Department of Agrobiological Resources

Laboratory of Genetics and Breeding Science

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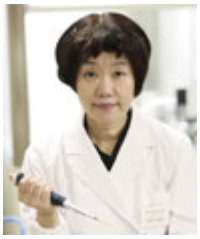
TEACHING	Genetics	Statistics of Agricultural Science I
	Breeding Science	Statistics
	Advanced Genetics and Breeding Science (MC)	Information Science



Professor
Rie TERADA

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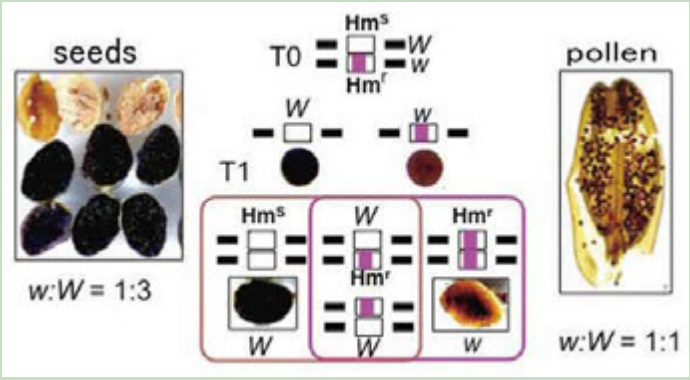
Research

1. Gene modification by the gene targeting in rice.

The technology of gene targeting (GT) mediated by homologous recombination (HR) is a powerful tool for genetic engineering and the study of gene function, because GT has a possibility of artificial gene design through precise nucleotide manipulation. We firstly succeeded GT of *Waxy* based on a strong positive-negative (PN) selection in rice (*Oryza sativa* L.), an important staple food. Fifteen individual rice genes were subsequently targeted by our GT procedure. Our research purpose is improvements of the GT technology and the progression of molecular breeding in rice.



Figure; GT of *Waxy* resulted in mutant *waxy*. The *waxy* phenotype was detected in rice seed and pollen.

2. Improvement of Potato production by True Potato seed.

On potatoes, we are developing TPS (True potato seed) system. This system uses biological seed (TPS) instead of seed tuber as planting material. TPS is not only to facilitate storage and transport but also to prevent from infecting many disease intermediate seed tuber.

Recent publications:
•Moritoh, S., Eun, C-H, Ono, A., Asao, H., Okano, Y., Yamaguchi, K., Shimatani, Z., Koizumi, A. and Terada R. (2012) Targeted disruption of an orthologue of *DOMAINS REARRANGED METHYLASE2, OsDRM2*, impairs the growth of rice plants by abnormal DNA methylation. The *Plant Journal* in press
•Ono, A., Yamaguchi, K., Fukada-Tanaka, S., Terada, R., Mitsui, T., Iida, S. (2012) A null mutation of *ROS1a* for DNA demethylation in rice is not transmittable to progeny. The *Plant Journal* in press
•Terada, R., Nagahara, M., Furukawa, K., Shimamoto, M., Yamaguchi,K. I., Iida, S.: Cre-*loxP* mediated marker elimination and gene reactivation at the *waxy* locus created in rice genome based on strong positive-negative selection. Plant Biothechnology 27: 29-37 (2010)