

第 11 回植物生命科学セミナー

11th Open Seminar hosted by the Department of Plant Biosciences
Faculty of Agriculture, Iwate University

Cellulose synthase isoforms: Unity and diversity

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日時： 2018 年 5 月 23 日(水) 16:30～18:00

場所： 総合教育研究棟(生命系)1 階 遠隔講義室(生命系スペース C)

要旨

Despite its importance for the plant and for humanity, cellulose is synthesized by a process that remains enigmatic. Cellulose appears to be synthesized by a trio of enzymes in the CESA family. However the distinctions, if any, among members of the trio are poorly understood. Is it three-pianos or piano, violin, and cello? We have taken CESA trio members from the model grass species, *Brachypodium distachyon*, and expressed them in the putatively orthologous mutant background in *Arabidopsis thaliana*. In general, the mutant phenotype is complemented, confirming ortholog status and consistent with functional divergence among trio members. In addition, we imaged the speed of CESA complex motion in the *B. distachyon* mesocotyl and find it to be indistinguishable from that seen in the *A. thaliana* hypocotyl. Finally, we imaged the cell wall of fibers in *A. thaliana* plants where each one of the trio members is replaced by a catalytically inactive version (in the null background for that member). Cell wall structure in each replacement is distinct, revealing that cellulose can be synthesized by just two active members of the trio, and further supporting the idea that each CESA trio member is distinct functionally (piano, violin, and cello).

マサチューセッツ大学・Tobias Baskin 教授に植物の基本的な生物学的プロセスであるセルロース合成のメカニズムについてお話しいただきます。多くのみなさまのご参加をお待ちしています。

(問合せ：農学部植物生命科学科 植物生理学分野 Abidur Rahman e-mail: abidur@iwate-u.ac.jp)