Supporting Information

A particle self-aligning, focusing, and electric impedance micro-cytometer device for label-free single cell morphology discrimination and yeast budding analysis

Xinwu Xie[a,c§], Zhiwei Zhang[a,b§], Xiang Ge[a,b], Xiaohao Zhao[a,b], Limei Hao[a,c], Zhen Cheng[d], Weibin Zhou[b], Yaohua Du[a,c], Lei Wang[e], Feng Tian[a*], Xinxi Xu[a*]

a, Institute of Medical Support Technology, Academy of Military Science, No.106 Wandong Road, Hedong District, Tianjin 300161, China

b, School of Electronic Information and Automation, Tianjin University of Science and Technology, No.1038 Dagunan Road, Hexi District, Tianjin 300222, China

c, National Bio-Protection Engineering Center, No.106 Wandong Road, Hedong District, Tianjin 300161, China

d, Beijing CapitalBio Technology Co. Ltd., No. 88 block, Kechuang Sixth Rd., Beijing Economic and Technological Development Zone, Beijing 101111, China

e, CapitalBio Corporation, National Engineering Research Center for Beijing Biochip Technology, 18 Life Science Parkway, Changping District, Beijing 102206, China

§ These authors contribute equally in this work.

* Corresponding author to Feng Tian (tianfeng62037@163.com) and Xinxi Xu (xuxx1@sohu.com).

Tel:86-022-84656720

Fax: 86-022-84656723

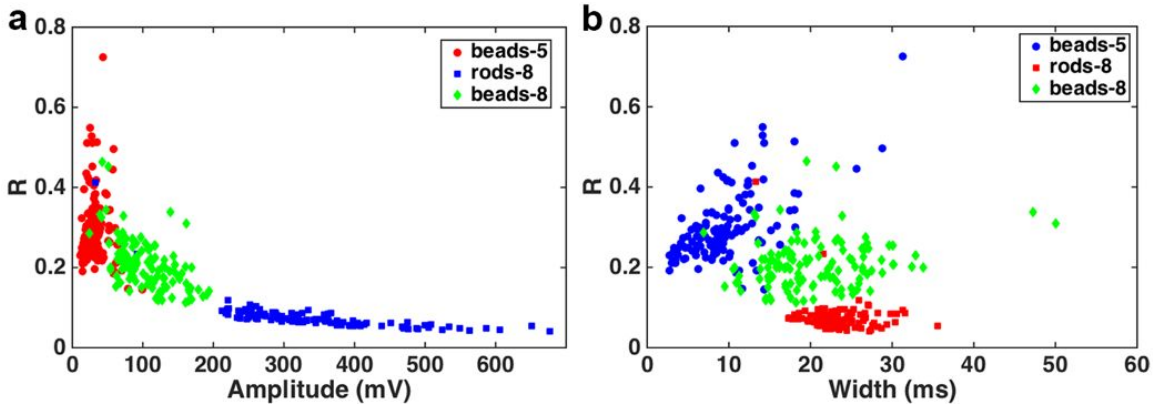

Figure S1. Scatter plots of beads and rods. a, scatter plot of R and amplitude; b, scatter plot of R and width. The beads-5, beads-8 and rods-8 represent Ø5, 8 µm-beads and 8 µm-rods, respectively.

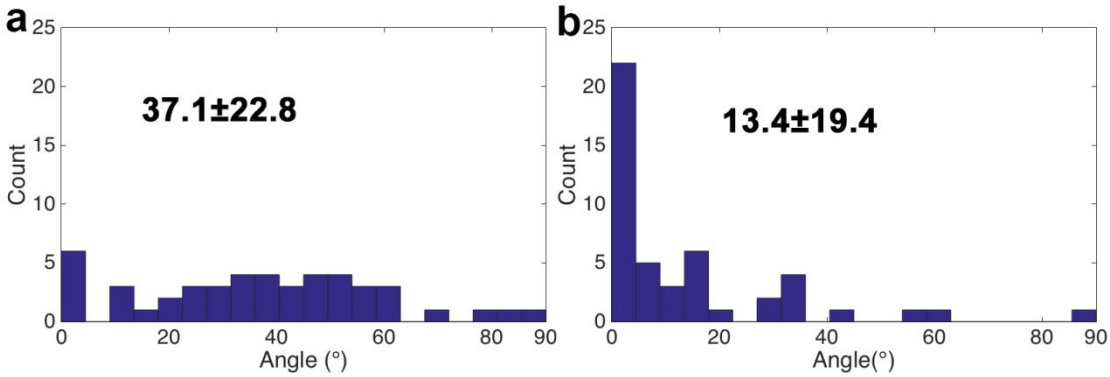

Figure S2. Histograms of ~40 typical budding yeast's orientation angle before the constriction part (a) and at the sensing zone (b).

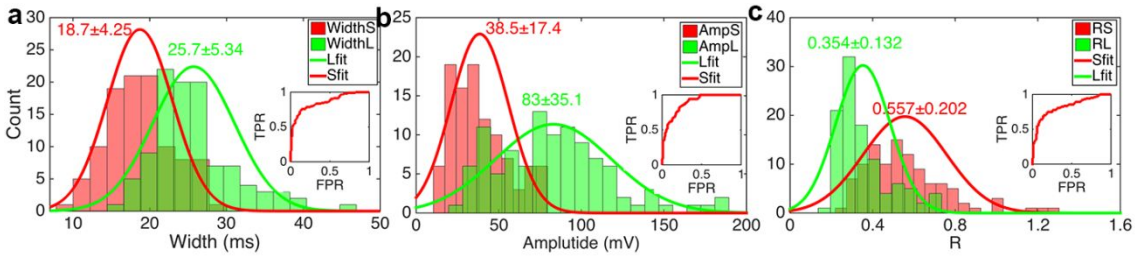

Figure S3. Histogram of pulse width (a), amplitude (b), and R (c) of typical single yeast and budding yeast with a high speed manner. Inserts highlight the ROC curves of each parameter.

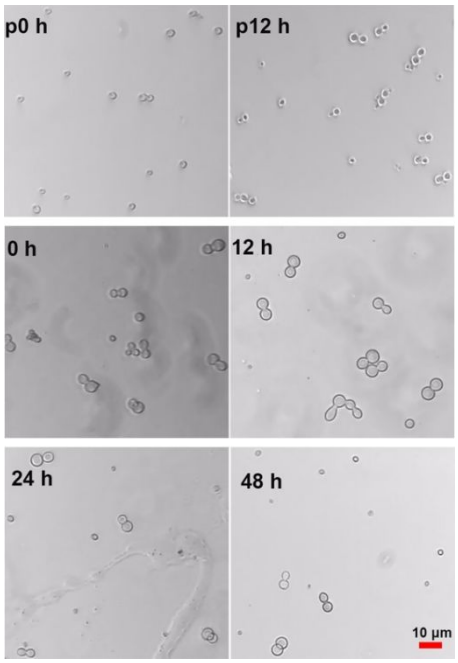

Figure S4. Typical images of yeast under different condition (p0 and p12 h represent the dry yeast powder resuscitation for 0 and 12 h respectively; 0, 12, 24, and 48 h represent fully recovered yeast cultured in fresh medium for 0, 12, 24, and 48 h, respectively).

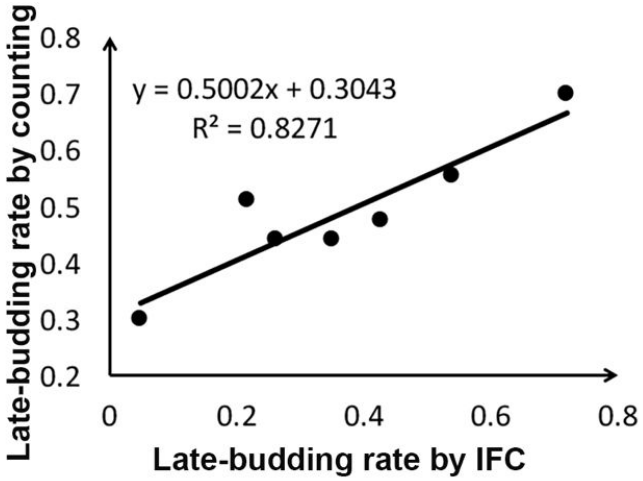

Figure S5. The correlation coefficient of the late-budding rate data

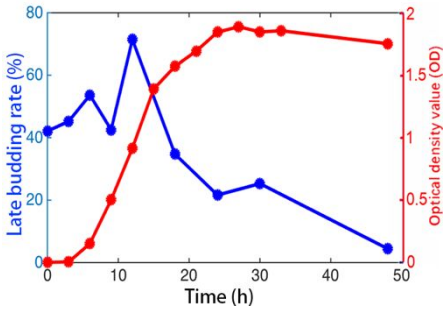

Figure S6. The late budding rate versus the OD value.