Systems metabolic engineering approach for the production of 1-propanol in *Escherichia coli*

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1-Propanol can be as various industrial products such as paint and cosmetic industries. In terms of energy density and combustion efficiency, it is advantageous than the traditional bio-fuel, ethanol. In the present study, we engineered the previously reported L-threonine overproducing E. coli TH20 strain for 1-propanol production. Toward this goal, novel synthetic pathway for 1-propanol production, deleting competing pathway and carbon source optimization based on the in silico flux response analysis was established. Additional metabolic engineering strategy of the resulting strain further improved the titer. [This work was supported by the Technology Development Program to Solve Climate Changes (systems metabolic engineering for biorefineries) from the Ministry of Education, Science and Technology (MEST) through the National Research Foundation of Korea (NRF-2012-C1AAA001-2012M1A2A2026556) and by the Advanced Biomass R&D Center of Korea (2011-0028386) through the Global Frontier Research Program of the MEST. Further support by BioFuelChem and EEWS program of KAIST are appreciated.]