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Study on the deformations of the lamina cribrosa during glaucoma

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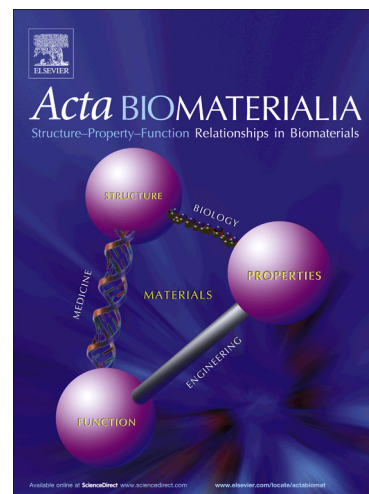
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**Study on the deformations of the lamina cribrosa during glaucoma**Hanjing Tian <sup>a</sup>, Long Li <sup>a</sup> and Fan Song <sup>a,b,\*</sup><sup>a</sup> State Key Laboratory of Nonlinear Mechanics (LNM), Institute of Mechanics,

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**Abstract**

The lamina cribrosa is the primary site of optic nerve injury during glaucoma, and its deformations induced by elevated intraocular pressure are associated directly with the optic nerve injury and visual field defect. However, the deformations in a living body have been poorly understood yet so far. It is because that integral observation and precise measurement of the deformations in vivo are now almost impossible in the clinical diagnosis and treatment of glaucoma. In the present study, a new mechanical model of the lamina cribrosa is presented by using Reissner's thin plate theory. This model accurately displays the stress and deformation states in the lamina cribrosa under elevated intraocular pressure, in which the shear deformation is not

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