Characterization of a Novel *Arabidopsis thaliana* Mutant

Ianis G. Matsoukas, Andrea Massiah, Brian Thomas
University of Warwick, Warwick CV35 9EF, United Kingdom.

The regulation of floral induction is activated by environmental, biochemical and developmental signals. In *Arabidopsis thaliana* several mutants have been isolated, which have been genetically and physiologically characterised. These have revealed the complex regulation of floral induction by the gibberellin, autonomous, vernalization and photoperiodic pathways.

An Arabidopsis dominant mutant was identified in a floral induction screen of a collection of Arabidopsis (ecotype Ws-4) T-DNA insertion mutants generated at INRA Versailles, and was named ELS (early in long and short days). This mutant harbours a T-DNA insertion in the promoter of the candidate gene, which may be responsible for the early flowering phenotype. Under short photoperiods, the *els* mutant flowers significantly earlier than wild type (WT). Under long photoperiods is only slightly earlier than WT of the same ecotype.

The major aims of this project are to demonstrate whether the gene downstream of the promoter carrying the T-DNA insertion is involved in regulation of floral induction in Arabidopsis. For this study, in addition to the *els* mutant, GABI-Kat and SALK line insertion mutants that carry T-DNA insertions around the candidate gene locus are available for analysis. Transgenic approaches with the candidate gene are also being used to complement or re-create the ELS phenotype.

Furthermore, crosses will be performed between the *els* mutant and other mutants (*co, ft*) in order to determine the epistatic relationships of *ELS* candidate gene and *els* phenotype with the other mutants. The hypocotyl elongation response of the *els* mutant will be assessed under exposure to GA, red light, far-red light and blue light to determine whether ELS is involved in the signaling pathways involving GA, *PHYA, PHYB, CRY1* and *CRY2* respectively. Finally, leaf movement rhythms of the *els* mutant will be measured to determine whether the circadian regulation of the *els* mutant is altered.