

**Title** Utilization of chillpeach microarray platform for comparing chilling injury-susceptible 'Hermoza' and chilling injury-resistant 'Oded' peaches

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#### **Abstract**

Transcriptomic analyses of two peach cultivars, which differ in their resistance to chilling injury, were examined after 2 weeks of cold storage at 5°C by utilizing the ChillPeach cDNA microarray platform. Both cultivars are white-, melting-flesh, however 'Oded' (*Prunus persica* 'Oded'), is a cling-stone, early season peach while 'Hermoza' (*P. persica* 'Hermoza'), is a free-stone, mid-season cultivar. Chilling injury symptoms of flesh browning, woolly texture and flesh bleeding were lower in 'Oded' fruits than in 'Hermoza' fruits after cold storage at 5°C, indicating that 'Oded' is more resistant to chilling injury. In cold-stored 'Hermoza' peaches, the expression level of selected genes involved in ethylene biosynthesis and its perception and signal transduction was lower than cold-stored 'Oded' peaches. In addition, the expression level of genes related to cell wall degradation, stress response and various transcription factor families (e.g., NAC, HD-ZIP and AP2/EREBP) was higher in cold-stored 'Oded' peaches than 'Hermoza' peaches. Overall, the results suggest that resistance to chilling injury in peaches is associated with ethylene pathway, stress tolerance, synthesis of cell wall degrading enzymes and transcription factors.