1020-74-274 **J. Patrick Wilber*** (pwilber@math.uakron.edu), Department of Theoretical and Applied Math., Akron, OH 44325-4002, and **Jay R Walton**. *The Convexity Properties of Constitutive Models for Soft Tissues.*

During the last three decades, the theory of nonlinear elasticity has been used extensively to model biological soft tissues. Although these efforts have generated many different models to describe the constitutive response of these tissues, surprisingly little work has been done to examine the mathematical features of the various models proposed. We analyze the mathematical properties of a general class of constitutive models, special cases of which correspond to important models in the bioimechanics literature, in particular the Fung model. Our results are of practical importance to the experimentalist who wishes to construct models that not only fit data well but also make sense mechanically according to established results in nonlinear continuum mechanics. (Received August 30, 2006)