**Transcript**

***Dr Suzanne Cutts – Activation of anthracycline anti-cancer agents by nanoparticle thearpy***

Okay so our lab focuses on a group of chemotherapy compounds that are currently used in the clinic. They’re known as the anthracyclines. So, what we have shown is that depending on the cellular target that the anthracyclines interact with they can kill cancer cells to different degrees. So, our research hypothesis is that by using a newly developed pro-drug compound that we can activate the anthracyclines to have a different mechanism of action where they will more potently kill cancer cells. So, what this pro-drug molecule does is it converts our chemotherapy compounds to a more active form so that they can strongly bind to DNA and kill cancer cells more effectively.

We’ve tested our research hypothesis in a mouse model of human breast cancer and we’ve shown that our pro-drug compounds actually activate the chemotherapy drug doxorubicin so that it’s a much more effective compound to kill tumour cells. So, what we want to do is to package our novel pro-drug compounds into nanoparticles which will be drug delivery vehicles and we want to show that these pro-drugs can be protected from the circulatory system so that they don’t undergo degradation and also that they can be targeted to tumour cells where they can activate the chemotherapy compound.

Currently used chemotherapy treatments can have dose limiting side effects, so this limits the maximum lifetime dosage that patients can have of the drugs such as the anthracyclines so using our activating compounds we hope that patients can receive lower doses of the anthracyclines and thus reduce such side effects as the cardio-toxicity which is such a current problem of anthracycline therapy.