

SIII-2-5

Development of Personal Computer Programs for Processing DNA Sequence Data

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Two computer programs for manipulating biological data have been developed. These programs, called SEQEDIT and SEQAID, are usable on the personal computer systems of MS-Windows which is the most popular operating system in Korea. SEQEDIT is an effective computer program for assembling DNA fragments. In the SEQEDIT program, a dynamic programming algorithm is applied to compute the maximal-scoring overlapping alignment between each pair of fragments. The performance tests of the program on fragment data from 18S rDNA sequencing projects produced satisfactory results. Another program, SEQAID, is a biological sequence editor and analysis program which is designed for the personal database of DNA and RNA sequences. It can read and write several sequence file formats such as GenBank, EMBL, PHYLIP, and CLUSTAL. It allows us to analyze sequences with easy hand edit and alignment features including colored bases and sliding. These programs may be useful to a person who has work of time with lots of sequences.

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Pathological Roles of Fas Ligand in Non-Lymphoid Tissues

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Fas, a cell surface receptor and member of the tumor necrosis factor receptor superfamily, induces apoptosis upon oligomerization by its ligand (Fas ligand). We know that Fas expression is widely distributed in many different cell types and tissues. In contrast, Fas ligand has been thought to be expressed only by cells of the lymphoid lineage, mainly T cells and NK cells. Is Fas ligand expressed in other cell types, and if so, what is its function in immune regulation? We have systematically screened human tissues by immunohistochemistry and found intriguing results, which have not been previously reported yet. These findings will be presented in terms of immune privilege and pathological roles. The distribution of constitutive Fas ligand expression in non-lymphoid tissues provide important clues to the understanding of pathogenesis of various diseases associated with apoptosis.