

RBC structure and deformability, which is a biomarker for a number of diseases, are largely governed by the membrane shear modulus. State-of-the-art methods to measure the shear modulus of RBCs are not high-throughput and, microfluidic platforms for high-throughput measurements of RBC mechanical properties have, until the present research, enabled measurement of the shear modulus. These limitations challenge the development of diagnostic devices based on RBC shear modulus biomarkers. In this talk, we will review the development of our high-throughput microfluidic platform[1], which has been designed via high-fidelity, massively parallel, unstructured grid, Immersed Boundary (IB) simulations.