

Chemical dissection of ABA receptor function

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Agricultural productivity is dictated by water availability and consequently drought is the major source of crop losses worldwide. The phytohormone abscisic acid (ABA) is elevated in response to water deficit and modulates drought tolerance by reducing water consumption and inducing other drought-protective responses. The recent identification of ABA receptors, elucidation of their structures and understanding of the core ABA signaling network has created new opportunities for both chemical and genetic manipulation of water use. An unusually large family of receptors encodes ABA receptors and, until recently, it was unclear if selective or pan-agonists would be required. Our recent identification of the selective agonist quinabactin has resolved this issue and defined the ABA receptor *Pyrabactin Resistance 1* (PYR1) and its close relatives as key targets for water use control. My seminar will discuss the structure and function of ABA receptors, our work developing synthetic ABA receptor agonists, and the use of orthogonal receptors to enable agrochemical control of water use in transgenic plants.