THE HOMOLOGUE ANALYSIS BETWEEN CANINE THYMOCYTE ANTIGENS AND MOUSE T CELL SURFACE ANTIGENS IN mRNA LEVEL, AND AN ATTEMPT TO ANALYZE NUCLEOTIDE SEQUENCE OF THE cDNA CLONE ENCODING CANINE Thy-1.

Masaaki MURAKAMI

Department of Veterinary Surgery
Faculty of Veterinary Medicine
Hokkaido University, Sapporo 060, Japan

It is though there is genetical phylogenic homology in essential molecules beyond species. This homology is widely used in many biological studies, for example, human and mouse homologus molecules have been analyzed.

This study used RNA blot analysis to determine whether there was homology between the mRNA levels of canine thymocyte antigens and mouse T cell surface antigens. Several intact or fragmentary cDNA encoding mouse T cell surface antigens, Thy-1.2, L3T4, Lyt-2, and TCRβ, were used as probes. In mRNA of the canine thymocyte, all these probes were hybridized with canine homologous mRNA. The canine homologues were nearly the same as mouse mRNA, Thy-1.2; 1.8kb, L3T4; 2.5kb, Lyt-2; 1.8kb, and TCRβ; 1.8kb. Next, in order to isolate canine Thy-1 cDNA clones, a canine thymocyte cDNA library was made, and screened at low stringency with the full length mouse Thy-1.2 cDNA clone. Screening about 300,000 clones, 131 clones that hybridized to the mouse Thy-1.2 clone were isolated. One clone (pDThy1cA) with a longer insert (1.75kb) was obtained. From the RNA blot analysis result, it was thought that this clone had the full length canine Thy-1 insert.

At present, the restriction enzyme mapping had been completed, the shorter fragments ligated with M13phage DNA, and about 30% of thenucleotide sequence determined. But it is still necessary to determine the nucleotide sequence completely, and to analyze the detailed tissue distribution in mRNA level.

This study suggested that by using antigens, perhaps human or mouse antigens, the primary structures, of which have already determined, the homologous genes of many domestic animals can be isolated. Thus, by using proteins synthesized from the isolated genes, it should be possible to establish a simple method of making useful monoclonal antibodies.