

Microfluidic based single cell analysis of signaling crosstalk between cell wall integrity and mating pathway in *S. cerevisiae*

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Here, we investigate the signaling cross-talk between cell wall integrity (CWI) and mating pathway of budding yeast via microfluidic device and quantitative single cell analysis. The microfluidic device enables to 1) track single yeast cells response in continuous media flow with well-focused microscopic images by holding the cells underneath of PDMS micropad, and 2) modulate magnitude of a cell wall stress by dilution of hydrogen peroxide in constant concentration of mating factor. Firstly, we monitor the expression of a mating-specific reporter, based on the FIG1 (Factor Induced Gene 1) promoter driving the expression of quadruple-Venus fluorescent protein. As a result, we found the activation of CWI signalling inhibits mating signaling, which is shown as decrease of Fig1 expression upon increase of cell wall stress magnitude. We expect this simple microfluidic-based single cell analysis will allow us to study a wide range of mutants and explore further the cross-talk mechanisms used by the cells to adapt and distinguish between multiple stresses.