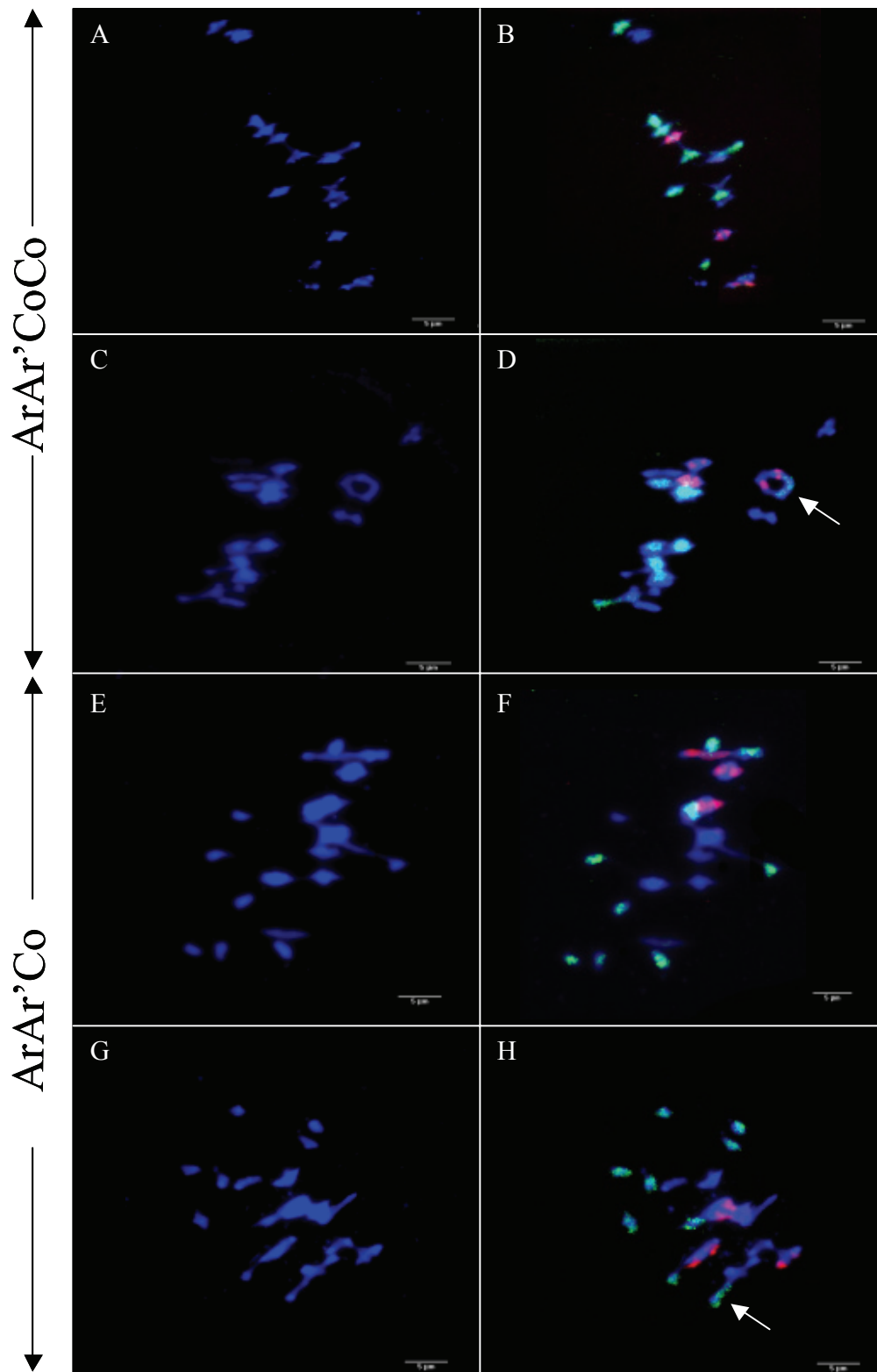


Supplemental Figure 1: Representative examples of Meiosis I in pollen mother cells of the diploid, allotetraploid and allotriploid hybrids.

DAPI staining of the diploid hybrid ArAr', (A-F) the allotetraploid hybrid ArAr'Co (G-I) and the allotriploid hybrid ArAr'CoCo (J-L) pollen mother cells during meiosis.

Meiotic behaviour of the diploid hybrid: (A) zygotene, showing local synapsis initiation (arrows), (B) pachytene, showing complete synapsis (C) diplotene, (D, E) diakinesis with ten bivalents (six and five ring bivalents, respectively; arrows), (F) metaphase with ten bivalents (4 bivalents are held by one chiasma and the remaining six are held by two chiasmata). Meiotic behaviour of the allotetraploid hybrid: (G) pachytene-like stage; arrows indicate multiple alignments; (H) spread and (I) squashed diakinesis; arrows show multivalents and asterisks show bivalents with an abnormal shape. Meiotic behaviour of the allotriploid hybrid: (J) pachytene-like stage, arrows point to synapsed chromosomes and squares indicate unsynapsed chromosomes; (K, L) early and late squashed diakinesis, asterisks show some bivalents with intimately linked chromosomes and triangles indicate some stretched univalents. Bar, 10 μ m.

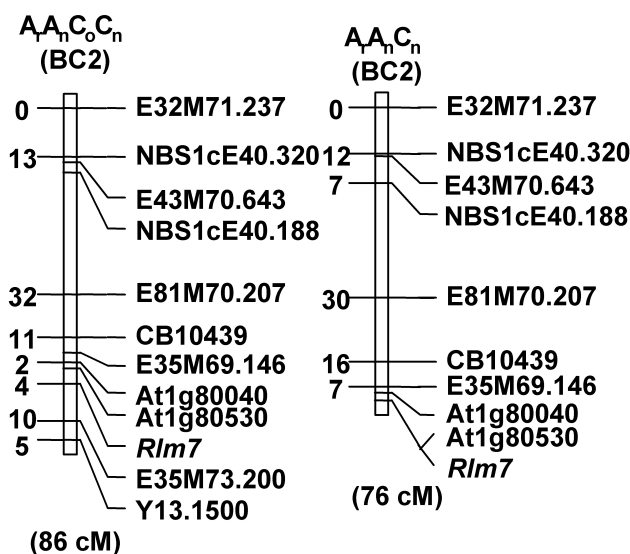


Supplemental Figure 2: ‘BAC-FISH analyses of pollen mother cells (PMC) in metaphase I in the ArAr’CoCo and ArAr’Co hybrids.

Chromosomes were stained with DAPI (blue) and FISH was carried out using two BACs that identify three pairs of A chromosomes (red) and all the C chromosomes (green).

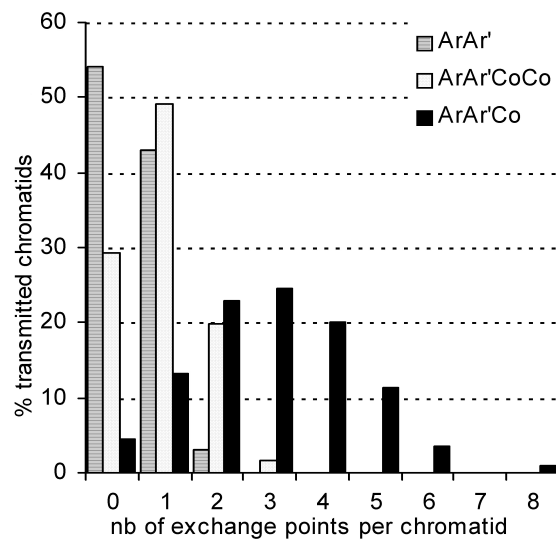
Genome origin (A vs. C) of the chromosomes involved in MI structures of the ArAr’CoCo hybrid: (A, B) are representative for the PMCs with ten AA bivalents and nine CC bivalents as expected; (C, D) show a cell with nine AA bivalents, eight CC bivalents and one AACC quadrivalent (arrow).

Genome origin (A vs. C) of the chromosomes involved in MI structures in the ArAr’Co hybrid: (E, F) are representative of the most observed configuration with ten AA bivalents and nine C univalents, (G, H) show a PMC with eight C univalents, one A univalent, nine AA bivalents and one AC bivalent (arrow).



Supplemental Figure 3: Maps of the A7 linkage group in BC2 progenies of the allotriploid (ArAnCn) and allotetraploid (ArAnCoCn) hybrids.

Genetic distances are expressed in cM, and BC2 progenies were produced from two 2n=38 BC1 offspring from among the progenies of the ArAnCn and ArAnCoCn hybrids, respectively.



Supplemental Figure 4. Number of exchange points per chromatid transmitted from the hybrids to their progenies.

SUPPLEMENTAL TABLE

Supplemental Table 1. Comparison of meiotic configurations observed at metaphase I between the allotriploid and allotetraploid hybrids

Hybrids	# PMCs	I ^A	I ^C	II ^{AA}	II ^{CC}	II ^{AC}	III ^{AAC}	IV ^{AACC}
A _r A _r C _o C _o	20	0.3 [0-2]	0	9.6 [8-10]	8.85 [8-9]	0.1 [0-2]	0	0.15 [0-2]
A _r A _r C _o	22	0.32 [0-2]	8.09 [6-9]	9.54 [8-10]	0.18 [0-1]	0.5 [0-2]	0.05 [0-1]	0

I^A and I^C indicate univalents belonging to the A and C genomes, respectively; II^{AA} and II^{CC} indicate bivalents formed between a pair of A or a pair of C chromosomes, respectively; II^{AC} indicates bivalents formed between A and C chromosomes ; III^{AAC} indicates trivalents formed between a pair of A chromosomes and one C chromosome ; IV^{AACC} indicates quadrivalents formed between A and C chromosome
 [] indicates the range of variation.