Proceedings of the LXVI SIGA Annual Congress
Bari, 5/8 September, 2023
ISBN: **978-88-944843-4-2**

Poster Communication Abstract – 1.31

GENETIC CONTROL OF POST-ZYGOTIC REPRODUCTIVE BARRIER IN INTERPLOIDY HYBRIDS

GABRIELI F.*, ZUMAJO-CARDONA C.**, CAVALLERI A.**, ALBERTINI E.*, EZQUER GARIN J.**, COLOMBO L.**

*) Università degli Studi di Perugia
**) Università degli Studi di Milano

triploid block, postzygotic barrier, seed development

In angiosperms, the seed is formed by three parts: the external seed coat, a tissue of maternal origin, the embryo that derives from the zygote division, and the endosperm, a triploid tissue deriving from the fertilization of the central cell in the embryo sac. For proper seed development, crosstalk between the three tissues is required.

In many angiosperm species, hybridization between individuals with an unbalanced ploidy level is avoided by a postzygotic barrier, called triploid block, which results in defective development of the seed and formation of non-viable seeds; seeds resulting from a maternal excess are smaller and seeds resulting from a paternal excess are bigger in size, however, this barrier can be bypassed, constituting one of the main mechanisms of speciation.

Being able to selectively regulate triploid block could result in a potential method to facilitate the production of triploid accessions of high socio-economic interest for agriculture and crop improvement.

Here we focus on a gene, *TRANSPARENT TESTA 8* (*TT8*), mainly expressed in the endothelium, and well known for its function in flavonoid biosynthesis in the seed coat. Interestingly, in the absence of functional maternal *TT8*, unbalanced crosses with paternal contribution excess result in viable seeds. To better understand what the mechanisms by which *TT8* regulates triploid block are, we have performed transcriptomic analysis on *Arabidopsis thaliana* Columbia-0 seeds resulting from balanced and unbalanced crossings either with or without the functional maternal *TT8*

allele (i.e., 2x X 2x; 2x X 4x; *tt8* 2x X 2x; *tt8* 2x X 4x). We have performed morphological characterization using fluorescence confocal microscopy. The obtained resultes will be presented and discussed.