

**Rational Engineering of *Escherichia coli* for
L-isoleucine production**

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L-isoleucine, one of the branched amino acids, cannot be synthesized in mammals. It is thus relevant that this amino acid is highly demanded in the industries of animal feedstuffs, dietary supplements, pharmaceuticals and cosmetics. Conventionally, isoleucine is industrially produced by bacterial strains developed by random mutagenesis. However, metabolism of random mutated strain is difficult to understand and improve. Thus, this study was aimed at construction of a genetically defined L-isoleucine producing strain. Based on TH20, a previously reported threonine-producing strain, thrABC, ilvA, ilvIH, ygaZH, ilvCED and lrp genes were amplified. The final engineered *E. coli* strain was able to produce 9.46g/L of L-isoleucine with a yield of 0.14g/g of glucose by fed-batch culture. [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]