

Figure S1. A spinning disk confocal image showing the presence of MUC1 on hTCEpi cell monolayer surface. Scale bar: 10  $\mu$ m.

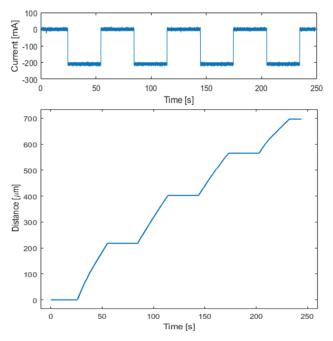


Figure S2. Raw data from LCMR calibration experiments. Top: step currents; bottom: the particle tracking result from video recorded through microscope.

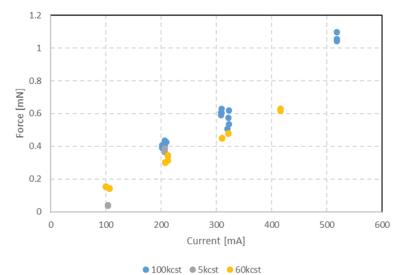


Figure S3. The master curve of force as a function of current for three silicone oils.