

Strigolactone perception by DAD2 and the environmental control of branching

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The strigolactone hormone signalling system of plants controls the number of branches produced and responds to nutrient status and light. Data will be presented that are consistent with DAD2 being the strigolactone receptor. Unusually for a hormone receptor, DAD also has enzyme activity and can hydrolyse its ligand. We have undertaken mutagenesis of DAD2 to dissect the relative contributions of enzyme activity and interactions with signal transduction partners to understand how strigolactones are perceived. We have also exploited the features of the DAD2 protein to undertake screens for antagonists of SL perception. In addition, DAD2 is postulated to act at a position in the network controlling axillary bud outgrowth that integrates nutrient availability and light quality. We investigated the relative importance of these two factors by simultaneously altering both light and nutrient conditions (red:far-red ratio and phosphate availability). An analysis of gene expression of SL pathway genes showed a co-ordinated response to phosphate and light and that the regulation of the SL receptor plays an important role in the response of plants to the environment.