

# **"Brillouin Confocal Microscopy for In Vivo Biomechanical Characterization of Cornea and Lens"**

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Measuring the mechanical properties of biological tissues and biomaterials is a challenging task that could have great impact in many areas of biomedical research. In basic and clinical ophthalmology, *in situ* and *in vivo* biomechanical characterizations would greatly help the understanding, diagnosis and treatment of ocular problems that are linked to the biomechanics of the lens and cornea, such as cataract and corneal ectasia. Yet, no current technology is capable of performing such characterizations satisfactorily. We have recently developed a novel 3D imaging tool, Brillouin microscopy, that provides biomechanical information on tissues *in vivo* non-invasively, quantitatively, and with high spatial resolution. In this project, we will attack the crucial scientific issues involved (validation with gold standard mechanical testing, correlation to physiological and/or pathological states, etc.) and we will develop all key technical elements (extinction, speed, automation etc) for this instrument to be readily used in basic ophthalmic research and clinical studies.