

BIOMECHANICS OF THE EYE

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ABSTRACT

In the last two decades ophthalmology has made gigantic steps forward, due to improved treatments involving sophisticated surgical procedures and computer-assisted machinery and instruments. Several causes of blindness, such as cataract or retinal detachment, can now be routinely successfully eliminated for most patients. Nevertheless, many ocular conditions still compromise the quality of sight, and these require more research into their causes and the development of new treatments. The functioning of the eye in both health and disease involves diverse areas of biomechanics such as solid mechanics, fluid mechanics, and (electro)-chemistry, and understanding this role will be fundamental to the ability to improve patient outcomes. A survey of the recent biomechanics literature reveals studies of diverse tissues, including the iris, tear film, optic nerve head, aqueous humor, vitreous humor [1], cornea [2], lens, retina and photoreceptors. Some conditions involve the interaction of multiple tissues, for example, glaucomatous disease, macular degeneration or trauma, and these present some of the greatest current challenges to medical and biomechanics researchers. In this minisymposium, we aim to bring together international researchers working on the biomechanics of the eye, in order to share experiences, ideas, methods and results. We call for experimentalists, mathematicians, engineers, computer scientists, ophthalmologists and eye surgeons.

REFERENCES

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