

Title A universal primer for isolation of fragments of genes encoding phytoene desaturase for use in virus-induced gene silencing studies

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Abstract

We have been using Virus-Induced Gene Silencing (VIGS) to test the function of genes that are candidates for involvement in floral senescence. Although VIGS is a powerful tool for assaying the effects of gene silencing in plants, relatively few taxa have been studied using this approach, and most that have are in the Solanaceae. We found that efficient silencing requires the use of fragments that are highly homologous to the target gene. To test the effectiveness of VIGS in different taxa, we use a fragment of a gene encoding phytoene desaturase. Silencing this gene, whose product is involved in carotene biosynthesis, results in a characteristic phenotype of photobleaching in the leaves. To simplify the effectiveness of VIGS in a range of species, we designed a set of universal primers to a region of the PDS gene that is highly conserved among species. We report the sequences of these primers and the results of VIGS experiments in horticultural species from the Asteraceae, Leguminosae, and Solanaceae.