Serial analysis of gene expression (SAGE) in human stomach cancer

2000 Fiscal Year Final Research Report Summary

SERIAL ANALYSIS OF GENE EXPRESSION (SAGE) IN HUMAN STOMACH CANCER

Research Project

Project/Area Number

11671218

Research Category

Grant-in-Aid for Scientific Research (C)

Allocation Type

Single-year Grants

Section

一般

Research Field

Digestive surgery

Research Institution

KANAZAWA UNIVERSITY

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Project Period (FY)

1999 – 2000

Keywords

STOMACH CANCER / GENE EXPRESSION / SERIAL ANALYSIS OF GENE EXPRESSION (SAGE)

Research Abstract

The purpose of this project is to conduct serial analysis of gene expression (SAGE) for human stomach cancer. Applying SAGE, that was originally developed in the tissue culture system, for global analysis of gene expression in clinical stomach cancer requires purification of high quality mRNA from tissue samples that contain minimal amount of stromal cells. In 1999, prior to examine tissue samples, we analyzed by SAGE for gene expression in a cancer cell line, KKLS that was established from undifferentiated stomach carcinoma in our institute. This preliminary analysis could quantitatively identify 2969 unique genes expressed among 5182 SAGE tags obtained from the cell line, with a linker ratio of 1.02%. Among highly expressed genes were included mitochondrial genes and several unknown genes unregistered to the Gene

Bank. We assume that the gene expression profile of KKLS would be fundamental for further analysis of gene expression in human stomach cancer showing different histological types.
In 2000, human stomach cancer tissues has been subjected to SAGE.During this analysis we have had difficulty in preparation of highly purified mRNA from the surgical materials, which was later overcome by modification of our method for extraction and purification of mRNA.Similar to the gene expression pattern in KKLS cell line, unknown nuclear genes and mitochondrial genes were quantitatively detected in the library of SAGE tags yielded from human stomach cancer samples. Recent reports showing frequent genetic alteration in mitochondrial DNA suggest an involvement of altered expression of mitochondrial genes in development and progression of stomach cancer. Although we could not complete this project in the given term (1999 to 2000), SAGE for human stomach cancer is being in progress in our laboratory, targeting nuclear as well as mitochondrial genes.

Research Products (12 results)

All | Other

All | Publications

[Publications] Minamoto T,Mai M,Ronai Z.: "Environmental factors as regulators and effectors of multistep carcinogenesis."Carcinogenesis. 20. 519-527 (1999)

[Publications] Minamoto T,Mai M,Ronai Z.: "K-ras mutation : early detection in molecular diagnosis and risk assessment of colorectal, pancreas and lung cancers - a review."Cancer Detect Prev. 24. 1-12 (2000)

[Publications] Buschmann T,Minamoto T, et al.: "Analysis of JNK, Mdm2 and p14ARF contribution to the regulation of mutant p53 stability."J Mol Biol. 295. 1009-1021 (2000)

[Publications] Spiegelman VS,Minamoto T, et al.: "Wnt/B-catenin signaling induces the expression and activity of βTrcp ubiquitin ligase receptor."Mol Cell. 5. 877-882 (2000)

[Publications] Ougolkov A,Minamoto T, et al.: "Altered expression of β-catenin and c-erbB-2 in early gastric cancer."J Exp Clin Cancer Res. 19. 349-355 (2000)

[Publications] Hirano K,Minamoto T,: "Altered expression of p53 and p27 proteins, alone or combined, as a predictor of metastatic potential in early invasive carcinomas of ……."Cancer Detect Prev. 24. 343-355 (2000)

[Publications] Minamoto T, Mai M, Ronai Z.: "Environmental factors as regulators and effectors of multistep carcinogenesis"Carcinogenesis. 20(4). 519-527 (1999)

[Publications] Minamoto T, Mai M, Ronai Z.: "K-ras mutation : early detection in molecular diagnosis and risk assessment of colorectal, pancreas and lung cancers-a review"Cancer Detec Prev. 24(1). 1-12 (2000)

[Publications] Buschmann T, Minamoto T, Wagle N, Fuchs SY, Adler V, Mai M, Ronai Z.: "Analysis of JNK, Mdm2 and p14ARF contribution to the regulation of mutant p53 stability"J Mol Biol. 295. 1009-1021 (2000)

[Publications] Spiegelman VS, Slaga TJ, Pagano M, Minamoto T, Ronai Z, Fuchs SY.: "Wnt/β-catenin signaling induces the expression and activity of βTrCP ubiquitin ligase receptor"Mol Cell. 5. 877-882 (2000)

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[Publications] Hirano K, Minamoto T.: "Altered expression of p53 and p27 proteins, alone or combined, as a predictor of metastatic potential in early invasive carcinomas of colon and rectum : a comparative clinicopathologic and molecular analysis"Cancer Detec Prev. 24(4). 343-355 (2000)

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