Proceedings of the Joint Meeting AGI-SIBV-SIGA
Assisi, Italy – 19/22 September, 2011
ISBN **978-88-904570-2-9**

Poster Communication Abstract – 1.13

A HISTONE DEACETYLASE IS REQUIRED FOR FERTILITY, SEED GERMINATION AND SEEDLING GROWTH RATE IN *ARABIDOPSIS*

AIESE-CIGLIANO R., CREMONA G., PAPARO R., CONSIGLIO M.F., CONICELLA C.

CNR-Institute of Plant Genetics, UOS Portici, Via Università 133, 80055 Portici (Italy)

Arabidopsis, epigenetics, reproduction

Histone post-translational modifications (HPTMs) play a fundamental role in many aspects of plant development and interaction with environmental stimuli. In *Arabidopsis*, several works underlined the involvement of histone de-/acetylation in the determination of flowering time, organ identity, flower morphology and fertility. Based on *in silico* analysis which looked for histone acetylases/deacetylases (HATs/HDACs) preferentially expressed in *Arabidopsis* flower buds and orthologous genes involved in sexual reproduction in other organisms, a HDAC (hereinafter named *HDAC1*) was identified as the strongest candidate for a reproduction role in *Arabidopsis*. In this work, the function of this gene was investigated by reverse genetics. Plants over-expressing *HDAC1* (hereinafter oe*HDAC1*) as well as lines silenced by artificial miRNA (hereinafter ami*HDAC1*) have been analyzed. Both oe*HDAC1* and ami*HDAC1* show a drop in seed germination and changes of seedling growth rate. Moreover, ami*HDAC1* plants exhibit additional defects affecting plant reproduction. Indeed, delayed embryo development, seed abortion and silique semisterility were observed as well as abnormal ovules and defects in bivalent disjunction during microsporogenesis. Further molecular, biochemical and cytological analyses are being carried out to investigate the role of HDAC1 in *Arabidopsis* reproduction.

The research leading to these results has received funding from the European Community's Seventh Framework Programme FP7/2007-2013 under grant agreement n. KBBE-2009-222883.