

Application of metabolomics to two areas: microbial metabolic engineering for bioproduction and food science and technology of unique tropical bio-products.

Metabolomics

mass spectrometry

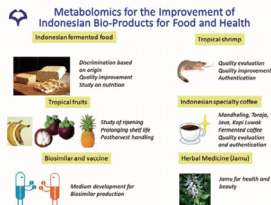
microbial bioproduction

food metabolomics

tropical bioproducts

研究
内容

Metabolomics is a very useful technology to understand and later engineer a biological system based on the knowledge of total metabolite profile of an organism. My research strategy is to expand the application areas of metabolomics to two new areas, microbial metabolic engineering and food science and technology of unique tropical bioproducts from Southeast Asia for the improvement of microbial based bioproduction of various useful compounds and the quality improvement and assessment of high value food commodities: a) specialty coffee, b) fine cacao, c) tropical fruits (mangosteen, mango, banana, pineapple), d) shrimp, e) fermented soybean tempe, f) herbal plants. My research resulted in the first publication on the authentication of world's most expensive coffee, Kopi Luwak, first metabolite analysis of mangosteen, fermented food tempe, several herbal plants and tropical fruits such as pineapple. These studies are important to give feedback to the food industry.



An overview of the various applications of metabolomics for the improvement of tropical bio-products in food technology and health.

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応用分野

Quality assessment for food and agricultural products, strain improvement of useful microbial hosts for bioproduction.



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論文・解説など

- [1] Dissook S. *et al.*, *Sci. Rep.* 2021. *In press*.
- [2] Putri SLE. *et al.*, *Metabolomics*. 2021;17(2):19.
- [3] Nitta K. *et al.*, *Frontiers in Bioengineering and Biotechnology*. 2021. *In press*.

連絡先HP



植物科学の最前線 ゲノム×代謝で未来をデザイン

#植物

#ゲノム

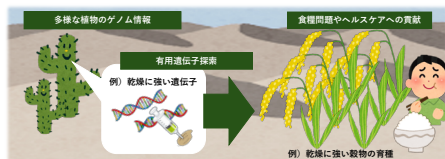
#代謝

#ゲノム編集

#持続可能農業

研究内容

- 植物は、代謝によって驚くほど多彩な化合物を生み出し、病虫害から身を守るだけでなく、有益な微生物との共生や、乾燥・高温などの環境ストレスへの適応を支えています。
- いま、植物ゲノム解読は急速に進み、“あらゆる植物の設計図”にアクセスできる時代が到来しつつあります。これまで未開拓だった植物にも目を向けることで、未知の機能をもつ遺伝子を発見できる可能性が広がっています。
- 本研究では、代謝を切り口に植物ゲノムから新たな有用遺伝子を発掘し、その力を活かして、未来の食料生産やヘルスケアを支える技術の創出を目指します。



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応用分野

医療・ヘルスケア分野、作物育種、物質生産



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論文・解説など

- [1] Tamura K et al. Plant Cell Physiol. 59, 783-796 (2018). doi: 10.1093/pcp/pcy046.
- [2] Tamura K et al. DNA Res. 30, dsac044 (2023). doi: 10.1093/dnares/dsac044.
- [3] Tamura K et al. Plant Biotechnol. 41, 303-308 (2024). doi: 10.5511/plantbiotechnology.24.0312c.

連絡先HP

