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**Padmanabhan Seshaiyer\*** (pseshaiy@gmu.edu), 4400 University Drive, MS 3F2, Department of Mathematical Sciences, George Mason University, Fairfax, VA 22030. *Applications of differential equations for fluid-structure interaction problems in biological systems*. Preliminary report.

This work will present the results from projects that evolved from multidisciplinary applications of differential equations for fluid-structure interaction problems in biological systems. Specifically, numerical methods for efficient computation of nonlinear interaction for coupled differential equation models that arise from biological applications will be presented. Some theoretical results that validate the reliability and robustness of the proposed computational methodology will also be presented. Moreover, we will also discuss how such projects can provide opportunities for students to employ transformative research in areas that bridge the gap between mathematical and biological sciences. (Received August 02, 2011)