

## **Analysis of differentially expressed genes in iron-induced prion protein conversion**

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The conversion of the cellular prion protein (PrPC) to the protease-resistant isoform is the key event in chronic neurodegenerative diseases, including transmissible spongiform encephalopathies (TSEs). Increased iron in prion-related disease has been observed due to the prion protein-ferritin complex. Additionally, the accumulation and conversion of recombinant PrP (rPrP) is specifically derived from Fe(III) but not Fe(II). Fe(III)-mediated PK-resistant PrP (PrPres) conversion occurs within a complex cellular environment rather than via direct contact between rPrP and Fe(III). In this study, differentially expressed genes correlated with prion degeneration by Fe(III) were identified using Affymetrix microarrays. Following Fe(III) treatment, 97 genes were differentially expressed, including 85 upregulated genes and 12 downregulated genes ( $\geq 1.5$ -fold change in expression). However, Fe(II) treatment produced moderate alterations in gene expression without inducing dramatic alterations in gene expression profiles. Moreover, functional

grouping of identified genes indicated that the differentially regulated genes were highly associated with cell growth, cell maintenance, and intra- and extracellular transport. These findings showed that Fe(III) may influence the expression of genes involved in PrP folding by redox mechanisms. The identification of genes with altered expression patterns in neural cells may provide insights into PrP conversion mechanisms during the development and progression of prion-related diseases.

### **Speaker Biography**

Hee-Jong Woo Immunology VMD, Ph.D professor of faculty of veterinary medicine, Seoul National University since 1992. Has completed his Ph.D of Immunology at the University of Tokyo, Japan in 1987. His postdoctoral training was at the Division of molecular diseases, Department of Pediatrics, School of medicine, University of Pennsylvania, and was an instructor of Laboratory of cancer biology, Department of surgery, School of Medicine at the Harvard University. He provides presentations on topics related to the neurodegenerative diseases in brain. Expertise in all immunological field and special interest in prion biology and the inflammation of brain.

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