



St. Olaf College Chemistry Department

Thursday, September 17,
2009

Regents Hall 310

3:15 p.m. refreshments
before the seminar

Dr. Gavin Brown
Lancaster University

"Getting Clearer - Molecular Organisation of the Cornea"



Abstract

The corneal stroma is composed of a network of collagen fibrils, proteoglycans and matrix proteins. Transparency of the tissue principally requires the uniformity of fibril diameters and interfibrillar distances and the presence of a quasi-hexagonal lattice arrangement of parallel fibrils. Keratan sulphate proteoglycans (KSPGs) have a crucial role and the KS chains are clearly required for the maintenance of transparency. Undersulphation of corneal KS results in tissue opacity and KSPG-deficient mice show corneal opacity and disruption of collagen fibril diameters and interfibrillar distances. Biochemical analysis has also shown that the protein dermatopontin is an abundant component of the extracellular matrix and that it interacts with KSPGs. It is possible that a tripartite interaction between dermatopontin, KSPGs and collagen is central to the control of collagen fibril spacing in the posterior stroma and a model is proposed.

Bio

Gavin is a Senior Lecturer in Biochemistry within the Biomedical and Life Sciences division in the School of Health and Medicine and is also the Director of the one-year Pre-medical Studies course. He is a graduate of Lancaster University and his first degree is in Chemistry. His research interests focus on the structure and properties of connective tissues such as the cornea, cartilage and skin. In particular his expertise is in glycobiology, namely the study of the structure and biological function of molecules which contain carbohydrates. Gavin is also the University's Director of Undergraduate Studies and Academic Director of the Study Abroad program. His role is, in conjunction with others, to enhance the quality of undergraduate learning and teaching at the University. He chairs the Undergraduate Studies Committee which reviews and develops learning, teaching and assessment activities across the Institution, promotes good practice and is responsible for implementing our LTA Policy and related Strategies. He also acts as champion for the recruitment of high-quality undergraduate students and the development of our portfolio of degree programs.

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