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

Poster Communication Abstract – 2C.10

PRELIMINARY CHARACTERIZATION OF THE *LOTUS JAPONICUS* NITRATE TRANSPORTER GENE FAMILIES

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Transport, signalling, N metabolism, symbiosis

Nitrate availability may strongly affect the plant developmental programs and in particular the root architecture. Nitrate can act either as a nutrient by affecting systemically the plant nutritional status through its assimilation process, and as a signal by affecting locally root development through specific signaling pathways. Leguminous plants are capable to perform a unique symbiotic interaction with soil bacteria of the genus rhizobia having as final goal the fixation of the atmospheric nitrogen (N). N fixation occurs into a new root organ, the nodule, where bacteria find a perfect environment to catalyze the N reduction to ammonia. The nodule organogenesis program is triggered by bacteria compounds, the Nodulation factors (Nod factors) secreted in the rhizosphera in response to excreted plant flavonoids. High nitrate concentration is known to strongly inhibit the nodule organogenesis program and the signaling pathway involved in the long distance process governing this type of control has been only recently started to be elucidated.

In higher plants, two types of nitrate transporters NRT1 and NRT2, have been identified. In Arabidopsis there are 53 *NRT1* genes and 7 *NRT2* genes. A complete characterization has been performed only for a few members of the nitrate transporter families and in the case of AtNRT1.1 and AtNRT2.1, an involvement in either uptake and signalling functions have been reported. We started a molecular characterization of the NRT1 and NRT2 gene families in the model legume *Lotus japonicus*. The observed response in terms of gene expression to different biotic and abiotic factors allowed a discrimination between different gene categories that may be involved in different functions.