

Abstract Submitted
for the DFD08 Meeting of
The American Physical Society

Comparison of Newtonian and Non-Newtonian Fluid Flow in Biological Models JENNIFER GUNDERSON, ARVIND SANTHANAKRISHNAN, NHI NGUYEN, UNC Chapel Hill, LAURA MILLER — We will present results from a qualitative investigation of fluid flow in physical models of the endothelial surface layer and the embryonic heart. We compare both Newtonian and non-Newtonian fluids and observed the differences in flow dynamics over a range of Reynolds numbers. Flow through these models can be categorized using known properties of the fluid and power law approximations. Based on comparisons of these fluids, we are able to obtain a better understanding of how non-Newtonian properties might alter flow patterns and the resulting shear stress and pressure gradients. This can also provide insight into how biological flows influence embryonic cardiogenesis and mechanosensing in the endothelial surface layer.

Arvind Santhanakrishnan
UNC Chapel Hill

Date submitted: 04 Aug 2008

Electronic form version 1.4