



## ***ABSTRACT***

*“Metabolomics from fundamental understanding  
to marker-assisted breeding”*

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Metabolomics approaches enable the parallel assessment of the levels of a broad range of metabolites and have been documented to have great value in both phenotyping and diagnostic analyses in plants. These tools have recently been turned to evaluation of the natural variance apparent in metabolite composition. Here, I will describe exciting progress made in the identification of the genetic determinants of crop plant chemical composition, focussing on the application of metabolomics strategies and their integration with other high-throughput technologies. The Zamir *Solanum pennellii* introgression lines will be used as a case study and I will illustrate the value of this approach by demonstrating a few examples whereby we have been able to identify the genetic factors underlying important agronomic and nutritional traits. Whilst work in this area is currently carried out at the level of fundamental science I will conclude with an outlook of my personal perspective of its applied uses.