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Poster Abstract – D.12

GENETIC DISSECTION OF SHOOT DEVELOPMENT IN MAIZE

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The isolation of genes affecting plant shoot formation is an important prerequisite for understanding the logic of plant development as well as for manipulating plant architecture. To this aim, maize transpositional mutagenesis has been adopted in our laboratory and has led to the isolation of different developmental mutants that are currently under study. Two of them, *shootmeristemless* (*sml*) and *fused leaves* (*fdl*), are presently described. Their locations, on the long arm of chromosome 10 and chromosome 7 respectively, have been established by traditional B-A translocation mapping and subsequently by linkage analysis with visible, as well as molecular, markers.

The *sml* gene is a recessive mutation affecting shoot apical meristem maintenance and lateral organ formation. Its introgression in different genetic backgrounds has highlighted the epistatic interaction between *sml* and the unlinked *distorted growth* (*dgr)* locus. Seeds homozygous for both *sml* and *dgr* loci have a shootless phenotype whereas *Dgr/-sml/sml* seeds produce plants with altered fillotaxis and abnormal leaf morphogenesis. Microscopy analysis of young dgr primordia will be presented showing that the mutation does not interfere with epidermis formation although cell shape is less regular than in the wild-type.

The *fdl* mutation confers a pleiotropic phenotype to the maize plant, which is specifically confined to the juvenile phase. The lack of a regular coleoptile opening that in normal development occurs after germination, is one of the fdl specific traits that we are presently investigating, for its putative relationship with the programmed cell death (PCD) process. We will present preliminary data on the cloning of the *fdl* gene along with a description of the strategy we have undertaken for the isolation of novel alleles. They will constitute proof for the gene identity and will provide new genetic material suitable for functional studies.