

第 1545 回生物科学セミナー

日時：8 月 8 日（金） 13:30-15:00

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演題：The versatile role of SWEET in fruit growth and interactions with microbes

Sugar transport is fundamental to plant development and environmental interaction. Members of the SWEET (Sugars Will Eventually be Exported Transporters) family have emerged as key regulators in orchestrating carbon allocation across diverse developmental stages and ecological contexts. We demonstrate that SISWEET1a, predominantly expressed in young tomato leaves, facilitates glucose uptake into phloem parenchyma cells following apoplastic sucrose hydrolysis for vigorous leaf expansion. During reproductive development, SISWEET5b plays a pivotal role in pollen maturation by mediating monosaccharide import into anthers; silencing this transporter leads to male sterility and reduced fruit set. In developing fruit, SISWEET15 is crucial for unloading sucrose into pericarp and seed tissues, contributing to fruit growth—traits of high relevance for crop improvement. Beyond development, SWEETs also modulate interactions with beneficial microbes. In *Arabidopsis* roots, SWEET2 restricts sugar efflux to limit colonization by *Bacillus subtilis*, a beneficial rhizobacterium. Interestingly, *B. subtilis* activates the AHL29 transcription factor to suppress SWEET2, thereby promoting sugar availability and symbiotic establishment. Together, these findings illustrate the multifaceted roles of SWEET transporters—from source-to-sink transitions in fruiting to fine-tuning microbial symbiosis—offering promising targets for enhancing both crop productivity and sustainable plant-microbe interactions.

場所：理学部 2 号館 223 号室及び Zoom で行います。

担当：東京大学大学院理学系研究科・生物科学専攻・植物生理学研究室