ABSTRACT

"Towards a spatiotemporal understanding of environmental response in roots"

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The response of plant roots to environmental change serves as an excellent model for understanding the dynamic regulation of gene expression in a multicellular context. To shed light on the spatiotemporal regulation of the salt stress response in roots, we are utilizing tools common to both developmental and systems biology. Our studies have revealed that the salt stress response is characterized by waves of transcriptional activity, which are associated with dynamic changes in morphology and growth rates. We have recently extended our interest of environmental responses into the role that moisture plays in locally regulating root growth and development. In a process we term "hydropatterning", we have discovered that contact of the root tip with moisture elicits a cascade of changes in root development including the suppression of hair initiation, activation of lateral root development and changes in gravity response.
The mechanisms for hydropatterning are currently being investigated and will be discussed during the seminar.