

Title *Nicotiana mutabilis* – a novel system for studying ethylene-mediated floral senescence
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Abstract

Nicotiana mutabilis, a tobacco species recently discovered in southern Brazil, has flowers that change color during their display life. Opening buds are white, and as the flower ages, the color changes, at first gradually, and then rapidly through light pink to dark pink and even red. The onset of the pigment change is associated with a marked increase in ethylene production, and the change is delayed by treating the flowers with 1-methylcyclopropene (1-MCP), an inhibitor of ethylene action. Expression of the gene encoding chalcone synthase increased slightly in association with a substantial rise in concentrations of anthocyanins in the petals. Likewise, expression of a homolog of *SAG12*, a leaf senescence-associated gene first isolated from *Arabidopsis*, increased as the color change advanced and ethylene production increased. The numerous genetic and experimental tools available for *N. tabacum* can readily be applied to this close relative to provide an interesting new model for studying flower senescence.