



Ian A. Sigal, PhD

Laboratory of Ocular Biomechanics
Department of Ophthalmology, University of Pittsburgh, USA

Dr. Sigal has a BS in Physics and graduate degrees in Aerospace Engineering (MAsc) and Mechanical engineering (PhD). He has dedicated his scientific career to the study of biomechanics-related diseases of the eye, such as glaucoma. In 2010 he joined the University of Pittsburgh and founded the Laboratory of Ocular Biomechanics. He has pioneered methods for numerical and experimental study of the eye structure and mechanics. Current projects include methods to measure eye mechanics in vivo and in situ, and to evaluate the combined roles of connective tissues and vasculature in eye disease.

ABSTRACT

Optical tools to understand eye structure and biomechanics

Although most people rarely think of the eye as a mechanical structure, forces and deformations play a central role in vision. Abnormal connective tissue architecture and mechanics can compromise vision and lead to blindness. Unfortunately, the difficulty in accessing the back of the eye has meant that the structure and biomechanics of the eye remain poorly understood. This has complicated prevention and treatment of eye disease. In this seminar I will highlight recent advances in the imaging and characterization of ocular connective tissue microarchitecture, and of the effects of intraocular, intracranial and blood pressures.