
CHRISTINA RICHARDS

ABSTRACT

PARTICIPANT AT:

EVOLUTION OF PLANT PHENOTYPES FROM GENOMES TO TRAITS



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Christina Richards, Assistant Professor, University of South Florida, USA

Exploring implications of genome function in complex environments using model and non-model plants

An essential component of deciphering the impact and long-term consequences of changing environment is understanding how organisms are able to respond at different time scales. Rapidly developing genomic tools for model plants grown in controlled conditions can now be used to examine the mechanisms of phenotypic response in a broad array of wild organisms and biologically relevant conditions. Studies in wild setting allow for exploring how phenotypic variation is modulated by differential expression resulting from sequence polymorphisms and regulatory mechanisms such as transcription factors and alternative splicing. In addition, while studies interested in adaptation have largely assumed that trait variation is based on sequence variation, there is now pressing need to explore the role of epigenetic processes. Epigenetic effects can result in heritable, novel phenotypes even without variation in DNA sequence and could therefore provide an unappreciated source of response. My lab group is exploring the potential role of genetic and epigenetic processes in natural and controlled studies of native, invasive and model plant species. Combined these studies should enhance our understanding of how genetic and epigenetic variation interact in response to environment on different time scales and ultimately contribute to adaptation.

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