CHARACTERIZATION OF PEA (*PISUM SATIVUM* L.) PLANTS TRANSFORMED WITH A GIBBERELLIN 3B-HYDROXYLASE GENE

Aruna Wickramarathna[1], J. Ozga and D. Reinecke

ABSTRACT

Gibberellins (GAs) regulate many aspects of plant growth and development. To expand our understanding of gibberellin biosynthesis in reproductive and vegetative growth, pea (*Pisum sativum* L. cv. Carneval) plants have been transformed to over-express the GA 3β-hydroxylase gene, *PsGA3ox1,* which encodes for the enzyme that converts GA_{20} to bioactive GA_1.

Morphological characterization of a homozygous transgenic line carrying one copy of *PsGA3ox1* (assessed by kanamycin screening) along with a transformation control line (where the trans-gene has segregated out) and a wild-type line (non-tissue-cultured seed) was carried out. The transgenic *PsGA3ox1* line produced significantly longer internodes from the 12th through the 22th node (16, 17 and 18 internode lengths were 18% greater than the controls), and larger stipule leaves and longer tendrils (approx. 12 % greater than the controls). The total number of internodes was minimally affected in the *PsGA3ox1*-transformed plants compared to controls. These data suggest that the *PsGA3ox1*-transformed line produced increased *PsGA3ox1* transcript levels which resulted in increased production of GA_1, and thus modified the phenotype of the plant as described.

To confirm the number of *PsGA3ox1* genes inserted into the genome and quantitate the transcript abundance of *PsGA3ox1* in this transgenic line, Southern blot analysis and GA gene expression studies are in progress. GA levels will also be quantified in selected tissues to clarify how regulation of GA levels affects vegetative and reproductive growth in pea.