生命科学セミナー

(植物生殖遺伝分野担当: 第 25 回)

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日時：2015 年 3 月 17 日 (火) 16:00～18:00
場所：生命科学研究科・本館大会議室 (片平・3F)

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Self-Incompatibility in *Petunia*: a Complex Self/Non-Self Recognition Mechanism between Pollen and Pistil

Petunia inflata possesses self-incompatibility through which the pistil rejects self-pollen to prevent inbreeding but accepts non-self pollen for outcrossing. The *S*-locus houses the *S-RNase* gene for pistil specificity[1)] and multiple *S-locus F-box* (*SLF*) genes for pollen specificity[2,3)]. We have used transcriptome analysis to identify 17 *SLF* genes in S_2-haplotype and S_3-haplotype[4)], and used co-immunoprecipitation and mass spectrometry to show that all 17 SLF proteins are assembled into similar SCF complexes, which contain a pollen-specific Cullin1 (named PiCUL1-P), a pollen-specific Skp1-like protein (named PiSSK1), and a conventional Rbx1 (named PiRBX1)[5)]. According to the collaborative non-self recognition model[3)], for a given *S*-haplotype, each SCF complex interacts with a subset of non-self S-RNases, determined by the SLF protein it contains, to mediate their ubiquitination and degradation via the 26S proteasome. A complete suite of SCF complexes is thus required to detoxify all non-self S-RNases to allow cross-compatible pollinations. We have used a transgenic functional assay[2)] to determine the interaction relationships of eight SLF proteins of S_2-haplotype and three SLF proteins of S_3-haplotype with up to 11 S-RNases[6)]. So, far more than 100 interaction relationships have been determined. We are using a chimeric gene approach to identify the amino acids responsible for differential interactions between SLF proteins and S-RNases.

References

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5) Li S, Sun P, Williams JS, Kao T-h (2014). Identification of the self-incompatibility locus F-box protein-containing complex in *Petunia inflata*. *Plant Reprod* 27: 31-45
6) Williams JS, Natale CA, Wang N, Li S, Brubaker TR, Sun P, Kao T-h (2014). Four previously identified *Petunia inflata S-locus-F-box* genes are involved in pollen specificity in self-incompatibility. *Mol Plant* 7: 567-569

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なお、不明な点は、生命科学研究科・植物生殖遺伝分野・渡辺（**nabe@ige.tohoku.ac.jp**）までお願いします。
共催：新学術領域研究「ゲノム遺伝子相関」、基盤研究**(A)**「シロイヌナズナ自家不和合性」

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