スマートセル開発に資する代謝解析と自動化技術

（神戸大・先端バイオ[1]）○蓮沼 誠久[1]

Smart cell development based on metabolism analysis and automation technology

([1]*Engineering Biology Research Center, Kobe University*) ○Tomohisa Hasunuma[1]

Behind the international trend of bioeconomy is the innovation of advanced biotechnology (genome engineering, bioinformatics, advanced measurement, etc.), which has led to the rise of the field of synthetic biology. In this talk, I would like to introduce with a special focus on metabolic analysis and automation technology in the technologies for the development of smart cells (cells whose potential functions have been brought out by advanced biotechnology) created by "fusion of bio and digital".

Keywords : metabolism analysis, automation technology, microorganism, smart cell, metabolic engineering

バイオエコノミーが国際的な潮流になっている背景には先端バイオ技術（ゲノム工学，バイオインフォマティクス，先端計測等）の革新があり，合成生物学分野の興隆につながっている。本講演では，我が国のバイオ戦略の中でも強く求められる「バイオ×デジタルの融合」によって創出されるスマートセル（先端バイオ技術により潜在的な機能が引き出された細胞）の開発技術群の中で，代謝解析と自動化技術に特に焦点を当てて紹介したい。

1) Takenaka, M., Yoshida, T., Hori, Y., Bamba, T., Mochizuki, M., Vavricka, CJ., Hattori, T., Hayakawa, Y., **Hasunuma, T.***, Kondo, A. (2021) An ion-pair free LC-MS/MS method for quantitative metabolite profiling of microbial bioproduction systems, *Talanta*, **222**, 121625
2) Vavricka, CJ., Yoshida, T., Kuriya, Y., Takahashi, S., Ogawa, T., Ono, F., Agari, K., Kiyota, H., Li, J., Ishii, J., Tsuge, K., Minami, H., Araki, M.*, **Hasunuma, T.***, Kondo, A. (2019) Mechanism-based tuning of insect 3,4-dihydroxyphenylacetaldehyde synthase for synthetic bioproduction of benzylisoquinoline alkaloids, *Nature Communications*, **10**, 2015