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New finding of hybrid Human Endogenous Retroviral HERV-9/IP10FH elements and reexamination of hybrid HERV-H/E elements

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Use the Repeatmasker program, a new hybrid human endogenous retroviral family (HERV-9/IP10FH) from human genome was identified and analysed. The HERV-IP10FH family encoded the env protein only is a non-autonomous endogenous retrovirus family. Hybrid family of HERV-9/IP10FH showed structure of LTR(9)-gag(9)-pol(9)/env(IP10FH)/LTR(9) with the size of 6.3-8.6kb. The hybrid HERV elements showed deletion event in LTR elements on human chromosomes 4, 5, and 6 with the size of 2.5-6.5kb, whereas complete structural forms were appeared on human chromosomes 1, 2, 4, 8, 10, 19, and Y. The HERV-9/IP10FH hybrid family seems to be generated by homologous recombination of some specific sequences 'AAGGGGAAGGAGA' near the boundary of their location. We also analysed HERV-H/E hybrid elements. The hybrid sequences contained structure of LTR(H)-gag(H)-pol(H)/gag(E)-pol(E)-env(E)-LTR(E)/gag(E)pol(H)-env(H)-LTR(H), indicating that HERV-E element truncated with 3' LTR element has been inserted into the structural pol gene of HERV-H element. Taken together, we suggest that bioinformatic analyses of the hybrid HERV could be contribute for understanding INDEL (insertion/deletion) mechanism.