# Rapid knockdown of target genes using synthetic small regulatory RNAs system and its application on metabolic engineering: Tyrosine and Cadaverine production

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Small regulatory RNAs (sRNAs) act on gene expression system after transcription in bacteria. We replaced MicC, which is a sRNA in Escherichia coli with translation start sequence of target genes. The synthetic sRNA system was successfully repressed the gene expression of DsRed2. This system was used for enhancing the tyrosine and cadaverine production in this study. 14 different strains were developed which respectively harboring one or set of the synthetic sRNAs targeting ppc, tyrR, csrA, and pgi. After screening, we selected a strain producing 2 g/L tyrosine. To increasing cadaverine production rate, we additionally screened 130 synthetic sRNAs library and as a result, murE repression was found to increase cadaverine productivity up to 55% of base strain. [This work was supported by the Technology Development Program to Solve Climate Changes on Systems Metabolic Engineering for Biorefineries (NRF-2012M1A2A2026556); 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]