Progress Report - September 2017

Name of Grant Recipient:	**University of Sydney, Centenary Institute**
Project Title:	***A new therapy for pancreatic cancer that improves tumour microenvironment and immune cell penetration***
Principal Investigator:	**Prof Jennifer Gamble**
	Faculty Head, Vascular Biology Program

1. Summarise the aim of your research

Blood vessels provide the body with key nutrients and energy. In addition the vessels regulate the passage of immune cells from the blood stream into the tissues. The blood vessels within a tumour are highly abnormal, and support the growing tumour mass by providing the essential nutrients and energy. Further the abnormal blood vessel are known to inhibit the infiltration of immune cells into the tumour, which results in the failure of the body to fight against the tumour growth.

We have developed a new drug, targeting the endothelial cells that line all vessels and renders these cells more "normal". The drug, in a number of different types of tumours in animals, significantly inhibits the growth of the tumours. This application is aimed at gathering preclinical data that will help in procuring the funds to mount a phase I oncology study that may ultimately lead to a new therapy to treat pancreatic cancer.

2. What have the outcomes been to date?

We are progressing well and making exciting discoveries in pushing this drug towards Phase1 trials.

Models in animals of pancreatic cancer are extremely difficult and expensive to run. Therefore our approach has been to understand how our drug works and its effects in "easier" tumour models such as melanoma. Then we can apply our understanding to the more difficult pancreatic tumour models.

We have recently published our findings, using these models of melanoma, colon carcinoma and PNET, in the International journal Cancer Research. These studies show that our drug, CD5-2 is most likely to be therapeutically beneficial in combination immunotherapy, since it enhances immune cell penetration into the tumours and results in their increased activation.

What are the next steps?

We have commenced our studies on the effect of our drug in a pancreatic cancer (PDAC) model. We will determine whether it inhibits tumour growth alone, alters the immune infiltration into the tumour microenvironment, changes the matrix within the pancreatic tumour and whether it promotes the effectiveness of other therapies to better inhibit pancreatic cancer growth, the so called immunotherapies.

We are seeking commercial partners that will allow the drug to enter Phase I studies in humans. We have determined the pre-clinical toxicology and pharmacological studies that are necessary. We are hopeful that Phase I trials will be performed in Sydney as we have a world-class facility here in the form of the NH&MRC Clinical Trials Centre.

3. What has it meant to receive funding from the Avner Pancreatic Cancer Foundation?

The grant awarded to us by the Avner Foundation has provided a boost in our efforts to determine whether our novel drug will be clinically useful. It has allowed us to focus on this devastating and hard to treat pancreatic cancer, where patients have little hope. Further it has been a catalyst to secure more funding for the development of the drug. Thus, we hope to contribute to the vision of the Foundation, to double the number of people surviving pancreatic cancer by 2020.