

Development of an advanced omics measurement and data analysis platform to drive next-generation biomanufacturing

Project Leader : Takeshi Bamba
Professor, Medical Institute of Bioregulation, Kyushu University



R&D Team : Waseda University, National Institute of Advanced Industrial Science and Technology, Kyushu University, Niigata University, Tokushima University, Yamaguchi University

Summary :

We are developing a multi-omics measurement and data analysis platform to establish a highly practical biofoundry that will provide a globally robust tool for bio-manufacturing.

Within this R&D project, we are focusing on the following key areas: I. Creating target selection and automated culture systems based on novel phenotypic analysis; II. Development of high-precision and high-throughput multi-omics measurement technology; III. Development of strategic identification methods for unknown metabolites to extend metabolic pathway maps; and IV. Development of data analysis methods for interaction networks at multiple omics levels. By integrating these technologies, we aim to create an advanced omics measurement and analysis platform that will drive next-generation biomanufacturing. We are constructing a model to predict microbial phenotypes obtained from genotypes and environmental conditions based on multi-omics data collected under different culture conditions using microorganisms such as *E. coli*. This model will then be applied to improve the production of useful substances in practical microorganisms.

