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Identification and Characterization of PERV Elements in Different Pig Genome

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Porcine endogenous retrovirus (PERV) released from pig cells is a main risk factor associated with xenotransplantation from pig to human. Overcoming the main obstacle for xenotransplantation, the character of PERV element must be fully understood. From now, PERV have been identified to have three classes : PERV-A, PERV-B, PERV-C. PERV-A and PERV-B have been reported to have a infection ability for specific human cell line. However, PERV-C could not replicate their genome in human cell line. Using bioinformatic tools, several PERV long terminal repeat (LTR) elements were identified and analyzed from Genbank database sequences. Various subtype of PERV LTR elements were analyzed by the bioinformatic tools. Some of PERV LTR elements show a highly conserved sequences and insertional polymorphism. We cloned different subtype of LTR elements and analyzed the expression pattern from Yorkshire, domestic pig, and domestic wild pig.

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Expression and Promoter Analysis of LTR Sequences in RNF19 Gene

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In many neurodegenerative diseases, the cytopathological hallmark is the presence of ubiquitylated inclusions consisting of insoluble protein aggregates. RNF19(ring finger protein 19) is a Parkinson's disease and ALS(amyotrophic lateral sclerosis) related gene which encode Dorfin, a RING-IBR(in between RING-fingers) type ubiquitin ligase(E3). From the NCBI database sequence analysis, two different RNF19 gene transcripts were identified. Interestingly, one of the transcripts was found to have a alternative transcript start sites supported by the MaLR(mammalian LTR-retrotransposons) element. The integration event of MaLR element between the original first and second exon of RNF19 gene could make a variant form for the diversification of RNF19 gene transcripts. RT-PCR analysis were conducted in different human normal tissues and tumor cell lines. The results of RT-PCR analysis indicated that MaLR-derived transcripts have a different sized alternative forms, and it has also promoter activity.