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Monitoring Ds transposition in the soybean genome

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The maize Ac/Ds transposon system was introduced into soybean as a means to create random activation tags in the genome. Towards this goal we assembled a T-DNA element that carries the cassava vein mosaic virus promoter (CaVMV), delineated by Ds. The binary vector harboring this T-DNA element is designated pPTN999. To estimate germinal transposition frequencies the transgenic allele in a set of pPTN999 events was mapped, and subsequently stacked with an Ac transposase cassette under control of the 35s CaVMV promoter. Genotyping of derived F₂ populations revealed an estimated Ds germinal transposition frequency of approximately 3%, with most residing in unlinked locations relative to the original mapped locus. We have identified 277 germinal transpositions to date of which 156 have been mapped via a TAIL PCR strategy to capture junction fragments. Moreover, 45 independent events out of approximately 400 soybean events originally developed that carry the T-DNA element from pPTN999 were also mapped via TAIL PCR. We are currently developing more throughput genotyping platforms as a means to identify and map Ds transpositions and the remaining transgenic alleles which reside in the pPTN999 events using Oxford Nanopore sequencing technology.