Applied Research on Microbial Fermentative Production of Valuable Compounds through Multi-Step Metabolic Pathways (Fermelanta, Inc.)

Fermelanta

City	Year of Establishment	Founder
Nonoichi, Ishikawa	2022	Shogo Fukizaki Hiromichi Minami Akira Nakagawa

Partner VC	Latest round of Fundraising	Valuation
Beyond Next Ventures Inc.	Series A	JYP 8,000 million

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○ Business Plan

Natural compounds with complex chemical structures often contain components beneficial to human health; however, their total chemical synthesis is difficult, and no efficient or cost-effective method for large-scale production currently exists.
By overcoming the technical challenges of introducing multiple heterologous genes into microorganisms, functionally expressing enzymes, and systematically controlling them as an integrated biological system, this research aims to establish multi-step biosynthetic pathways based on continuous enzymatic reactions.
Through this approach, we seek to develop foundational technologies for constructing industrial microbial strains capable of producing target compounds with high efficiency, and to realize their social implementation.

○ Research Outline

This research and development project aims to establish a fermentation technology using genetically engineered E. coli strains with newly introduced metabolic pathways, enabling the production of plant-derived compounds independent of climate and geographic conditions.
Furthermore, by achieving the following Proofs of Concept (PoC), the project seeks to solve key industrial challenges related to the stable supply and cost reduction of rare plant-derived compounds:
①Practical development of thebaine and cannabinoids
②Development of platform microbial strains with common metabolic pathways applicable to diverse intermediate compounds
③Construction of foundational technologies and general-purpose tools to support the development of customized microbial strains

Business Area/Field	Research Period	Research Grant Amount	International collaborative technology demonstration
Materials	PCA 2025～2027FY	JPY 499 million	-

As of October, 2025