

[P4] Crop Genetics and Physiology

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

12:15 PM - 1:00 PM

[P4-41]CO₂-Responsive CCT Protein Interacts with 14-3-3 Proteins and Regulates the Expression of Starch Synthesis-Related Genes

*Nominated for Presentation Awards

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CO₂-responsive CCT protein (CRCT) is a positive regulator of starch synthesis-related genes such as *ADP-glucose pyrophosphorylase large subunit 1* and *starch branching enzyme I* particularly in the leaf sheath of rice (*Oryza sativa* L.). RNA-seq analysis and subsequent RT-qPCR analysis showed that sucrose treatment induced the expression of *CRCT*, which in turn induced starch synthesis-related genes in WT. However, this induction did not occur in *CRCT* knock out mutants. A chromatin immunoprecipitation (ChIP) using a FLAG-CRCT overexpression line and subsequent qPCR analyses showed that the 5'-flanking regions of some starch synthesis-related genes were enriched by ChIP, indicating that CRCT can bind to the promoter regions of these genes. A bimolecular fluorescence complement (BiFC) assay revealed that CRCT interacts with a 14-3-3 protein in the nucleus. These results suggest that CRCT responds to sugar and regulates starch synthesis by directly binding to the promoter region of starch synthesis-related genes and interacting with 14-3-3 protein.