

A novel nano-spray LCMS method for analysis of sex hormones in human tears and serum.

2021 Honours Project

This project seeks to develop novel methods to measure levels of a variety of sex hormones in human tears, serum and in tissue culture, using quantitative nano-LCMS stable isotope dilution.

In one of their many roles in the human body, sex hormones (incl. androgens and oestrogens) are involved in production of the tear film which protects and nourishes the front of the eye. Funded by the Australian Research Council, our group is conducting research to understand how sex hormones regulate tear film production and thus maintain a healthy ocular surface and enable clear vision.

However, only small volumes of tears can be collected from human subjects, and currently available methods are not sufficiently sensitive to quantify sex hormone levels in tear samples. Our group has pioneered methods to detect sex hormones, and this honours project will help us to improve the sensitivity of these methods in order to analyse individual tear samples and extracts from tissue culture.

The successful honours student will work in both the School of Optometry and Vision Science (SOVS) and in the Mark Wainwright Analytical Centre (BMSF Laboratory), under joint supervision, and will collaborate with world-leading experts in both basic and applied science. Training in tandem mass spectrometry, nano-flow liquid chromatography and tear collection will be provided. The project will suit an enthusiastic student with an analytical background, chemistry / biochemistry wet lab skills and good attention to detail. A stipend will be available to the successful candidate.

Project Team

Scientia Professor Fiona Stapleton (SOVS)

Associate Professor Blanka Golebiowski (SOVS)

Dr Minh Phan (SOVS)

Dr Martin Bucknall (MWAC)

For further information and to arrange a meeting with the project team please contact Dr Minh Phan: m.phan@unsw.edu.au.