Under pressure - A stress response signal changes in plant vascular identities

Plants are sessile organisms and are thus bound to dwell in the environment they were placed in by chance. Therefore, they have developed a high degree of plasticity in their development, meaning that plants adapt their growth according to environmental inputs. These environmental inputs are perceived using molecular signals. One of these molecular signals is the phytohormone abscisic acid (ABA). ABA has been shown to be crucial for the plant's response to especially stress conditions caused by abiotic factors like draught or salinity, but also biotic factors such as pathogen attacks. The molecular mechanisms translating this environmentally triggered ABA into changes in plant growth, however, are largely obscured. One of the developmental processes that had been left unexplored under influence of ABA is the vascular development. Therefore, I studied vascular alterations in roots of the model plant *Arabidopsis thaliana* in plants both treated with ABA but also in plants that have altered ABA synthesis or perception. Analysing these, I was able to show that alterations in ABA-levels is able to change organisation of the vasculature by influencing previously described developmental regulators.

All together my results suggest a previously unrecognised role of ABA in cell identity control and maintenance. Future research will help to not only test this hypothesis but also possibly unravel the biological importance of the type of alterations I observed. This will then provide a more complete insight into plant adaption towards environmental changes. Since the vasculature is a crucial internal system of the plant connecting all organs, understanding of its response to altered environmental conditions might help to understand how plants are able to better cope with stress conditions. With this understanding, improved breeding for crops that are able to grow in harsh conditions, such as very dry regions or on soil with unfavourable attributes, might be possible.

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