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

Poster Communication Abstract – 9.30

CYTOKININS-AUXIN DEPENDENT MOLECULAR MECHANISMS NECESSARY FOR THE STEM CELL NICHE MAINTENANCE IN THE *ARABIDOPSIS THALIANA* ROOT MERISTEM

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Root Meristem Mainteinance, Stem Cell Niche, Cytokinin-Auxin crosstalk, Scarecrow

Understanding the molecular mechanisms through which plant meristems are maintained is a central question in developmental biology. In the root of *Arabidopsis thaliana*, stem cells in the apical region of the meristem self-renew and produce daughter cells that differentiate in the distal meristem transition zone. To ensure root growth, the rate of cell differentiation must equal the rate of generation of new cells. Cell differentiation takes place in the transition zone that is localized in the distal part of the root meristem, but must be synchronized and balanced with division of the stem cells that are localized in the apical part of the meristem. We have previously shown that maintenance of the *Arabidopsis* root meristem size - and consequently root growth - is controlled by the interaction between two hormones at the meristem transition zone: cytokinins, which promote cell differentiation, and auxin, which promotes cell division, but it is still unknown how the cytokinin/auxin interaction maintains a balance between cell differentiation at the transition zone and cell division in the stem cell niche. Here we show that SCARECROW (SCR) maintains stem cell activity repressing cytokinin-mediated differentiation input in the stem cell niche through down-regulation of the cytokinin-responsive transcriptional regulator ARR1 thus controlling root meristem size.