

Ph.D. defense presentation 博士論文発表会（公聴会）

Mechanism of Plant Growth Promotion by Microbial Volatile Organic Compounds

（微生物の揮発性物質による植物の生育促進機構の解明）

Date: 4 June (Thu) 2026, 13:00-14:00

Presenter: Theint Thida (Program of Bioresource Science)

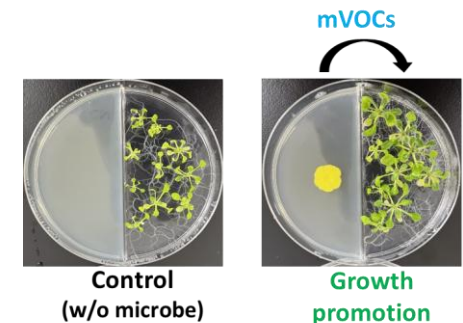
Venue: C201 (School of Applied Biological Science)

Abstract

Microbial volatile organic compounds (mVOCs) play a crucial role in regulating plant growth through indirect plant-microbe interactions. In this study, we have investigated the molecular mechanisms of plant growth promotion by mVOCs released from *Acinetobacter* sp. WCHAc060042, *Cereibacter sphaeroides* TS, *Pseudomonas putida* YH-2, *Acinetobacter tjernbergiae* DSM 14971, and *Pseudomonas* sp. CA10. The volatiles 2,5-dimethylpyrazine (2,5-D) increased the shoot and root dry weight and increased the chlorophyll *a* and *b*, total chlorophyll *a+b*, carotenoid, and potassium concentrations in the shoots of *Arabidopsis* seedlings. The transcriptome profile revealed that 1753 and 2766 genes were differentially expressed in the shoots and roots of *Arabidopsis*, respectively. In conclusion, these results suggest that 2,5-D is a potential candidate for promoting plant growth by regulating nitrate and ammonium transporters.

Reference

Thida T, Nampei M, Siewe JM, Li J, Omura H, Ueda A (2026) *Journal of Experimental Botany*, erag076, , <https://doi.org/10.1093/jxb/erag076>



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