

Construction of L-isooleucine producing strain of *Escherichia coli*

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L-isooleucine, one of branched chain amino acids, is currently used as a component of pharmaceuticals, cosmetics as well as animal feed additives. Biosynthetic pathway of L-isooleucine in *Escherichia coli* consists of five enzymatic reactions from L-threonine as a starting metabolite. In this study, we rationally engineered *E. coli* for the production of L-isooleucine by removing all the negative metabolic regulations such as feedback inhibition and transcriptional attenuation regulations that hamper the production of L-isooleucine, and overexpressing the genes encoding enzymatic reactions of L-isooleucine biosynthetic pathway and exporters that facilitate production of L-isooleucine. The approaches described in this study are useful for the enhanced production of L-isooleucine through the development of rationally engineered microorganisms. [This work was supported by the Korean Systems Biology Research Project (20090065571) of the Ministry of Education, Science and Technology (MEST) through the National Research Foundation. Further supports by the World Class University Program (R32-2008-000-10142-0) of the MEST, LG Chem Chair Professorship, IBM SUR program, and Microsoft are appreciated.]