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Terrestrial Biodiversity and Ecosystems

Gall to the Future
Current Progress and Future Prospects of Cecidology

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Time : 2021. 03. 04 Thu. 10:30
Venue: Auditorium, 1st Floor
Interdisciplinary Research Building
跨領域科技研究大樓 1 樓演講廳
Host: Dr. Chih-Yu Chiu 邱志郁研究員

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Abstract

Cecidology is a unique research field that studies plant galls, which are abnormal outgrowth of plant-tissues caused by the infection of gall inducers like insects, bacteria, fungi, nematodes, and mites. The taxonomy, anatomy, phylogeny, and physiology of gall inducers and their host plants have been well surveyed. In my post-doctoral research in Dr. Yang's lab, I pioneered the use of bioinformatics method to analyze the transcriptomes of gall tissues. Several transcription factors, which regulate leaf development and morphology, were identified to have participated in the morphogenesis of leaf galls in the Lauraceae species. I also established a novel method to determine the phytohormones in gall tissues and gall midges. Our phytohormone analysis found that gall midges and host plant leaves have distinct phytohormone profiles. However, our knowledge of the intricate physiological and molecular interactions between the host plants and the gall inducer(s) remain spares. Here, I propose to address three questions. (1) What have shaped the diverse morphology of gall tissues? (2) What are the roles of fungal symbionts in plant gall interaction? (3) What are the unique genomic/genetic/transcriptomic features of gall inducers (insects/fungi/mite)? It is anticipated that clarification of these questions will significantly fill gaps in understanding of interactions between host plants and their gall inducer(s).