

### Abstract:

Gravistimulation induced differential ethylene production in *Antirrhinum majus* L. cut flower stems with highest levels in the lower halves of the gravistimulated stems. Expression levels of three different 1-aminocyclopropane-1-carboxylate (ACC) synthase (ACS) genes, an ACC oxidase (ACO) and an ethylene receptor (ETR/ERS homolog) gene were studied in the bending zone after 9 h of gravistimulation. One of the ACS genes (*Am-ACS3*) was abundantly expressed in the lower halves but not in the upper halves of gravistimulated stems. This strongly suggests that *Am-ACS3* is responsible for the observed differential ethylene production in gravistimulated stems. *Am-ACO* and *Am-ETR/ERS* gene expression was increased in both the lower and upper halves of gravistimulated stems, suggesting that they play no role in differential ethylene production. When gravistimulation was performed in an environment enriched with either 20  $\mu\text{L/L}$  ethylene or 100 nL/L 1-methylcyclopropene (1-MCP), a slight stimulation of bending by 1-MCP and a slight inhibition of bending by ethylene were observed. The regulation and role of ethylene in gravitropism of cut snapdragon flowering stems is discussed.