Research We Fund

Project:

Under the tongue vaccine for oral and oesophageal cancers

Research team:

Prof Neil O'Brien-Simpson, A/Prof Andrea O'Connor, Prof Michael McCullough, Dr Jason Lenzo, Prof Julie Satur, Prof Wayne Phillips, Prof William Health.

Institution: The University of Melbourne

Cancer type: Oesophageal, oral

Years funded: 2019–2021

What is the project?

This project will investigate the design of biocompatible mineral nanoparticles to deliver a vaccine for the induction of killer T cells that are essential in combating oral and oesophageal cancers. We will compare delivering the vaccine under the tongue with other methods and the ability to induce an immune response that is protective against target cells. Our project will increase our understanding of vaccine design and the potential of cancer vaccines.

What is the need?

Oral cancer represents nearly 5% of all diagnosed malignant lesions and is one of the leading causes of cancer-related deaths, affecting around 500,000 patients world-wide. Oesophageal caner is reported to be the sixth leading cause of cancer death and the eighth most common cancer in the world and has a five-year survival rate of just 16% in Victoria. There is a need to develop a drug that targets these cancers and we aim to make a vaccine to target a specific tumour antigen.

What are you trying to achieve?

I aim to produce a vaccine that is effective against oral and oesophageal cancers and a design that can be used to target other cancers. Our research will use a chemical biology, and multi-disciplinary collaborative approach to produce targeted vaccines that are effective against solid and malignant cancers and provide long-term protection.

Project timeline

Timeline	2019	2020	2021
Make and analyse the vaccine nanoparticles and investigate the ability of the vaccine to stimulate cultured cells and how they are able to do this.	■		
Define what type of immune cell is taking up the vaccine and how cells are responding.		■	
Determine how the vaccine protects against cancer in our models. Pre-clinical evaluation of our vaccine and how different routes of immunisation affect efficacy.			■

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