

Metabolic Engineering using Synthetic Small Regulatory RNA based Rapid Gene-Knockdown Technique for Enhanced Production of Cadaverine and Tyrosine

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Small regulatory RNAs (sRNAs) are gene regulators that act on post-transcriptional phase. Here, we developed synthetic a sRNA gene knockdown technique. Synthetic sRNA properly repressed *DsRed2* and was used to enhance the production of tyrosine and cadaverine. Through screening of 14 different strains with sRNAs, we isolated a strain producing 2 g per liter of tyrosine and using a library of 130 synthetic sRNAs, *murE* was isolated and showed a 55% increase in cadaverine production. [This work was supported by the Technology Development Program to Solve Climate Changes on Systems Metabolic Engineering for Biorefineries from the Ministry of Science, ICT and Future Planning (MSIP) through the National Research Foundation (NRF) of Korea (NRF-2012M1A2A2026556 and NRF-2012M1A2A2026557); the Intelligent Synthetic Biology Center through the Global Frontier Project (2011-0031963) of the Ministry of Education, Science and Technology (MEST) through the National Research Foundation of Korea; the Commercializations Promotion Agency for R&D Outcomes(COMPA-2015K000365) funded by the Ministry of Science, ICT and Future Planning(MISP).]