

Plant Genomics

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Studying host-insect interactions using viral induced gene silencing and siRNA

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Wheat Dn genes afford resistance to the economically important pest, *Diuraphis noxia* (Kurdjumov, Russian wheat aphid, RWA) and have been the topic of transcriptomic and proteomic studies aimed at unraveling the pathways involved in resistance. However, despite numerous efforts to isolate these Dn genes, none of them had been cloned and sequenced and this can partly be ascribed to the complexity and size of the bread wheat genome, as well as the apparent centromeric location of these genes. To date, several R-gene targets were investigated using viral induced gene silencing (VIGs) in wheat. However, the availability of the complete genome of the pest has opened up new avenues of study to unravel the complex interaction between these organisms. The current study explores both avenues. Candidate plant resistance genes were silenced *in planta* and aphid response assessed, while candidate aphid effectors were also delivered *in planta* to assess their respective functions during host-pest interactions. In all cases, the aphids were allowed to feed, where after reproduction was recorded. The ectopic expression of the gene targets was also quantified using RT-PCR analysis.

Biography

Anna-Maria Botha-Oberholster has received her training in Plant Genetics at the Weizmann Institute of Science, Israel and the Salk Institute of Biological Science, USA. From 1994, she actively mentored students and has been affiliated to several academic institutions globally. Highlights in her career spanning more than 20 years, include representing Africa at the initiation meeting that started the International Wheat Genome Sequencing Consortium in Washington DC, in 2004 and at IBSA (now BRICS) in Brazil in 2008. Her research outputs include more than 100 peer-reviewed papers in accredited international journals, 5 book chapters, numerous peer-reviewed conference proceedings, technical reports and popular articles.

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