

**Molecular basis of self/non-self recognition in self-incompatibility on cruciferous plants**

**Masao Watanabe**

(Tohoku University, Graduate School of Life Sciences, Professor)

**【Outline of survey】**

In higher plants, the genetic diversity is maintained by outcrossing. Self-incompatibility (SI) is one of outcrossing systems, which was written in C. Darwin's books. From my recent research, it has been revealed that *Brassica* SI, which is controlled by a single locus with multiple alleles, is regulated by allele-specific direct interaction between SP11 (male *S* determinant) and SRK (female *S* determinant). However, there is little information of the downstream signaling factor of SRK, at a moment. In this study, I aim to understand the intracellular signaling network of *Brassica* SI using two types of plant materials, self-compatible *B. rapa* and self-incompatible *Arabidopsis thaliana*, with multidisciplinary approach.

**【Expected results】**

SI is one of a model system of cell-cell communication in higher plants, and has been used in the production of F<sub>1</sub> hybrid variety in *Brassica* crops. Furthermore, a variety of genes encoding receptor kinase are contained in the genome of higher plants, although most of their functions were still unknown. This study will contribute to discover the downstream molecules of SI, and their intracellular signaling network and other orphan receptor kinase.

**【References by the principal investigator】**

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- Murase, K., Shiba, H., Iwano, M., Che, F.-S., Watanabe, M., Isogai, A., and Takayama, S. (2004) A membrane-anchored protein kinase involved in *Brassica* self-incompatibility signaling. *Science* 303: 1516-1519.

**【Term of project】** FY2008—2012

**【Budget allocation】**

**80,000,000 yen** (direct cost)

**【Homepage address】**

<http://www.ige.tohoku.ac.jp/prg/watanabe/>