

# Establish next- generation biomanufacturing platforms with a focus on plants

**R&D Project Title:** Establishment of cutting-edge plant platforms for biomanufacturing

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**Summary :** Conventional biomanufacturing today utilize biomass such as sugar produced in agriculture, which does not directly contribute to reducing CO<sub>2</sub> emissions and has problems such as competition with food. Also, the types of compounds produced by microorganisms such as E. coli and yeast are limited due to their metabolic constraints. Therefore, by utilizing the diverse metabolic abilities of plants or others, we will create an innovative manufacturing platform with still under developing plants, microalgae, and new CO<sub>2</sub>-fixing microorganisms as hosts using CO<sub>2</sub> as a direct raw material for manufacturing. We will collect their biological information, and develop cutting-edge technologies of metabolic design, artificial genome construction, large-scale genome modification, gene introduction, and differentiation control for them. While applying these technologies, we will expand production and improve productivity of useful compounds that have been difficult to produce so far.

