Meeting: 1006, Lubbock, Texas, SS 16A, Special Session on Partial Differential Equation and Its Application in Biomedical Study

1006-92-229 **Dinara Khalmanova*** (dkhalmanova@hotmail.com), ESM Department, University Park, PA 16802, **Tsvetanka Sendova** (sendova@math.tamu.edu), Department of Mathematics, MS 3368, Texas A&M University, College Station, TX 77843, and **Jay R. Walton** (jwalton@math.tamu.edu), Department of Mathematics, MS 3368, Texas A&M University, College Station, TX 77843. *Biological Growth and Remodeling in Soft Tissue: Constrained Mixture Model with Constitutive Response in Smooth Muscle Dependent on the Population Number/Size.* Preliminary report.

To model biological growth and remodeling of soft tissue adequately, there is a need for constitutive relations that relate mass production/removal of the soft tissue constituents and stress in the tissue. We discuss a model for growth and remodeling in soft tissue based on the recently proposed by Humphrey and Rajagopal (2003) constrained mixture model. Their approach uses the concept of evolving natural configurations for the constituents and a homogenization assumption for constrained mixture. To model the constitutive response in the smooth muscle we use an approach based on the number/size population growth model. Some illustrative computational results and properties of the model will be discussed. (Received February 15, 2005)