

Metabolic Engineering

Understanding of microorganisms as a system, and development of methods for production of target products

Fermentation engineering



Omics analysis



in silico analysis



Development of ...

- 1) metabolome analysis
 - 2) metabolic flux analysis
 - 3) methodology for identification of genes conferring desired phenotype from multi omics data
 - 4) *in silico* methods for prediction of optimal metabolic pathway to produce target product
 - 5) genetic manipulation technique for rapid metabolic engineering
 - 6) breeding method to obtain strains tolerant to stress during production process
 - 7) breeding method to improve availability of biomass resource
 - 8) fermentation process for maximization of the potential of microorganisms
- Achievement of bioproduction for petroleum substitute



Creation of valuable strains

- Optimization of metabolic pathway for production
- Breeding of strains robust to production process