

## ABSTRACT NUMBER 29

### Regulation of stoma through CK2-dependent phosphorylation of OST1

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ABSTRACT:

OPEN STOMATA (OST)1 is the key kinase in the abscisic acid (ABA) core signaling module. OST1 contains a motif called the “ABA-box”, which is the docking site for the negative regulating protein phosphatases 2C (PP2C). Here we show that casein kinases (CK)2 coordinate two mechanisms of negative regulation of OST1. CK2 trans-phosphorylates the maize homolog ZmOST1 at four conserved serines in the ABA-box, triggering the latter's destruction and likely increasing binding by ZmABI1, a representative PP2C. The organization of ZmOST1 in plant cell is altered by the co-expression of either the CK2alpha or CK2beta subunits of the holoenzyme, strongly suggesting direct interaction between CK2 and ZmOST1. Consistently, transgenic Arabidopsis plants expressing ZmOST1[AA] exhibit enhanced ABA responses. Our data thus uncover unsuspected important roles for CK2 in ABA signaling, as a direct regulator of OST1 turnover, its subcellular organization as well as priming its eventual dephosphorylation by PP2C binding.