



ABSTRACT

“Analysis of the major cell cycle kinase CDKA;1 during Arabidopsis growth and development”

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Proper control of cell proliferation is of key importance for any multicellular organism and requires a tight coordination with growth and differentiation. At the heart of the eukaryotic cell cycle are cyclin-dependent kinases (CDKs) that regulate the entry into the next cell-cycle phase. In particular, high levels of CDK activity are required for entry and progression of DNA synthesis phase (S-phase) and for execution of mitosis (M-phase). CDKs function as microprocessors and integrate extrinsic cues, such as nutrient availability, with intrinsic cues, for instance the developmental program and only if a certain threshold of CDK activity is reached will the entry into the next cell-cycle phase be promoted. Here, I will focus on the control and function of the major cell cycle regulator CDKA;1, the Arabidopsis homolog of the animal Cdk1 protein. CDKA;1 is required throughout plant development, starting from meiosis to the development of the gametophytes, embryonic and postembryonic growth. Comparing the action and regulation of CDKs in plants with what has been found in other model organisms shows that the mechanistics of Cdk1-like kinases are conserved. However, the regulatory context and the wiring appear to be species-specific adapted.