

## Dr Kate Wegener

**Fellowship location: School of Molecular & Biomedical Science**

**Previous position: Postdoctoral Researcher; University of Oxford, UK.**

**Research focus:** Integrin proteins - extracellular receptors that mediate attachment between a cell and the tissues surrounding it, which also play a role in cell signalling and thereby define cellular shape, mobility, and regulate the cell cycle. Dr Wegener will be examining these proteins at the atomic level, using nuclear magnetic resonance. Integrin proteins are essential for cell adhesion and migration, which are important in numerous normal, physiological (e.g. embryogenesis, the immune response, tissue repair) and abnormal, pathological processes (e.g. tumour formation and metastasis, thrombus formation, vascular disease).



**About Kate:** "My childhood years were spent in Port Lincoln, where I attended the local primary and high schools, before moving to the city for my university education. At the University of Adelaide, I studied for a Bachelor of Science degree, majoring in organic chemistry, and spent my honours year designing and producing sensors for the detection of aluminium in water samples.

"During my honours year, I learned of the fascinating research in Professor John Bowie's group, on the structure and function of peptides secreted on the skin of amphibians. This inspired me to move into the area of protein structure for my graduate studies. I joined Professor Bowie's research group where I elucidated the structure of several frog peptides, and investigated their roles as antimicrobial and anti-cancer agents.

"Completing my PhD in 2001, I moved to the UK to take up a post-doctoral position in Professor Iain Campbell's laboratory in Oxford. Here I became interested in the mechanisms behind cell adhesion and migration, looking at the role of a particular group of proteins called integrins. Utilising nuclear magnetic resonance spectroscopy I was able to determine the structure of a complex between an integrin and its activator talin. This landmark result has helped us to understand the mechanism of integrin activation, an important process in cell adhesion, with roles in blood clot formation and tumour metastasis.

"Keen to return to Australia and Adelaide in particular, I was delighted to become the inaugural Ramsay Fellow in 2008. Now in Adelaide, I continue to research the mechanisms of integrin activation, and I've made advances toward the development of therapeutics to interfere with this process. Such drugs have the potential to become new anti-thrombotic treatments for heart disease. This aspect of my work is being conducted in collaboration with Prof. Andrew Abell, of the Chemistry Department at the University of Adelaide.

"The Ramsay Fellowship has given me the means to return to Adelaide whilst continuing to pursue my research interests. Adelaide and South Australia are where my extended family are, and where I now choose to raise my own growing family."