Expanded sRNA expression platforms for rapid and multiplex metabolic engineering in *Escherichia coli*

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Although synthetic sRNA can efficiently knockdown target gene expression, it cannot be used in engineered strains already having incompatible plasmid(s). To this end, we report the development and applications of expanded sRNA expression platforms for rapid, multiplexed and genome-scale target gene knockdown in engineered Escherichia coli. High performance strains capable of producing L-proline and L-threonine are rapidly developed by combinatorial knockdown via one-step co-transformation of sRNA expression vectors. Furthermore, a genome-scale sRNA library targeting 1,858 E. coli genes is employed to construct crude violacein and indigo producers by high-throughput colorimetric screening. The expanded sRNA expression vectors developed here enables rapid development of chemical overproducers regardless of plasmid compatibility. [This work was supported by the Technology Development Program to Solve Climate Changes on Systems Metabolic Engineering for Biorefineries (NRF-2012M1A2A2026556 and NRF-2012M1A2A2026557) and the Intelligent Synthetic Biology Center through the Global Frontier Project (2011-0031963) of the Ministry of Science and ICT (MSIT) through the NRF of Korea.]