

Bioproduction of 1,2-Propanediol from Methanol by Metabolically Engineered *Methylobacterium extorquens*김현수¹, 최서영¹, 채함어¹, 조숙형², 연영주³, 이진원^{1,2,†}¹서강대학교; ²C1 가스 리파이너리 사업단; ³강릉원주대학교(jinwonlee@sogang.ac.kr[†])

1,2-Propanediol is a clear, tasteless, and odorless oily liquid that has broad range of applications such as unsaturated polyester resins, functional fluids, cosmetics, pharmaceuticals, food, detergents, and so on. Traditional 1,2-propanediol production process from petroleum has a weakness for dependency on oil prices as well as high cost and environmental unfriendliness. By growing demand for bio-based 1,2-propanediol as an alternative, we proposed that the bio-conversion of 1,2-propanediol from methanol, an attractive carbon source in terms of being a non-food feedstock and cheaper than glucose by using metabolically engineered *Methylobacterium extorquens* AM1. Firstly, optimal set of enzymes for 1,2-propanediol biosynthesis was identified. Secondly, competitive pathway was blocked to redistribute carbon flux into 1,2-propanediol. Last of all, increasing precursor availability of 1,2-propanediol was attempted. In this work, recombinant *M. extorquens* successfully produced 1,2-propanediol from methanol and showed the possibility of *M. extorquens* as a new biocatalyst for producing 1,2-propanediol.