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THE UNUSUAL INFECTIOUS PATHOGEN, PRION

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Unconventional slow infectious agents cause among other things kuru, Creutzfeldt-Jacob disease, and Gerstmann-Sträussler-Scheinker syndromes in humans, as well as scrapie in sheep and similar spongiform encephalopathies of mink, and cow. In recent years, a key breakthrough in the study of these diseases was the discovery of abnormal fibrillar structures, scrapie associated fibrils, consistently present in cellular extracts from diseased brains caused by unconventional slow infectious agents but never in normal material. The next advance was the identification of a 27-30 kDa protease resistant protein (PrP) in infectious fractions. This molecule was later named prion protein. Subsequent studies showed that PrP 27-30 is derived from larger protein of Mr 33-35 kDa. At the same time the brains of normal and prion-infected animals were found to express similar levels of PrP mRNA and a protease-sensitive prion protein designated PrP^C. PrP^C is protease-sensitive, whereas PrP27-30 is the protease-resistant product of a 33-35 kDa disease-specific protein, designated PrP^{Sc}. PrP^{Sc} is encoded by a host chromosomal gene and identical sequences were deduced from genomic clones derived from DNA of uninfected persons. Most prion diseases are associated with the accumulation of PrP^{Sc} in the brain.

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THE ANALYSIS OF *ENV* GENE VARIATION OF HIV-1 ISOLATES IN KOREA

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To study the representative HIV-1 subtype and to determine the molecular epidemiology of HIV-1 spread in Korea, 41 HIV-1 isolates from Korean were examined by using Heteroduplex mobility assay which is a very rapid and convenient method to identify HIV-1 subtype and to characterize genetic diversity of HIV-1 isolates. 8 HIV-1 isolates from homosexual group were all subtype B. Among the 11 HIV-1 isolates from heterosexuals with Korean in Korea, 7 HIV-1 isolates were subtype B. On the other hand, 7 HIV-1 isolates from women transmitted from their husbands who were infected with HIV abroad showed various subtypes as 3 subtype B, 2A, 1C, and 1E respectively. HIV-1 isolates from heterosexuals with foreigners abroad were characterized as 4 subtype A, 8B, 1D, and 2E. Inter and intra-subtype nucleotide distances inferred by standard curve between HIV-1 subtype B isolates and reference HIV-1 DNAs showed about 25% and 10% respectively. However, 3 HIV-1 subtype E isolates were very close as 2.6%-4.5% with reference HIV-1 subtype E strain TH22. So, we suggest that representative HIV-1 subtype in Korea is subtype B, especially in homosexual group and heterosexual contact group in Korea. In contrast, at least 5 HIV-1 subtypes were transmitted in heterosexual contact group who had transmitted with foreigners abroad.