

A RORing success for translational research

Ten years ago, Associate Professor Caroline Ford had just started the Gynaecological Cancer Research Group at UNSW. Today, she's internationally recognised for her discoveries in the fields of ovarian and endometrial cancer, particularly around the role of genes ROR1 and ROR2 and their role in cancer metastasis.

In part, Ford's success is the result of an enduring relationship with the TCRN that includes extensive engagement with the Consumer Advisory Panel, as well as other clinical and academic network members. It's an experience that has transformed her research approach from being driven by the literature to shaped by translational research priorities.

"I don't think it's overstating it to say that it has really flipped the order and the priorities that I incorporate into my research strategies and programs," she says.

"Certainly, it helped me as a translational cancer researcher and probably introduced concepts and networks and ideas to me at a much earlier stage."

Connecting the dots

In 2015, Ford demonstrated that switching off the ROR1 and ROR2 genes could stop the spread of ovarian cancer; the research was later published in *Oncotarget*. Over the next four years, she and her team expanded on this work, including showing the importance of these genes in endometrial cancer as well. This discovery became the bedrock for a wide-ranging program of research that was focused on translating that finding from the lab into the clinic.

Ford's research was aided by access to samples from the TCRN-facilitated HSA Biobank, which helped her articulate the molecular similarities between these two cancer types.

"Looking at the tumour samples that that were collected in the Biobank from all types of ovarian and

endometrial cancer patients was absolutely essential to show that ROR1 and ROR2 were actually very common across all different subtypes of these diseases," Ford says.

She received two TCRN Conference and Professional Development Grants (2016 and 2018) to present her research at the American Association for Cancer Research Annual Meeting.

In 2019, she was the recipient of a TCRN Major Pilot Funding Grant worth approximately \$180,000 which enabled the development of three research projects focused on ROR1 and ROR2.

Taking a threefold approach

In the first project, Ford investigated the use of blood cancer drug cirmtuzumab to silence the ROR1 gene. This research showed extremely promising results in pre-clinical models of chemo-resistant ovarian and endometrial cancer; at the time of writing, it was currently the focus of an ANZGOG application for a clinical trial.

On the ROR2 side, Ford and her team established a new collaboration with a group of chemists at UNSW. The goal was to develop a nanomedicine targeting ROR2. While the work remains in its very early stages, the drug has already been shown to inhibit ovarian cancer invasion in a lab model.

In a third project, the TCRN funding is supporting Ford and her team to collect ascites, a build-up of fluid in the abdomen that is a common symptom of ovarian cancer. This fluid, which is chock full of cancer cells, DNA and immune cells, is "an absolute goldmine" of information about what the cancer is doing in real time.

"One of the things we've found is that there's this huge amount of DNA available in the ascites fluid. It's DNA that's released from the cancer cells, so it gives us an insight into what's happening with that patient's tumour at the very time," Ford says.

"In future, we're hopeful this could actually be used as a biomarker where we could look for targeted therapies."

A growing international profile

The groundbreaking nature of Ford's research isn't lost on the broader scientific community. In 2017, Ford was named an inaugural Superstar of STEM by Science & Technology Australia, and in 2018 she received the



Associate Professor Caroline Ford

Women's Agenda Award for Female Leader in Science, Medicine & Health.

She was also named a leading Australian in the field of ovarian cancer by the Witchery White Shirt Campaign; currently, she is collaborating with fashion label CAMILLA AND MARC on an ovarian cancer awareness and fundraising campaign.

And her evolution continues at UNSW as well: Ford convenes a number of UNSW courses on cancer pathology, personalised medicine and medical research, and she also developed Australia's first-ever massive open online course (MOOC) in the field of personal medicine.

For the last four years, she's also been a member of the TCRN Senior Leadership Group, lending her research expertise to the network's strategic directions and playing a guiding role in the dissemination of its translational outcomes.

"My work with the TCRN has given me a lot more insight into the leadership of these types of networks and how you can enable equitable access to a whole range of people within it," she says.

"The TCRN really demonstrates what can be done at a structural level to further promote translational research and make sure that everyone is getting the benefits of it, not just a chosen few."

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