

## [P4] Crop Genetics and Physiology

Thu. Sep 9, 2021 12:15 PM - 2:00 PM Room 4 (Poster) (Crop Genetics and Physiology)

1:15 PM - 2:00 PM

### [P4-26]The Purification of Recombinant TGW6, which Limits Grain Size in Rice

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*THOUSAND-GRAIN WEIGHT 6* (*TGW6*) encodes an indole-3-acetic acid (IAA)-glucose hydrolase. By the function of native *TGW6*, the number of endosperm cells and the weight of grains are limited. Otherwise, the 1-bp deletion allele of *tgw6* cloned from the Indian landrace rice Kasalath loses the function and enhances the grain size as well as yield. We hypothesized that the chemical intervention strategy for the specific inhibition of *TGW6* might increase the grain size and yield. However, we do not have the information for the structure of the *TGW6* protein to design the antagonist. In this study, we purified the recombinant *TGW6* through the *Escherichia coli* expression system. We cloned full-length *TGW6* from Nipponbare by PCR and inserted it into pET-32b. The constructs were transformed into Rosetta-gami 2 (DE3). The *E.coli* cells contained a pET-32b expression plasmid for *TGW6* were grown at 37°C in LB minimal medium. Isopropyl-1-thio-β-d-galactopyranoside was added to induce the expression of the *TGW6* construct. After harvesting the cells, we extracted the recombinant *TGW6* by sonication and purified using Ni-affinity chromatography. However, most of the recombinant *TGW6* expressed as insoluble forms. Then, we cloned *TGW6* truncated 30 amino acid sequences from N-terminus with the same experimental condition. We could improve the solubility by truncation of N-terminus amino acids and purify the recombinant *TGW6*. Further, we will report on the enzyme activity of the recombinant *TGW6*.