

# Identification and Cloning of Genes Associated with the Guinea Pig Skin Delayed-type Hypersensitivity Reaction

**Yoshiro Kobayashi**

*Faculty of Science, Toho University*

Although the cellular and molecular mechanisms underlying the delayed-type hypersensitivity (DTH) reaction have been intensively investigated, the functions of infiltrating leukocytes and skin resident cells in the elicitation phase of the DTH reaction are not completely understood. To gain more insight into the role of these cells in the DTH reaction, we performed differential display analysis aiming at identification of the genes showing elevated expression during the DNCB-induced guinea pig skin DTH reaction. About 250 cDNA fragments, each corresponding to the 3' end of a RNA species, were obtained through differential display analysis. Characterization of 50 of them led to the identification of 28 genes whose expression was elevated in the DNCB-induced DTH reactive tissue. Sequencing of the 28 cDNA fragments and homology search analysis demonstrated that 10 of them represented known genes, some of which, in particular elafin (an elastase inhibitor) and ferritin, are considered to play roles in the DTH reaction. The other 18 cDNA fragments are probably derived from unknown genes. Northern blot hybridization with the 18 cDNA fragments as probes revealed that the expression of these genes during the DTH reaction changed with different kinetics. Cloning of the cDNAs of two of these genes indicated that one is that for guinea pig tryptophanyl-tRNA synthetase, a protein recently found to be induced by IFN- $\gamma$  and upregulated during the late stages of mononuclear phagocyte maturation in vitro. Strong induction of the gene for tryptophanyl-tRNA synthetase during the DTH reaction suggests its involvement in the in vivo immune response.