

세미나 초록

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| 발표 주제 | Synthetic biology and bioprocess engineering of non-conventional yeasts |
| 발표 내용 | <p>High dependence on fossil-based feedstocks has intensified climate change and global warming, highlighting the urgent need for sustainable industrial alternatives. In response, our research focuses on engineering microbial metabolism and bioprocesses in non-conventional yeasts to establish sustainable biomanufacturing platforms. We demonstrated efficient production of organic acids from lignocellulosic biomass-derived sugars by metabolically engineering the acid-tolerant yeast <i>Issatchenkia orientalis</i>. We expanded our platform to C1 bioconversion by engineering the methylotrophic yeast <i>Pichia pastoris</i>. Through enhanced CRISPR/Cas9 genome editing and development of efficient in vivo DNA assembly systems, we enabled high-performance strain construction. We successfully produced diverse bioproducts from methanol, including lactic acid, polyhydroxybutyrate, and β-carotene. Furthermore, we explored formate as an energy-rich co-feed to enhance lipid biosynthesis in the oleaginous yeast <i>Yarrowia lipolytica</i>. Collectively, this work highlights the potential of engineered non-conventional yeasts for valorizing renewable biomass and C1 chemicals.</p> |