

**Jane Deeley**  
**Final PhD Seminar**

**Investigations into Human Lens Lipids Using Tandem Mass Spectrometric Techniques**

Experimental evidence supports the formation of a barrier in the lens after middle age. The barrier isolates the nucleus from the metabolically active cortex, lessening the transport of antioxidants to the lens centre and leaving the nucleus vulnerable to oxidation. The biomolecules of the lens that may be playing a role in the development of the lens barrier are the proteins and membrane lipids. We have characterised the lipid composition of human lenses using a range of tandem mass spectrometric techniques and have demonstrated that the human lens lipid profile is distinct from commonly used experimental animals. Studies from this thesis have identified a series of novel lipid structures that are prevalent in the human lens and shown that the distribution of major lens lipids changes with age. These findings and their implications for our understanding of the onset of the lens barrier will be discussed.