

## **High-throughput screening of high lactic acid-producing *Bacillus coagulans* by droplet microfluidic based flow cytometry with fluorescence activated cell sorting**

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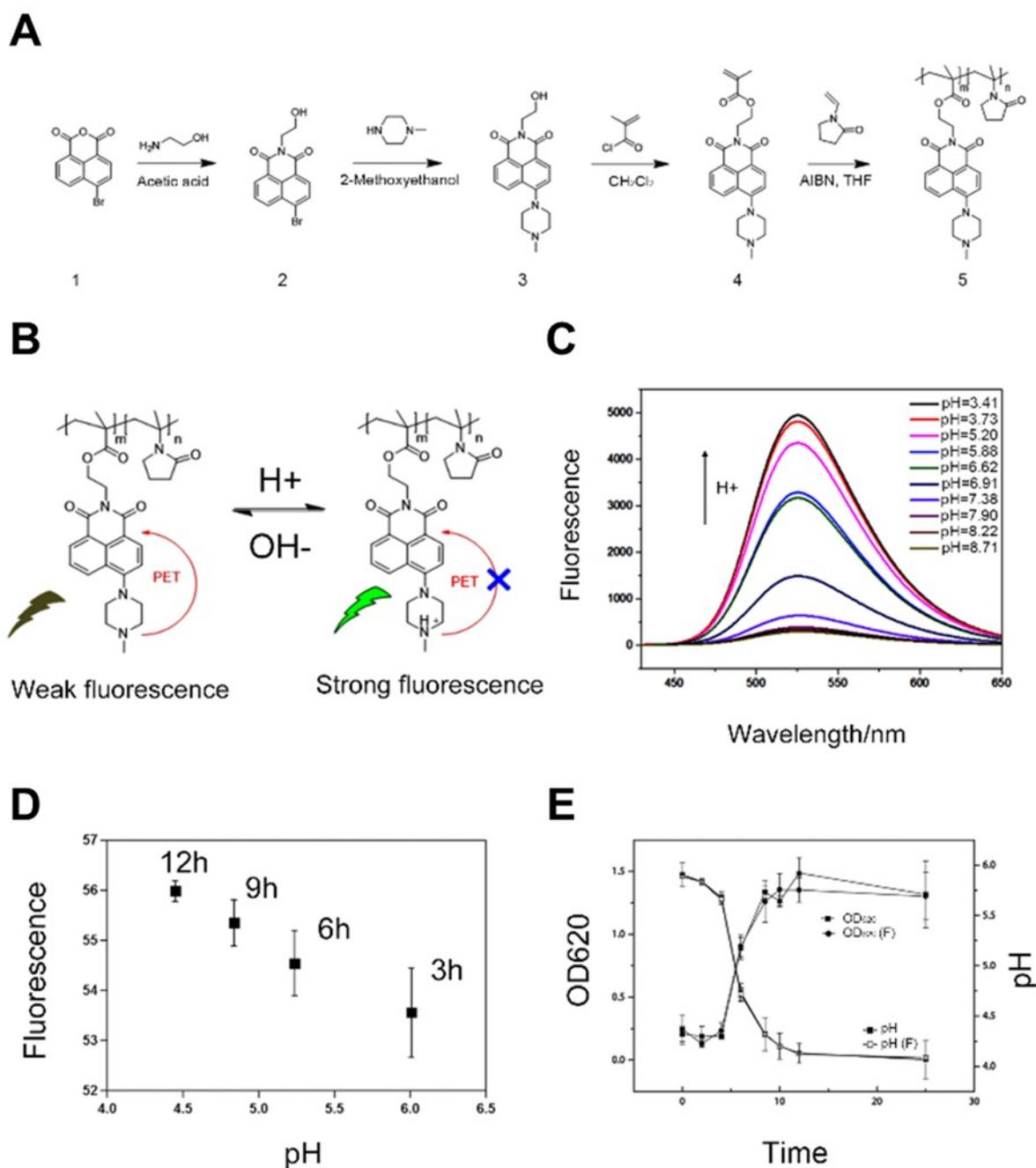
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## Supplementary material. 1. Synthesis of Probe-1

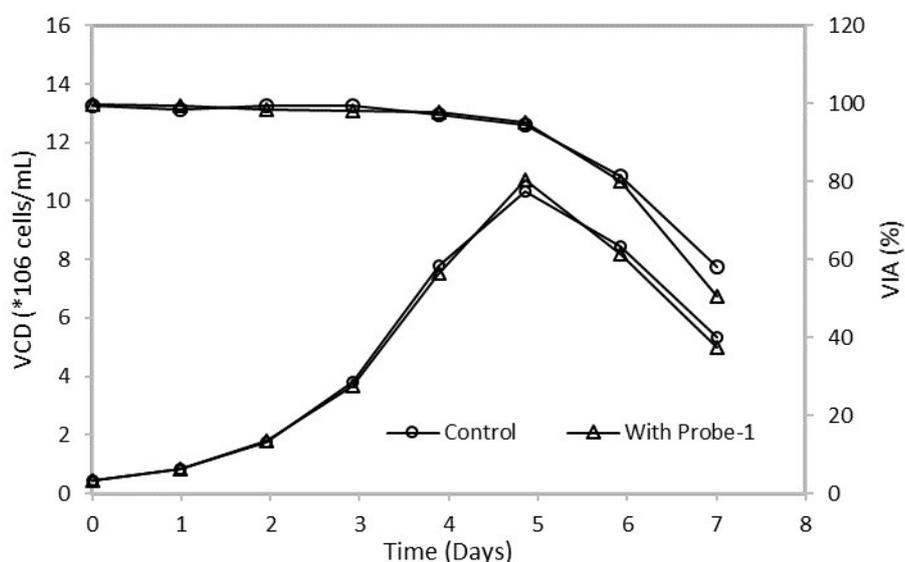


**Figure. S1.** A novel pH fluorescence biosensor -- Probe-1. (A) Synthesis steps of Probe-1. (B) The chemical structural formula and reaction principle of Probe-1. (C) The max Ex/Em of the conjugate was 405 /530 nm, and it responded well to different pH in aqueous solution. (D) The fluorescence intensity of Probe-1 had a negative linear correlation with pH of the broth. Samples was taken from flask every 3 hours, and the fluorescence intensity was directly detected without treatment. (E) The *Bacillus coagulans* growth curve of the experiment group and control group showed little difference which indicated that the Probe-1 was biocompatibility

The max Ex/Em of the conjugate was 405/530 nm, and it responded well to different pH in aqueous

solution with a concentration of  $10^{-5}$  mol/L. It showed that the fluorescence intensity of the Probe-1 was increasing with the declining pH of the broth caused by the accumulation of lactic acid. The biocompatibility was an essential feature for the indicator. Here, the *Bacillus coagulans* growth curve of the experimental group and the control group showed little difference which indicated that the Probe-1 was biocompatibility. These results showed the validity of a screening model for lactic acid using the Probe-1.

### Supplementary material. 2. Biocompatibility of Probe-1



To further evaluate the biocompatibility of the Probe-1. CHO-K1 cells were cultivated with and without (Control group) Probe-1. The growth curve of the experiment group ( $10^{-5}$  mol/L Probe-1) and control group were consistent in cell density (VCD) and viability (VIA) which indicated that the Probe-1 was biocompatibility for CHO-K1.