

# Exploring the dormancy puzzle: shedding light on the role of ABA in shoot branching

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## **Abstract**

Plant architecture, such as shoot branching, is a key trait that can influence plant yield. Plants regulate branching by maintaining or releasing bud dormancy. This regulation involves a complex network of auxin, cytokinin, strigolactones and other metabolites such as sucrose and trehalose-6-phosphate. Here the focus is identifying the role of abscisic acid (ABA), commonly known as the drought hormone, in bud dormancy. Arabidopsis and pea were used to determine whether increases in endogenous and/or exogenous ABA could inhibit bud growth. Twelve established arabidopsis signalling and biosynthesis mutants and an ABA biosynthesis mutant in pea were screened to determine if they demonstrated altered branching phenotypes. ABA response experiments tested whether ABA may play a role in bud growth after release from dormancy (quiescence). Indeed, ABA inhibited bud growth in decapitated plants in a dose-dependent manner in pea, with ABA concentrations as low as 50µM being able to significantly reduce branching. This indicates that ABA may act at multiple stages not only to maintain bud dormancy but reduce bud growth. The findings will be discussed in terms of whether ABA controls the promotion of bud dormancy and inhibition of growth or, instead, maintains healthy quiescence.