

1176-74-278

Avishek Mukherjee*, 2203 Millstone Drive, Newark, DE 19711. *Computational modeling of intimal thickening induced by hemodynamical shear stresses with fiber fields In 2D vessels.*

The presentation will focus on intimal growth in arteries, induced by hemodynamical shear stress. Growth is modeled using morphoelasticity theory, assuming endothelial cells release PDGF (platelet-derived growth factor) in a shear-dependent manner. The blood-flow is highly idealized (steady and non-turbulent). The model should be viewed as providing a framework for coupling more fully 3D hemodynamics simulations to disease progression. Since collagen fibers play an important role in regulating the growth of the intima, the presentation will also focus on simulating collagen fiber fields in a given arterial cross section using a new technique of numerical conformal maps. (Received January 24, 2022)