



AN INNOVATION CASE STUDY



DEVELOPING NOVEL, LOW SEROPREVALENCE ADENOVIRUSES AS VACCINE VECTORS - AN INNOVATION CASE STUDY

PROJECT DURATION: 11 months

PARTNERS: : Inbio and Cardiff University

PROJECT AIM: To develop novel, low seroprevalence adenoviruses as vaccine vectors

OVERVIEW

The use of adenoviruses as viral vectors make effective vaccine platforms, as they induce robust adaptive immune responses. Following the rollout of adenovirus-based COVID-19 vaccines and the likely need for repeated vaccinations to manage emerging SARS-CoV-2 variants, the development of immunity against these vectors is likely. This anti-vector immunity can lead to a reduction in vaccine immunogenicity, with likely impacts upon vaccine efficacy. Therefore, there is a need to develop novel adenovirus-based vector platforms using other adenovirus serotypes with low seroprevalence in the human population.

This project between Cardiff University and InBio will evaluate the innate and adaptive immune responses induced by a panel of novel human adenoviral vectors and vector pseudotypes.

The selected viral panel has been chosen for several reasons including:

- Showing potent in vivo adaptive immunogenicity against an encoded transgene,
- Proven pre-clinical induction of mucosal immunity in vivo
- In vitro and in vivo cellular targeting through altered adenovirus receptor tropisms.

Accelerate is supporting the delivery of this project through Cardiff University's School of Medicine. A cross disciplinary approach draws on expertise and resource from the Division of Infection and Immunity, and the Division of Cancer and Genetics in addition to support from the Joint Biological Services Unit at Cardiff University. Industrial partners are providing their expertise in the allergy field and will provide essential specialised equipment and Luminex xMAP® multiplex kits for analysis to further expand their remit in viral immunology.



EXPECTED OUTCOMES

- Expanded research strategy for InBio, from allergy to infectious disease
- Identification of new vectors that have hallmarks of good vaccine candidates
- A targeted approach to the respiratory mucosa. This has the potential to develop vaccines with improved transmission-blocking properties, and higher protection against even mild disease
- Opportunities for further collaboration between project partners
- Case studies
- Peer reviewed publications



POTENTIAL FUTURE OUTCOMES

- A contribution to COVID-response work
- Positive impact on public health through the underpinning of enhanced vaccine development
- Supporting the process towards 'A Healthier Wales'

"Accelerate has provided a unique platform through which to partner with InBio, whose specialised expertise and facilities have enabled us to capture the full potential of Cardiff University's adenoviral vaccine vectors under development. Working with Accelerate has opened doors for me to make new and important connections in key networks, and has enabled me to navigate the process of successfully partnering with industry. As a junior PI, that has been invaluable"

Dr Carly Bliss, School of Medicine