



Research Directions

Office of Research Services

Tracks of my Tears

Associate Professor Thomas Millar and Professor John Bartlett from the School of Natural Sciences are collaborating with Partner Investigator Dr Howard Ketelson of Alcon Research Ltd to explore the biochemical composition of human tears through a three year ARC Linkage Project.



'Eye care is critical to the elderly, with over 50% suffering from a condition called 'Dry-eye Syndrome', where tears are absent or not produced in adequate amounts to protect and lubricate the eye,' says Associate Professor Millar. 'The eye-drops used to manage the condition can initially be painful or uncomfortable to administer, and this may be because the drops do not mimic real tears and they have components that are necessary to preserve the active constituents and maintain the solution so it can be used as drops into the eye. In this project we'll explore the complex mixture of salts, fats, proteins and mucins that make up human tears, and use this information to formulate and test more effective and less uncomfortable eye-drops for the treatment of dry-eye.'

Working closely with Alcon Research Ltd., a leading developer and manufacturer of ophthalmic products, the research team will collect human tears from volunteer donors. These samples will then be studied using a variety of biochemical and physical assay techniques to test how the tear solutions form films (like they do in the eye), and what effect changes in temperature and humidity have on tear film formation. The chemical structure and composition of the tear film, and how it interacts with different chemical polymers and dry-eye drop treatments will also be considered.

With an increasingly ageing population, this study will assist elderly sufferers of dry-eye, and contact lens users by developing treatments which are not only more effective, but will also allow users to maintain their productivity and independence.

Project Title: Investigation of the structure of the pre-ocular tear film

Funding has been set at: \$530,000 (ARC) and \$496,014 (Alcon Research Ltd)

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