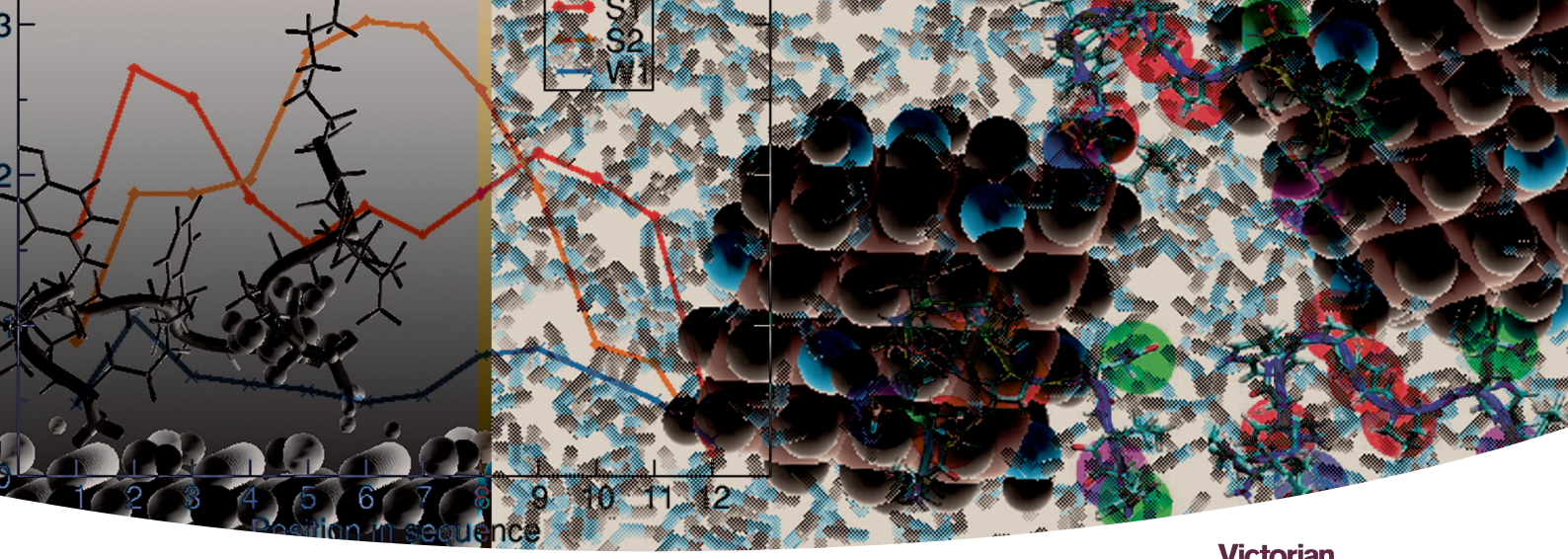

VESKI Innovation Fellow

Associate Professor Tiffany Walsh

Victorian Endowment for Science, Knowledge + Innovation
veski

Research Project

Aiding developments in advanced materials with molecular simulation

Project Summary

Nature is a terrific manufacturer; able to produce strong and durable materials including shells, teeth and bone using only non-toxic ingredients like chalk and water.

Associate Professor Tiffany Walsh will use molecular simulations to see how nature fabricates these materials at the molecular level. She will shed light on the intriguing properties seen at the interface between biological and synthetic matter, poised to play a pivotal role in the development of novel advanced materials ranging from nanomedicine to energy conservation.

Her aim is to learn from nature's approach to manufacturing, paving the way for manufacturers to make high-performance and multi-functional materials in a similar way. This opportunity to mimic nature could significantly reduce energy consumption and completely transform the manufacturing sector.

Tiffany will establish a team at the Institute of Frontier Materials at Deakin University's Waurn Ponds campus in Geelong to undertake the world-leading research. She will also take advantage of the new Victorian Life Sciences Computational Initiative (VLSCI) facility located in Carlton.

The advanced capabilities of molecular simulation, particularly with the computational power available through the VLSCI, will help Tiffany identify nature's methods and relate them to future bio-inspired manufacturing approaches.

Her research will also open up new areas of biotechnology to deliver solutions and advances in areas such as personalised healthcare, that are both commercially viable and socially useful.

Tiffany is an expert in the field of computational materials science, particularly bio-nano materials modelling, and is described as a "modern chemist" by Professor Peter Hodgson. She gained her PhD in theoretical chemistry at Cambridge University and was then granted a Glasstone Research Fellowship based in the Materials Modeling Laboratory in the Department of Materials at Oxford University. Following her time at Oxford, she joined the University of Warwick as a joint appointment between the Department of Chemistry and the Centre for Scientific Computing.

Her impressive background, international experience and exciting and practical research project make her a fantastic addition to the research team at Deakin University in Geelong.

"Because a lot of my work is concerned with bio-molecules, it was a perfect fit with the priorities of the VLSCI. It was such a big draw card for me to come and be able to use this facility. I saw this as a chance to really invigorate my existing research program and begin to grow my research in a number of directions."

Associate Professor Tiffany Walsh

Personal History

Tiffany grew up in Warrnambool before completing a Bachelor of Science with honours at the University of Melbourne, majoring in chemistry. Impressively, she graduated as the top student in chemistry in 1993, and won a Cambridge Commonwealth Trust Scholarship.

Since receiving her PhD in 1998 from the University of Cambridge, Tiffany has built an internationally recognised profile as one of the leading researchers in the area of molecular simulation of bio-interfaces.

Before returning to Australia, Tiffany co-led a successful application for a £5.3M Programme Grant from the Engineering and Physical Sciences Research Council, and won industrial funding for a post-doctoral researcher from Unilever, UK.

Tiffany has an excellent publication and citation record indicating the growing impact of her work with over 50 publications, including high-impact journals such as Nature. She has also been invited to deliver more than 30 conference presentations in the USA and Europe, and over four consecutive years was invited to speak at either the Materials Research Society or American Chemical Society meetings.

She also has a well established international network of collaborators and will maintain strong links with colleagues in the United Kingdom and the United States while giving Victoria global recognition as a region of innovation in bio-nano materials modeling.

Her partner is a commercial IT Manager and will be working in technology in Victoria. They are both looking forward to living in Torquay, close to family and Deakin University's Waurn Ponds campus.

Other VESKI Innovation Fellowship recipients:
Professor Andrew Holmes AM FRS FAA FTSE
Professor Marcus Pandy PhD
Dr Gareth Forde PhD
Dr Alyssa Barry PhD
Professor Michael Cowley FTSE
Professor Sarah Hosking PhD
Associate Professor Ygal Haupt PhD
Dr Ross Dickins PhD
Dr Mark Shackleton PhD
Professor Edwin van Leeuwen FTSE
Dr Matthew Call PhD
Dr Christopher McNeill PhD
Dr Seth Masters PhD
Professor Cameron Simmons PhD

VESKI Fellows in an ambassadorial role include:
Professor Adrienne Clarke AC
Professor Peter Doherty AC
Professor Alan Trounson
Mr Brian Jamieson
Dr Janine Kirk AM
Professor Christina Mitchell

For further information about VESKI visit www.veski.org.au,
telephone 03 9635 5700 or email: info@veski.org.au

BACKGROUND INFORMATION

VESKI enhances Victoria's intellectual capital through a dynamic program of fellowships, awards, and international networks including the VESKI Innovation Fellowships. This established and prestigious program returns successful Australian expatriates and leading researchers with outstanding skills in the fields of science, innovative technology and design to Victoria. VESKI is supported by the State Government of Victoria.