

**Projects directed by Dr Anne Chapman-Smith will be available in the laboratory of Assoc. Prof. Murray Whitelaw.**

Honours projects in my area typically use molecular biology, biochemical and biophysical techniques to investigate protein-protein and protein-DNA interactions of the basic Helix-Loop-Helix PAS transcription factor family of proteins. We structure the projects so that students are each working on their own aspect of the larger project and the work is likely to produce valuable new data that will increase our understanding of the molecular interactions that regulate transcription.

**Since the work is progressing quite rapidly, please contact me directly ([anne.chapmansmith@adelaide.edu.au](mailto:anne.chapmansmith@adelaide.edu.au)) to discuss potential Honours projects.**

Projects may involve a range of techniques, which are commonly used in our laboratory. These include:

- common molecular biology techniques, such as cloning and sequencing
- protein expression and purification
- electrophoretic mobility shift assays (gel shifts) and DNA footprinting
- robotic screening of crystallisation conditions
- two-hybrid interaction assays systems
- reporter gene assays in mammalian cells in culture
- other biochemical and biophysical techniques to detect protein-protein and protein-DNA interactions.

We are actively pursuing structural characterisation of bHLH.PAS protein/DNA complexes, in collaboration with Assoc. Prof. Matthew Wilce at Monash University, who is an expert in crystallography of protein/nucleic acid complexes, and Dr. Lisa Martin at Monash University. This includes the use of techniques such as Xray Crystallography, Small Angle Xray Scattering and imaging with Atomic Force Microscopy.