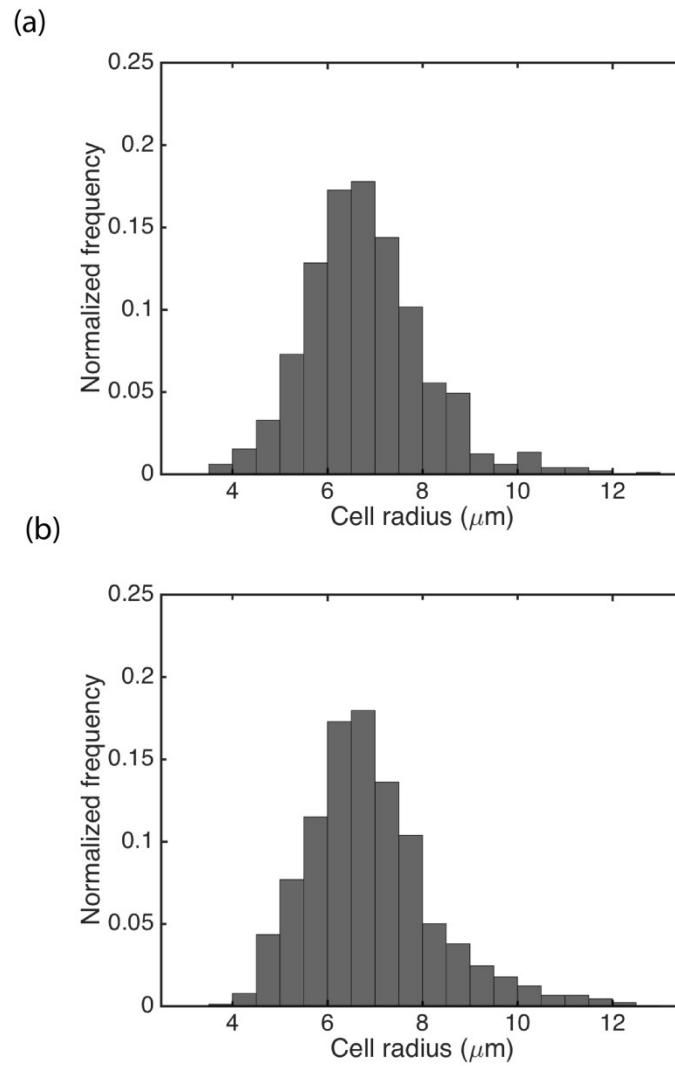


Supplementary Fig. 1 Calibration of electrical signals' peak amplitude and cell volume. Cell radius is optically measured using high-speed optical microscopy and peak amplitude of the corresponding cell signal is recorded (x marks on the plot). Linear regression is used to model the relation between cell volume and electrical signal peak amplitude.



Supplementary Fig. 2 Comparison of electrically (a) and optically (b) measured cell size distribution of HeyA8 human ovarian cancer cell line. Electrical measurements in this plot are obtained by combining cell size histograms from all microfluidic channels in Fig. 5. Close match between histograms demonstrate accuracy of our measurements.