

Abstract Submitted
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Spatially and temporally resolved quantification of endothelial cell modification in response to shear stress LORI LAMBERT, University of Nebraska - Lincoln, IRAKLIS PIPINOS, TIMOTHY BAXTER, University of Nebraska Medical Center, RICHARD LEIGHTON, SRI, TIMOTHY WEI, University of Nebraska - Lincoln — This talk contains a report on *in vivo* measurements made over a confluent layer of bovine endothelial cells in a microchannel. The ultimate goal of the experiments is to understand and model cellular response to fluid stresses and the ensuing transport across the endothelial layer. High resolution μ PTV measurements were made to quantify the cellular response to steady shear rates of 5, 10 and 20 dynes/cm². Surface topography, shear and pressure distributions were calculated from sets of velocity fields made in planes parallel to the wall. For each experiment, measurements were made in three-hour intervals for eighteen hours. To validate the methodology, the pH of the medium was varied so that the health of the cells would vary. Clear differences in topography and cell orientation were found. Implications for future experiments and research will be discussed.

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