Homeologous Recombination is Captured in the Nascent Synthetic Allotetraploid [*A. ipaensis* x *A. correntina*]$_{4x}$ and its Derivatives

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Wild introgression from diploid species provides the opportunity to broaden the gene pool of cultivated peanut for disease resistance and quality improvement. However, the genome stability and recombination of newly synthesized allotetraploids is not well characterized. A new interspecific hybrid *A. ipaensis* x *A. correntina* was made and produced fertile progenies after chromosome doubling via colchicine treatment. Selfed progenies of the new allotetraploid, and F_1 hybrids and F_2 progenies from the [*A. ipaensis* x *A. correntina*]$_{4x}$ by *A. hypogaea* crosses were genotyped by the Axiom_Arachis version 2 SNP array. Homeologous exchange between the *A. ipaensis* and *A. correntina* sub-genomes was observed in the S_0 generation and segregation of recombined segments followed Mendelian inheritance among the S_1 progenies. New events of homeologous exchange were found in the S_1 generation. The genomic region with segmental recombination was found to segregate in the F_1 hybrids between the [*A. ipaensis* x *A. correntina*]$_{4x}$ and *A. hypogaea*. Segregation of this region among the F_2 progenies followed a disomic recombination pattern. Yet, new events of segmental recombination were found in the F_1 hybrids as well as the F_2 progenies. From the breeding perspective, sub-genome instability could be a double-edged sword since desirable traits from the wild species may be either lost or fixed across sub-genomes during generation advance.