

Supplementary material for “Non-uniform distribution of myosin-mediated forces governs red blood cell membrane curvature through tension modulation”

H. Alimohamadi¹, A.S. Smith², R.B. Nowak², V.M. Fowler^{2,3} and P. Rangamani¹

¹Department of Mechanical and Aerospace Engineering, University of California San Diego, California, United states of America

²Department of Molecular Medicine, The Scripps Research Institute, La Jolla, California, United states of America

³Department of Biological Sciences, University of Delaware, Newark, Delaware, Unites States of America

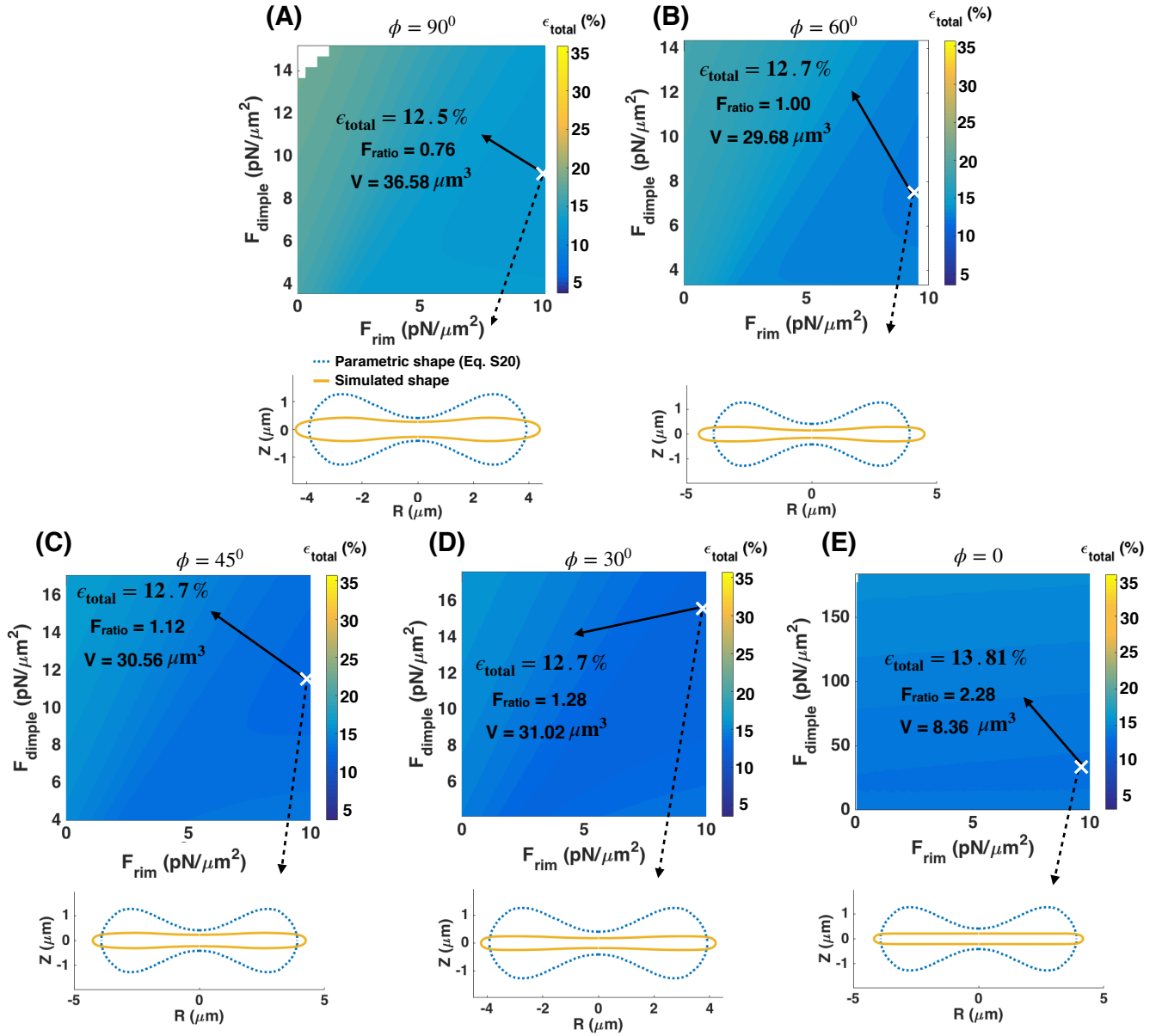


Figure S9: For high membrane tension (Tension = 10^{-2} pN/nm), independent of the orientation of the force, the simulated shapes have pancake morphologies and the shape error is too large ($\epsilon_{\text{total}} > 0.5 \mu\text{m}$). The Heat maps show the total error in the shape of the simulated RBCs for a range of force densities in the dimple and rim regions. (A) The applied forces are assumed to be normal ($\phi = 90^\circ$). (B) The applied forces make angle $\phi = 60^\circ$ with the tangent vector \mathbf{a}_s . (C) The applied forces make angle $\phi = 45^\circ$ with the tangent vector \mathbf{a}_s . (D) The applied forces make angle $\phi = 30^\circ$ with the tangent vector \mathbf{a}_s . (E) The applied forces are tangent to the membrane surface ($\phi = 0$). In each heat map, the point with the minimum error is marked with 'X'. Also, for each marked point, the volume of the simulated RBC (V) is calculated and the shape (solid yellow line) is shown in comparison with the reference parametric.