Role of TTLs proteins in cellulose biosynthesis

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Abiotic stress cause detrimental yield losses in crop species. Plants are sessile organisms, so the understanding of the plant cell wall, which is the most important component that constitute the plant biomass of crop species, is therefore of utmost importance for agricultural activities. Cellulose is the most abundant biopolymer on Earth and a major component of plant cell walls. Previous studies have shown that the GSK3 kinase BIN2 modulate cellulose biosynthesis through phosphorylating cellulose synthases and that the expression of cellulose synthases are regulated by Brassinosteroids. Our previous work reveals that the tetratricopeptide-repeat thioreoxin-like proteins (TTLs) are positive regulators of BR signalling functioning as a scaffold of the BR pathway in Arabidopsis, associating with most core components in traducing BR signalling, BRI1, BSK1 and BIN2 kinases BSU1 phosphatase and the transcription factors BZR1 and BES1. In addition, *ttl* mutants are affected cellulose particularly in conditions of osmotic stress. We are investigating the mechanisms by which TTL proteins regulated cellulose biosynthesis using a combination of genetics, biochemical, and molecular and cell biology approaches. We show that in addition to regulate BR-mediated celullose biosynthesis TTL3 associates with RLKs that have been shown to be important for cellulose biosynthesis such as FEI1.