

MHCクラスIII遺伝子群の調節機構

メタデータ	言語: Japanese 出版者: 公開日: 2022-11-11 キーワード (Ja): キーワード (En): 作成者: メールアドレス: 所属:
URL	https://doi.org/10.24517/00067928

This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 3.0 International License.



1987 Fiscal Year Final Research Report Summary

Regulatory mechanisms for the MHC class III genes

Research Project

Project/Area Number

61480156

Research Category

Grant-in-Aid for General Scientific Research (B)

Allocation Type

Single-year Grants

Research Field

Immunology

Research Institution

Cancer Institute, Kanazawa University

Principal Investigator

TAKAHASHI Morinobu Cancer Institute, Kanazawa University, がん研究所, 教授 (80019877)

Project Period (FY)

1986 - 1987

Keywords

MHC class III / Complement C4 / Sex-limited protein / Transcriptional regulation / 転写調節 / CTIアッセイ

Research Abstract

Mouse C4 and Sex-limited protein (Slp) are encoded by two recently duplicated genes of the major histocompatibility complex III of the mouse. The availability of many expression variants for these genes among mouse strains makes them the attractive system in which the regulation of eukaryotic genes under developmental, hormonal and tissue specific control can be studied. We isolated and characterized cDNA and genomic DNA clones for these genes from several mouse strains which show interesting variation for the expression of C4 and slp. Our experimental results obtained by various molecular genetic techniques can be summarized as follows.

1. The mouse strains carrying H-2^k haplotype are characterized as low C4 producers. We measured C4 mRNA by Northern blotting and nuclear C4 RNA by nuclear run on assay using the hepatocytes from high C4 producing mouse(B10) and low C4 producing mouse(B10.BR). Furthermore we tested the 5'flanking regions of the C4 genes from these strains for their transcriptional regulatory activity with transfected cells. The results clearly showed that the low C4 biosynthesis is mainly controlled at the posttranscriptional and pretranslational level.
2. To elucidate the molecular basis underlying the difference in the mode of expression of C4 gene(constitutional) and Slp gene(testosterone induced), we compared the nucleotide sequences of these two genes isolated from FM strain. Furthermore we tested the 5'flanking region fragments for transcriptional regulatory activity using CAT assay in transfected cells. We identified the functional domains in the regions of these genes that appear to explain the difference in the gene expression of the C4 and Slp genes.
3. We isolated and characterized all of C4-related genes from the cosmid library of C3H.W7 strain that shows an extraordinary mode of expression of

Slp(constitutional expression). We found the three of apparent Slp genes indeed consisting of the C4-derived 5' half and Slp-derived 3' half. By comparing their nucleotide sequences with those of C4 and Slp genes, we concluded that these recombinant genes are derived by multiple cross over in the central portions of the gene.▲ Less

Research Products (6 results)

All Other

All Publications (6 results)

- [Publications] 野中勝, 中山耕造, 柳大烈, 高橋守信: The Journal of Immunology. 136. 2989-2993 (1986) ▼
- [Publications] 野中勝, 木村博, 柳大烈, 横山茂, 中山耕造, 高橋守信: Proc. Natl. Scad. Sci. USA. 83. 7883-7887 (1986) ▼
- [Publications] 中山耕造, 野中勝, 横山茂, 柳大烈, サンガ・ベッタナキッサクン, 高橋守信: The Journal of Immunology. 138. 620-627 (1987) ▼
- [Publications] Nonaka,M., Nakayama,K., Yu,D.Y and Takahashi,M: "Complete nucleotide and derived amino acid sequences of sex-limited protein(Slp), nonfunctional isotype of the fourth component of mouse complement" The Journal of Immunology. 136. 2989-2993 (1986) ▼
- [Publications] Nonaka,M., Kimura,H., Yu,D.Y., Yokoyama,S., Nakayama,K and Takahashi,M.: "Identification of the 5'-flanking regulatory region responsible for the difference in transcriptional control between mouse complement C4 and Slp genes" Proc. Natl. Acad. Sci. U S A. 83. 7883-7887 (1986) ▼
- [Publications] Nakayama,K., Nonaka,M., Yokoyama,S., Yu,D.Y., Pattanakitsakul,S. and Takahashi,M.: "Recombination of two homologous MHC class III genes of the mouse(C4) and Slp) that accounts for the loss of testosterone dependence of sex-limited protein expression" The Journal of Immunology. 138. 620-627 (1987) ▼

URL: https://kaken.nii.ac.jp/report/KAKENHI-PROJECT-61480156/614801561987kenkyu_seika_hokoku

Published: 1989-03-29