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Research topics

Background

- Microbial secondary metabolites are important resources for drug discovery (pharmaceuticals and agrochemicals).
- Some soil microorganisms and their metabolites remain untapped.
- Understanding of biosynthesis and regulation of secondary metabolites is indispensable for further exploration and engineering.

Purpose

- To understand biosynthetic mechanisms of bioactive secondary metabolites produced by filamentous fungi
- To explore and create new metabolites based on the findings

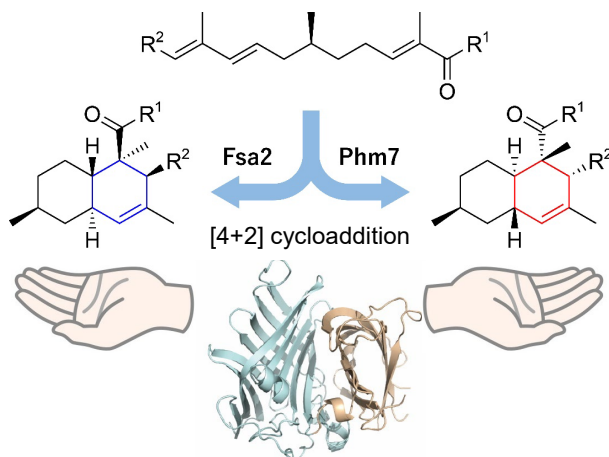
Major achievements

- Elucidations of biosynthetic pathways of fungal bioactive metabolites
- Discovery of enzymes responsible for diastereoselective [4+2] cycloaddition and creation of a natural product derivative with unnatural configuration
- Isolation and screening of filamentous fungi from soil
- Genetic engineering of filamentous fungi isolated from soil

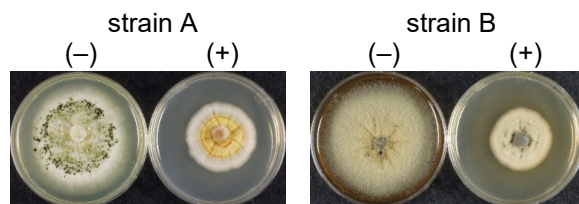
Prospects for collaboration

【Seeds discovery】

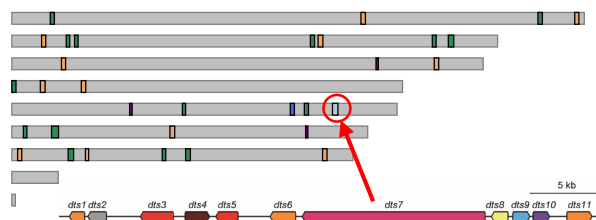
- Development of new methods to explore untapped microbial resources and discover pharmaceutical and agrochemical seeds
- Efficient production of desired metabolites with better biological activity by genetic engineering



Discovery of enzymes responsible for diastereoselective [4+2] cycloaddition in natural product biosynthesis



Phenotypic screen of filamentous fungi responding to chemical stimuli



Genome mining of unexplored filamentous fungi for new BGCs



Research features

Understanding “how” and “why” microorganisms produce bioactive metabolites will provide a clue to further exploration of untapped potentials of microbes.