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Molecular Cloning and Phylogeny of the Human Endogenous Retrovirus HERV-W LTR Family in cDNA Library of Human Fetal Brain

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Abstract

Long terminal repeats (LTRs) of the human endogenous retrovirus (HERV) have been found to be coexpressed with genes located nearby. It has been suggested that the LTR elements have contributed to the genetic variation of human genome connected to various diseases. Recently, HERV-W family was identified in the cerebrospinal fluids and brains of individuals with schizophrenia. Using cDNA library derived from human fetal brain, we performed PCR amplification and identified seven new HERV-W LTR elements. Those LTR elements showed a high degree of sequence similarity (98~99%) with HERV-W LTR (AF072500). A phylogenetic tree obtained by the neighbor-joining method revealed that seven new HERV-W LTR elements (FB-1, 2, 4, 8, 9, 10, 12) were closely related to the AX000960, AF072504, and AF072506 from GenBank database. Our data suggest that several copy numbers of the HERV-W LTR elements are expressed in human fetal brain and may contribute to an understanding of biological function connected to neuropsychiatric diseases.