Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Dynamics of Caveolae in Endothelial Cells MERON MENGISTU, LINDA LOWE-KRENTZ, H. DANIEL OU-YANG, Lehigh University — The blood flow subjects endothelial cells to various shear stress conditions, regulating the formation and localization of caveolae for macromolecular transport and potentially mechanosensing. We simulate this condition by exposing cultured bovine endothelial cells to various flow conditions in flow chambers. Using GFP-constructs of caveolar markers such as caveolin-1, dynamin II, and intersectin, we targeted caveolae with optical tweezers laser as probes to measure changes in viscoelastic properties that the cell undergoes in the different flow conditions. We also tracked the transport of fluorescently labeled Bovine serum albumin (BSA) through caveolae using confocal microscopy. This technique allows us to study the transport dynamics of caveolae once they are internalized in endothelial cells. Integrating optical tweezers and confocal fluorescence microscopy will allow us to measure the micro-mechanical properties of caveolae and give us insights into its function as a mechanosensor as well as its role in transcytosis.

Meron Mengistu
Biological Sciences

Date submitted: 07 Dec 2004 Electronic form version 1.4