Functional characterization of proteins involved in wood formation in Populus and Arabidopsis

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Introduction:

Examination of cis-regions of TF regulatory network inducing secondary cell wall formation in Populus woody model plant, and in Arabidopsis, a non-woody model may be a fruitful approach to understanding mechanisms of wood formation. The wood-forming transcription factor network involves upstream NAC-domain master regulators called VND7, NST1 and SND1, an intermediate regulator, MYB46, as well as downstream direct activators of cell wall biosynthesis genes

Aim:

The objective of the project is to characterize and compare the gene regulatory networks regulating wood formation in Populus and Arabidopsis.

Method:.

:The promoters of MYB46 and of the NAC domain transcription factors VND7 and NST1 will be isolated by PCR amplification from Populus and Arabidopsis genomic DNA. The promoters which are isolated from MYB46 and NAC domain transcription factor are cloned by using overlap extension PCR. Agroinfiltration are done into the leaves of N.benthamiana at the rate of 2 leaves. Therefore, 24 leaves are injected totally which are taken from 7 different plants.

Results:

The transcription factor's self and mutual transactivation is analysed. From the results it showed that the ACTYPE element will mediate the transactivation of MYB46 with the promoters which helps in the wood formation in Populus but in Arabidopsis ACTYP element is not present so that results in a non-woody species.

Acknowledgements

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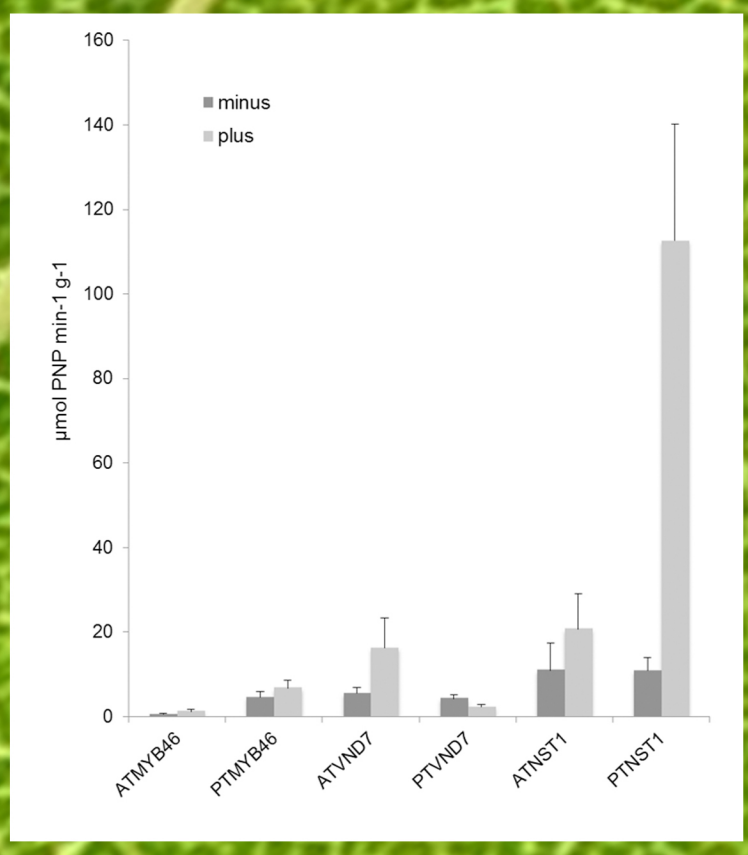
Transactivation analysis showing that PttMYB021 able to transactivate the six reporter genes. The promoters MYB46, NST1 and VND7 showing activity.



Transactivation analysis showing that PttMYB021 able to transactivate itself.