Establishment of a modified small regulatory RNA system for gene knockdown, and its application for enhanced chemical production in *Clostridium acetobutylicum*

조창희, 장유신, 유승민, 이상엽†
한국과학기술원
(leesy@kaist.ac.kr†)

Following the development of methods for introduction of plasmid DNA into *Clostridium*, several clostridial metabolic engineering tools such as antisense RNA for gene knockdown, homologous recombination and mobile group II intron technique for gene knockout have been established for controlling metabolic fluxes. Since these methods are used for only single target gene, metabolic engineering tool for multiple gene targets are needed in clostridia. Here we describe a new metabolic engineering tool for controlling the expression of multiple genes by applying an *Escherichia coli* synthetic sRNA system. By applying this system, we demonstrate enhanced chemical production in *Clostridium acetobutylicum*. [Development of Systems Metabolic Engineering for Biorefineries from the Ministry of Science, ICT and Future Planning (MSIP) through the National Research Foundation (NRF) of Korea (NRF-2012-C1AAA001-2012M1A2A2026556); and the Advanced Biomass R&D Center (ABC) of Global Frontier Project funded by the Ministry of Science, ICT and Future Planning (ABC-2010-0029799).]