生命科学セミナー

Genetic control of multicellularity in plants

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日時：　5月15日（水曜日）　16：00～17：00

場所：　農学・生命科学研究棟（京都大学北部構内）

セミナー室（2）　（1階 104号室）

Multicellular organisms are faced with dramatic challenges: multiple cell types need to be individually instructed and coordinated in time and space. In addition, precise control of cell division and cellular growth patterns is required for developing a functional, 3-dimensional shape. In most species, developmental patterns are highly reproducible, leading a species-specific phenotypes. A central question in biology is how genetic regulation ensures species-specific morphologies. In plants, morphogenesis relies heavily on the placement of the new cell wall, and thus, developmental regulation often results in modulation of the new division plane. We use the early Arabidopsis embryo as a simple and highly predictable model in which cell polarity, cell division, cell type specification and tissue patterning are intricately coordinated. I will discuss our recent work aimed at understanding the cellular basis for the establishment of multicellular patterns in 3D. I will describe our efforts towards identifying the genetic and cellular basis for the establishment of cell polarity and oriented cell division.

Key recent literature:

1. Radoeva, T. et al. (2019). A robust auxin response network controls embryo and suspensor development through a bHLH module. **Plant Cell** 31, 52-67.
2. Yoshida, S. et al. (2019). A SOSEKI-based coordinate system interprets global polarity cues in Arabidopsis**. Nature Plants** 5, 160-166.
3. Liao, C.-Y., and Weijers, D. (2018). A toolkit for studying cellular reorganization during early Arabidopsis thaliana embryogenesis. **Plant J.** 93, 963-976.
4. Palovaara, J. et al. (2017). Transcriptome dynamics revealed by a gene expression atlas of the early Arabidopsis embryo. **Nature Plants** 3, 894-904.
5. Palovaara, J. et al. (2016). Tissue and organ initiation in the plant embryo: A first time for everything. **Annu. Rev. Cell Dev. Biol.** 32, 47-75

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