

# Breakthrough technologies to accelerate breeding and strain improvement in biological production for a sustainable society

**Pioneering new food resources from wild plants for sustainable food supply under fluctuating environment caused by global warming**

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## Summary :

This research aims to create novel stress-tolerant crops that can withstand various stresses at levels not achieved by conventional crop breeding by imparting characteristics of agricultural crops (non-shattering, seed enlargement, and increased yield) to wild plants (weeds). We mainly use wild *Oryza* with high-stress tolerance as the primary research target. In this project, wild *Oryza* species, which are difficult to utilize through conventional breeding, will be genome-edited by a unique gene transfer technology to control the shattering and grain size. We aim to, thereby provide advantageous traits as an agricultural crop to the species and make it into an agricultural resource. Furthermore, by the *in vitro* fertilization of egg and sperm cells, we aim to develop new food resources by creating new rice varieties that have both the superior traits of wild species and the characteristics of cultivated rice species, which are genetically distant and cannot be crossed with each other. In the coming term, salt-tolerant wild *Oryza* will be domesticated by our original technology to produce new crops to cope with the salt damage due to climate change.

