

## Special Issue

# The Regulation of Metabolism by Sugars During Plant Responses to Environmental Factors and Their Function During Development

### Message from the Guest Editor

The regulation of metabolism by sugars in plants not only relies on limiting the intensity of metabolism through their availability for respiratory processes and syntheses of organic compounds, but also the impact of these compounds, in particular sucrose and its monosaccharides, on the expression of many plant genes. Moreover, these primary metabolites function in a complex network with many bioactive molecules, which independently or in dialogue regulate the processes of plant growth and development, as well as response to stresses. The levels of sugars in plant cells and their transport, utilization, and storage are precisely regulated and strongly dependent on cell physiological activity, plant organ, environmental conditions, and plant developmental stage during ontogenesis. These levels are also tightly controlled by sugar transporters and enzymes. Sugars modulate all developmental phases, i.e., embryogenesis, seed dormancy, germination, vegetative and generative development, and senescence. During the phases of plant development, sugars coordinately but differentially activate or repress gene expression and regulate both the transcription rate and mRNA stability.

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