1038-92-17 **Mark Alber*** (malber@nd.edu), Department of Mathematics, 255 Hurley Building, University of Notre Dame, Notre Dame, IN 46556. *A multiscale model of blood clot development.*

A two-dimensional multiscale model will be described for studying formation of a thrombus (clot) in a blood vessel. It involves components for modeling viscous, incompressible blood plasma; non-activated and activated platelets; blood cells; activating chemicals; fibrinogen; and vessel walls and their interactions. The macroscale dynamics of the blood flow is described by the continuum Navier–Stokes equations. The microscale interactions between the activated platelets, the platelets and fibrinogen and the platelets and vessel wall are described through an extended stochastic discrete cellular Potts model. Simulation results demonstrate the development of an inhomogeneous internal structure of the thrombus, which is confirmed by the preliminary experimental data. We also make predictions about different stages in thrombus development, which can be tested experimentally and suggest specific experiments. Lastly, we demonstrate that the dependence of the thrombus size on the blood flow rate in simulations is close to the one observed experimentally. (Received December 12, 2007)