

UNH Materials Science Seminar

11:00-12:00, Thursday, February 9, 2006

DeMeritt Hall 209B

University of New Hampshire

Mechanotransduction in Cardiac Myocytes

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It has long been known that mechanical forces regulate both the structure and the function of the heart and that aberrant mechanical stress can lead to heart damage and failure. However, the molecular basis of the transduction of these mechanical stimuli into physiological responses is poorly understood. Recent advances in molecular and physiological techniques suggest that a regulatory relationship may exist between the extracellular matrix (ECM), the cytoskeleton, and ion channels. Utilizing microcontact printing techniques, we have controlled the structure of the cytoskeleton and the distribution of cellular components involved in cell-ECM contacts in single cardiac myocytes. Further, we have combined an atomic force microscope (AFM) with fluorescence optical microscopy in order to establish a regulatory relationship between mechanical forces and the structure and function of the cardiac myocyte.