

Dr Kate Wegener

Tel: (08) 8303 5289

Email: kate.wegener@adelaide.edu.au

Website: www.adelaide.edu.au/directory/kate.wegener

Integrins and Cell Migration and Adhesion

Integrins are membrane spanning proteins with large extracellular domains that connect the cell to the extracellular matrix, enabling cell migration and adhesion. The integrins communicate with the interior of the cell via their cytoplasmic 'tails' - short disordered polypeptide sequences, which act as ligands to a wide variety of proteins, forming both structural and signalling connections in focal adhesion networks. Work in this laboratory aims to elucidate the precise structural details of these interactions, and to determine how they are regulated during cell migration and adhesion.

Research Projects

1. Endocytosis and integrins - Integrins have been shown to be endocytosed from old adhesion complexes, before being recycled to new sites of attachment in a migrating cell. This project involves determining the molecular details of the interactions of integrin cytoplasmic peptides with proteins involved in integrin endocytosis.
2. Specificity of integrin tail interactions – 24 known integrin heterodimers are formed from one of 18 possible α subunits and eight β subunits. These different integrins have different roles, indicated by their tissue distributions and how they interact with ligands. This project is to produce a range of β integrin tail peptides and deduce their interaction specificity with a number of focal adhesion proteins. This information will be related to the function of the specific integrin types.

Techniques used for these projects may include nuclear magnetic resonance spectroscopy, surface plasmon resonance and isothermal titration calorimetry. Protein and peptide expression, purification and mutagenesis, and some bioinformatics approaches will also be used.