



**veski
innovation
fellow**

**Professor
Colby
Zaph**

research project

Biological Methylation: a new frontier in the regulation of immunity and inflammation

project summary

Mucosal tissues such as the intestine and lung form a physical barrier between the body and the outside world. Cells must differentiate between what's good for the body, including innocuous food antigens and symbiotic bacteria, and what's bad, including viruses, parasites and infectious bacteria. A breakdown in this ability to differentiate between good and bad often leads to chronic inflammatory diseases including asthma, inflammatory bowel diseases, food allergies and cancer.

Chronic inflammatory diseases afflict millions of people and current treatments are less than ideal. With very few Victorian researchers are focused on mucosal immunology, Professor Colby Zaph will provide Victoria with a unique and cutting-edge approach in this important area.

The pharmaceutical market for the treatment of inflammatory diseases and immune deficiency is worth an estimated \$70 billion per year. None of the drugs in the pipeline provide a first line treatment for inflammatory diseases. Professor Colby Zaph will continue to forge strong collaborations with key industry partners with the aim of developing new drugs.

The Zaph laboratory in the Department of Biochemistry and Molecular Biology at Monash University is focused on defining the cellular and molecular mechanisms that control immunity and inflammation at these mucosal sites. This understanding represents a potential target for identifying novel therapeutics for the treatment of these diseases. Colby and his team are focusing on both immune cells (T cells) as well as non-immune cells (epithelial cells) that respond to the inflammatory signals. They are defining the role of a class of enzymes that modify proteins to change their function by a process called methylation.

The results from his experiments will begin to identify candidate compounds to translate for use into human subjects. As these inhibitors are developed in partnership with industrial partners, there are immediate opportunities for translational studies in a wide variety of inflammatory disease settings.

personal history

Professor Colby Zaph is a Canadian researcher, born in Regina, Saskatchewan, who moved to Australia in 2015 to become a **veski** innovation fellow at Monash University.

Professor Zaph obtained his Bachelor of Science in Biochemistry from the University of Saskatchewan in 1995 before moving to the University of Pennsylvania in Philadelphia, PA. Here he obtained his PhD with research focused on CD4 T cell memory during leishmaniasis.

Professor Zaph remained at the University of Pennsylvania for his postdoctoral work, collaborating on the regulation of mucosal immunity to helminth infection.

In 2008, he returned to Canada as an independent investigator at the University of British Columbia. Colby continued to develop his outstanding record of research achievement. He has published 23 manuscripts, with 10 as senior author, in leading and influential journals such as *Developmental Cell* and the *Journal of Clinical Investigation*.

Professor Colby Zaph

“Our research program is focused on working with industrial partners to develop novel therapeutics that will transform the treatment of chronic inflammatory diseases such as IBD.”

other innovation fellowship recipients

background information

In addition, Colby has been awarded more than CA\$3 million in competitive operating, salary and equipment grants, and secured more than CA\$4.5 million in funding and awards including a Career Investigator Award from the Michael Smith Foundation for Health Research.

He is an active mentor and brings several members of his team to help him establish his new laboratory in Melbourne. Colby's trainees have also been extremely successful, with one obtaining Canada's preeminent postdoctoral fellowship, a Banting fellowship.

His wife and children join Colby in Victoria.

Professor Andrew Holmes AM FRS FAA FTSE

Professor Marcus Pandy

Dr Gareth Forde

Dr Alyssa Barry

Professor Michael Cowley FTSE

Professor Sarah Hosking

Professor Ygal Haupt

Associate Professor Ross Dickins

Dr Mark Shackleton

Professor Edwin van Leeuwen FTSE

Dr Matthew Call

Associate Professor Christopher McNeill

Dr Seth Masters

Professor Tiffany Walsh

Professor Cameron Simmons

Dr Luke Connal

Professor Colette McKay

Dr Ethan Goddard-Borger

Associate Professor Mark Dawson

Professor Kenneth Crozier

Associate Professor Roger Pocock

Professor Richard Sandberg

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Since 2004, 23 **veski** innovation fellows have returned to Victoria with funding worth more than \$4 million delivering a return on investment in excess of \$45 million. Their research covers semiconductors, epigenetics, audiology, optics and nanotechnology, enzymes, dengue, malaria, cancer, inflammatory diseases, musculoskeletal health, geothermal energy and obesity.

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further information

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