**세미나초록**

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| 발표주제 | Biological design and engineering of biofuels producing microbial systems | |
| 발표내용 | Single-cell microbes, such as *E. coli* and yeast, can be redesigned to be miniature chemical reactors that transform sugars into biofuels and biochemicals. With the development of synthetic biology, we can design biological systems, introduce biosynthetic pathways from one organism into new host organism, and engineer metabolic pathways using genetic manipulation to optimize the production of target biofuels and biochemicals that the host microbe does not naturally generate.  Isoprenoids are naturally occurring hydrocarbons with a branched, and in many cases, a cyclic structure. They are produced mostly by plant and have been used traditionally as medicine and fragrance ingredients. However, recently the use of these molecules as biofuels has been explored and has shown a great possibility.  We designed and identified isoprenoid compounds that can be potentially used as fuels, and engineered the heterologous biosynthetic pathway into model host, *E. coli*, to produce these terpene compounds with a relatively high yield. To achieve higher production titer of these terpene molecules, we have optimized the pathway to accumulate the precursors using synthetic biology and advanced Omics.  In this work, we have created highly efficient microbial factories for green, cost-effective and sustainable production of advanced biofuels and other valuable products. | |
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