# Biofuel (gasoline) production by metabolically engineered *Escherichia coli*

하지연, 최용준[1], 이상엽†
MBEL, Department of Chemical and Biomolecular Engineering, KAIST;
[1]School of Environmental Engineering, University of Seoul
(leesy@kaist.ac.kr†)

A platform *E. coli* strain for the productions of short-chain alkanes, FFAs, fatty esters, and fatty alcohols was developed. The *fadE* gene was deleted to prevent the degradation of fatty acyl-CoAs. The activity of FebH was promoted for the enhancement of the initiation of fatty acid biosynthesis by *fadR* gene deletion. A mutant TesA converted short chain fatty acyl-ACPs to the corresponding FFAs. The sequential reactions of fatty acyl-CoA synthetase, fatty acyl-CoA reductase, and fatty aldehyde decarbonylase converted the short chain FFAs into corresponding alkanes. The engineered *E. coli* strain produced up to 580.8 mg/L of short chain alkanes. [This work was supported by the Advanced Biomass Research and Development Center of Korea (NRF-2010-0029799) through the Global Frontier Research Program of the Ministry of Science, ICT and Future Planning (MSIP) through the National Research Foundation (NRF). Systems metabolic engineering work was supported by the Technology Development Program to Solve Climate Changes on Systems Metabolic Engineering for Biorefineries (NRF-2012-C1AAA001-2012M1A2A2026556) by MSIP through NRF].