Proceedings of the XLIX Italian Society of Agricultural Genetics Annual Congress
Potenza, Italy – 12/15 September, 2005
ISBN **88-900622-6-6**

Poster Abstract - B.18

FUNCTIONAL CHARACTERIZATION OF *H13*, A TOBACCO GENE INVOLVED IN STAMEN ELONGATION, OVEREXPRESSED IN MALE-STERILE TOBACCO PLANTS TRANSFORMED WITH THE ONCOGENE *ROLB*

V. CECCHETTI*, M. POMPONI*, MM. ALTAMURA**, G. FALASCA**, P. COSTANTINO*, M. CARDARELLI***

*) Dipartimento di Genetica e Biologia Molecolare, Università di Roma "La Sapienza", P.le A. Moro 5, 00185 Roma, Italy
**) Dipartimento di Biologia Vegetale, Università di Roma "La Sapienza", P.le A. Moro 5, 00185 Roma, Italy
***) IBPM – CNR, c/o Dipartimento di Genetica e Biologia Molecolare, Università di Roma "La Sapienza", P.le A. Moro 5, 00185 Roma, Italy

stamen development, auxin, Nicotiana tabacum, Arabidopsis thaliana, C4-3

In angiosperms, male reproductive processes take place in the stamen. This organ consists of two morphologically different parts: the filament and the anther. To study the effect of auxin in the process of stamen development, we transformed *Nicotiana tabacum* plants with the promoter of the Arabidopsis gene *DMC1*, specifically active during meiosis, fused to the *rolB* coding region(1). This gene of *Agrobacterium rhizogenes* encodes a protein tyrosine phosphatase that perturbs the auxin signal transduction and induces a cell-autonomous state of auxin hypersensitivity.

pDMC1:*rolB* plants are male sterile due to alterations in meiosis s well as a severe delay in anther dehiscence. Moreover these plants display reduced stamen growth due to shorter filaments as compared to controls (2). These developmental alterations could be phenocopied by exogenous application of auxin suggesting that auxin plays a key role in stamen development.

In order to analyse auxin distribution and localization during stamen development *A. thaliana* and *N. tabacum* plants transformed with the auxin–inducible construct *DR5::GUS* are currently been analyzed.
In addition real-time RT-PCR analysis of mRNA extracted from male sterile *pDMC1*:*rolB* anthers, at meiotic and posmeiotic stages, shows an increase in the transcript level of *H13*, a cDNA overexpressed in tobacco protoplasts expressing *rolB*. The putative protein sequence of *H13* contains one region 25 aminoacids long highly conserved in putative proteins of many dicotiledonous plants such as TED3 of *Zinnia elegans*, involved in tracheid formation Moreover tobacco plants transformed with an antisense *H13* cDNA under the control of the CaMV35S promoter *(anti35S:H13)*, display an increase in stamen length, suggesting a role for *H13* in filament elongation.

1.Cardarelli M, Mariotti D, Pomponi M, Spanò L, Capone I, Costantino P (1987). Mol Gen Genet 209: 475-480
2.Cecchetti V., Marsilio S., Pomponi M., Altamura M.M., Pezzotti M., D'Angelo S., Tornielli G.B., Costantino P. and Cardarelli M.(2004) Plant Journal 38**,** 512-525
3.Ulmasov T, Murfett J, Hagen G, Guilfoyle TJ (1997) Plant Cell 9:1963–1971