professor Elin Gray completed a BSc in Biochemistry at the University of Havana, Cuba, and obtained her PhD degree at University of Witwatersrand, Johannesburg, South Africa. She was a visiting Fogarty Fellow at the Vaccine Research Centre at the NIH, Maryland; and at Duke University, North Carolina, USA. Elin moved to Perth in 2011 to join the Melanoma Research Group at Edith Cowan University and was awarded a **postdoctoral researched fellowship by the Cancer Research Trust in 2014**. This fellowship was worth %150,000 pa for 5 years.

The key objective of her research was to investigate how to better target treatment for cancer patients. The CRT fellowship would strengthen Dr Gray's research into the role of circulating tumour cells (CTCs) in melanoma patients and expand to other cancer types. At the end of the 5-year period, Elin's fellowship was extended for another year, to allow her to continue searching for the optimal device for CTC isolation.

### **Quick Facts**

- Measuring the level of CTCs is already used to predict the chance of survival for cancer patients.
- Dr Gray's work would focus on how to analyse the genetic material of CTCs in a patient's bloodstream to allow for more tailored treatment.
- CTC analysis can give a real time snapshot of the tumour which will allow treatments to be modified as it mutates.

### **Elin's achievements**

Elin's research has focused on the development of blood tests for cancer patients, referred as "liquid biopsy", that can guide treatment decisions. She has and continues to work in close collaboration with leading oncologists and pathologists to translate these results into clinical application to improve patient outcomes.

Elin's research has yielded new insights into the heterogeneity of melanoma cells found in the blood of patients. She has proved that the presence of these cells are indicators of the aggressiveness of the disease and has shown that a marker (PD-L1) on these circulating melanoma cells can identify patients that will respond to immunotherapy leading to a large study funded by Merck Sharp and Dohme. As part of the Cancer Research Trust consortium led by Prof Alistair Forrest, Elin is carrying out single cell analysis of blood derived melanoma cells to understand how these cells migrate and colonise throughout the body.

Using cutting-edge methodologies, Elin has shown that genetic analysis of circulating cancer cells in patients with melanoma of the eye, can help to identify patients with an aggressive form of the cancer that requiring close monitoring and treatment. This test is significant as it avoids the need for a sight-threatening invasive biopsy.

Her research has also shown that tumour derived DNA fragments in blood can serve as an early indicator of cancer spreading to other organs and correlates with the volume of the tumours. Thus, it can serve as an alternative to radiological scans that could reduce health costs and exposure to radiation, while allowing early treatment intervention to maximise therapeutic success.

In 2019, Dr Gray was awarded a Cancer Council WA Research Fellowship.