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IDENTIFICATION OF REGIONAL
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**EXPERIMENTAL STUDY AND BIOMECHANICAL CHARACTERIZATION FOR THE PASSIVE
SMALL INTESTINE: IDENTIFICATION OF REGIONAL DIFFERENCES**Dimitrios P. Sokolis*

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Abstract

This article reports regional differences in the inflation/extension properties and the no-load and zero-stress geometry, serving as the reference state for defining the multiaxial response, within and across the individual duodenum, jejunum, and ileum of the small intestine of middle-aged rats in the normal condition. The descriptive/predictive capacity of three phenomenological models, regularly appearing in the biomechanics literature, to characterize the anisotropic response of intestinal tissue was investigated in terms of best-fit parameters. Our inflation/extension results showed that the pressure-radius relationship was nonlinear, dissimilar to the near-constant, linear force-pressure relationship at all axial stretches, suggesting an energetically-favorable response in the entire loading range. The geometrical results showed that small intestinal dimensions were greatest in the proximal duodenum and smallest in the proximal jejunum, unlike the opening angle and circumferential residual strains that were less spatially variable; contrasting previous findings on relatively immature animals. The quadratic and exponential model was the most suitable descriptor of the passive pseudo-

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