



# Research Directions

Office of Research Services

## ***Tear Films***

**Associate Professor Thomas Millar, School of Natural Sciences, has received funding to investigate the structure of the tear film of the eye. This ALCON Research Limited project aims to identify the components responsible for maintaining the stability of the tear film which at present remain unproven.**



'We know that the tear film fluid serves several purposes, keeping the eye moist, creating a smooth surface for light to pass through, nourishing the eye and providing protection from injury and infection' said Professor Millar. 'Our research will tease out the things that make up the tear film and clarify the relationship and interaction of the components found in the fluid at the surface of the tear film'.

A particularly important aspect of the tear film is how its surface molecules interact with the air. Normally, this interaction lowers the surface tension of the tear film and makes it stable. For people who have a high surface tension, their tears break up rapidly, which leads to dry eye. Exactly which molecules are at the surface of the tear film and how they interact with each other, the air and the molecules beneath in the aqueous layer of the tear film will be the focus of this research. A variety of techniques including surface pressure measurements, neutron reflectivity, light and electron microscopy will be used to examine this layer under dynamic conditions.

The research will produce a new understanding of the structure of the tear film, the components that make up the outer layer and the interaction between the different layers of the tear film.

**Project Title:** *Investigations on the structure of the pre-ocular tear film*

Funding has been set at: \$226,830.  
June 2006.

Contact Details:

[t.millar@uws.edu.au](mailto:t.millar@uws.edu.au)

<http://www.uws.edu.au/about/acadorg/schools/naturalsciences>