



ABSTRACT

*"Multiple phosphorylations by multiple kinases at multiple locations -
how to keep track on cellular signalling in plants?"*

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Protein phosphorylation is one key regulatory principle in all living organisms: about 30% of all cellular proteins are - at least occasionally - phosphorylated and sequenced genomes encode about 500 to 1000 protein kinases. Moreover, some proteins can be phosphorylated by different kinases at multiple sites, which makes it even more challenging to keep an overview on these regulatory processes. One approach, which helps to get an overview on these diverse processes is to ask where and when these phosphorylation events occur. Many of them will be triggered by specific signals and also take place only in distinct subcellular localizations. Therefore I will start with the discussion of protein kinases, which are involved in the (salt-) stress response at different membrane systems, but which are also active in the cytosol and the nucleus. At all places, there is cross-talk with other signalling pathways and different pathways merge at targets, which are phosphorylated by different kinases. I will present a bZIP transcription factor as one example to illustrate how this could serve as integration point of different signalling pathways, which are used in response to different stresses.