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

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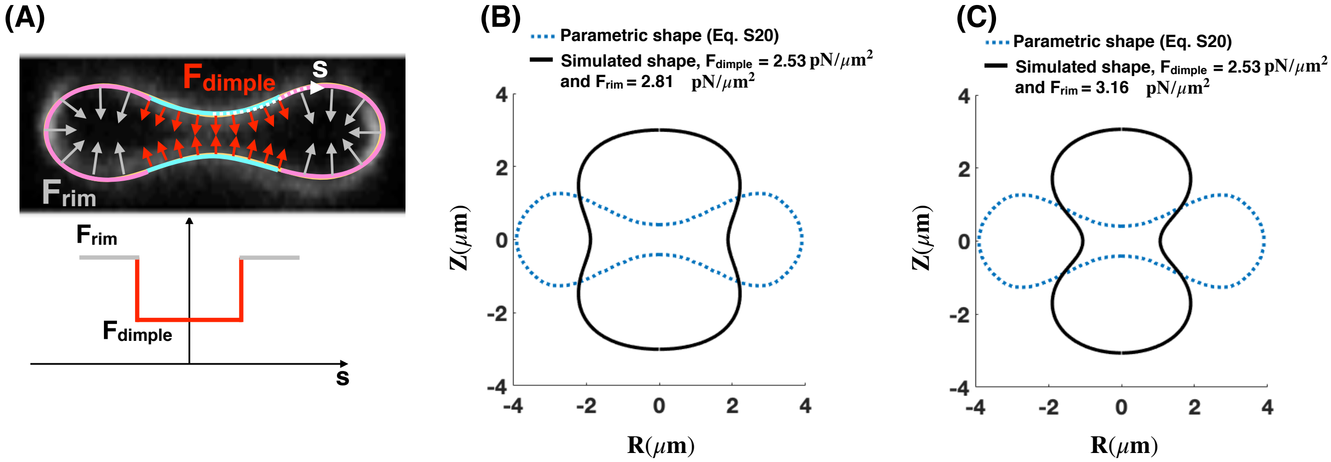

Figure S2: Applying a large pulling force at the rim region causes a very large shape error. (A, upper) Schematic of a biconcave RBC with a small force per unit area (red arrows) at the dimple and a large force per unit area (gray arrows) at the rim section. (A, lower) The applied force along the membrane as a function of the arclength. (B) A comparison between the simulated shape of RBC with F_{dimple} = 2.53 $\text{pN}/\mu\text{m}^2$ and F_{rim} = 2.81 $\text{pN}/\mu\text{m}^2$ and the parametric shape of an RBC. Having a larger force density along the rim region deviates the simulated shape from a biconcave to a peanut- shape geometry. Therefore, the calculated shape error becomes significantly large ($\epsilon_{total} \sim 52\%$). (C) The parametric shape of an RBC versus the shape that obtained from the simulation with F_{dimple} = 2.53 $\text{pN}/\mu\text{m}^2$ and F_{rim} = 3.16 $\text{pN}/\mu\text{m}^2$. As the rim force density increases, we found a much larger shape error in the simulated geometry ($\epsilon_{total} \sim 91\%$).