

Engineering *Corynebacterium glutamicum* to overproduce 1,5-diaminopentane

Ziwei Luo¹, Seok Hyun Park¹, 이상엽^{1,2,†}

¹MBEL, Dept. of Chemical and Biomolecular Engineering (BK21 Plus program), KAIST;

²BioInformatics Research Center, Institute for the BioCentury, BioProcess Engineering Research Center, KAIST
(leesy@kaist.ac.kr[†])

Biological production of 1,5-diaminopentane from renewable feedstock provides a promising and sustainable alternative to traditional petroleum-based chemical synthesis. In the present study, we report the development of a metabolically engineered *Corynebacterium glutamicum* strain that can produce 1,5-diaminopentane from glucose. By overexpressing L-lysine decarboxylase in an industrial L-lysine overproducer *C. glutamicum* (U2 strain), 1,5-diaminopentane was not produced whereas L-lysine was detected. The *cadA* gene was thus codon-optimized, which led to a production titer of 31.94 g/L of 1,5-diaminopentane without exogenous feeding of L-lysine by fed-batch cultivation. [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-2012-C1AAA001-2012M1A2A2026556).]