

Development of naringenin riboswitch-based biosensor for in vivo sensing

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A number of riboswitch-based genetic devices have been developed and applied to diverse fields. Since riboswitches should have distinct dose-response curves to meet the requirements, they have been redesigned by rational approaches. However, rational approach is applicable only to few riboswitches. Therefore, we developed an evolutionary approach for riboswitch engineering. First, we obtained naringenin (NRN) aptamer library by SELEX and constructed NRN riboswitch library with the aptamer library, random linker sequences, selection marker gene and reporter gene. Then we performed enrichments by dual selection in medium and high NRN concentrations. After the selection, we measured the dose-response curves of the enriched NRN riboswitches, and half maximal effective concentration of riboswitches were classified according to the NRN concentration of enrichments.