

Metabolic engineering of *E. coli* for isoprenoid-derived biofuel production

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Isoprenoids, also called terpenoids, are a large and diverse class of naturally-occurring compounds. They are present in all living organisms and include many important drugs, valuable flavor and fragrance compounds, pigments, antioxidants, and natural polymers. Isoprenoid-based hydrocarbon molecules can be also developed into various transportation fuels such as gasoline, diesel, and jet-fuel. The different structures accessible via the isoprenoids biosynthetic pathways may allow the production of potential biosynthetic alternatives to gasoline, diesel, and jet fuel. They are derived from five-carbon universal building blocks assembled and modified in various ways. IPP and DMAPP are the building blocks which are produced from either the mevalonic acid (MVA) or methylerythritol phosphate (MEP) pathways. The increased synthesis of building blocks of IPP and DMAPP through metabolic engineering is a way to enhance the production of terpenoids. This work was supported by 21C Frontier Microbial Genomics and Applications Center Program, the Basic Research Program(Grant No.2009-0084490) of MEST, a grant from KRIBB Research Initiative Program, and BK21 program of Korea.