



Figure S1 Plasma membrane sheet (PMS) preparation and rupture force

measurements. (A) A schematic illustration of the preparation of the plasma membrane sheet. (B) Typical force-extension traces when the tip pressed on the PMS at a set-point force of 100 pN. Red line represented the fitting of the contact region in the “extend” trace using the Hertz model. (C) Histogram of Young’s modulus from

individual single molecule events. The Gaussian fitting showed an average ~ 0.7 MPa. $n = 929$. **(D)** The representative force-extension curves with specific rupture force events and only thermal noise in the force spectroscopy with hCD3_εCD WT-Cys peptide. Approaching and retraction force curves are labeled in gray and blue colors, respectively. Black lines are worm-like chain (WLC) fitting to the curves. **(E)** Histogram of force values of specific rupture force events (red open bar, $n = 707$) and thermal noise (black open bar, $n = 2270$). Blue solid bar represents the force detection limit of AFM in the measurements.