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Nagata et al.

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[54] **DNA ENCODING GRANULOCYTE COLONY-STIMULATING FACTOR RECEPTOR AND PROTEIN THEREOF**

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[73] Assignee: **Osaka Bioscience Institute**, Japan

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C07K 14/715

[52] **U.S. Cl.** **530/350**; 536/23.1; 536/23.5;
435/69.1; 530/351

[58] **Field of Search** 435/69.1, 240.2,
435/252.3, 320.1; 530/350, 351; 536/23.5,
23.52

[56] **References Cited**

U.S. PATENT DOCUMENTS

4,675,285 6/1987 Clark et al. 435/172.3

5,422,248 6/1995 Smith et al. 435/69.1

FOREIGN PATENT DOCUMENTS

WO91/05046 4/1991 European Pat. Off. .

OTHER PUBLICATIONS

Yamasaki et al, Science, 241, 1988, pp. 825-828.
Sims et al, Science, 241, 1988, pp. 585-589.
Uzumaki et al, PNAS, 86, 1989, pp. 9323-9326.
Cosman et al, 1990, vol 2(1) pp. 1-31.
Larsen, A. et al., J. Exp. Med., The Rockefeller Univ. Press. vol. 172 "Expression cloning of a human granulocyte colony-stimulating factor receptor: a structural mosaic of hematopoietin receptor, immunoglobulin, and fibronectin domains", pp. 1559-1570 (Dec. 1990).
Park, L. S. et al., Blood, vol. 74, No. 1, "Interleukin-3, GM-CSF, and G-CSF, receptor expression on cell lines and primary leukemia cells: receptor heterogeneity and relationship to growth factor responsiveness" pp. 56-65, (Jul. 1989).

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[57] **ABSTRACT**

A murine G-CSF receptor cDNA was cloned from a cDNA library prepared from mouse myeloid leukemia cells and the structure analyzed. A human G-CSF receptor cDNA was then cloned from cDNA libraries constructed from human placenta cells or human histocytic lymphoma cells using the murine G-CSF receptor cDNA as a probe, the structure analyzed and expressed in a host cell transformed with it. The stable production of human G-CSF receptor can be accomplished by transforming a host cell with the cloned G-CSF receptor cDNA and making the transformant express the G-CSF receptor.

5 Claims, 21 Drawing Sheets

FIG. 2A

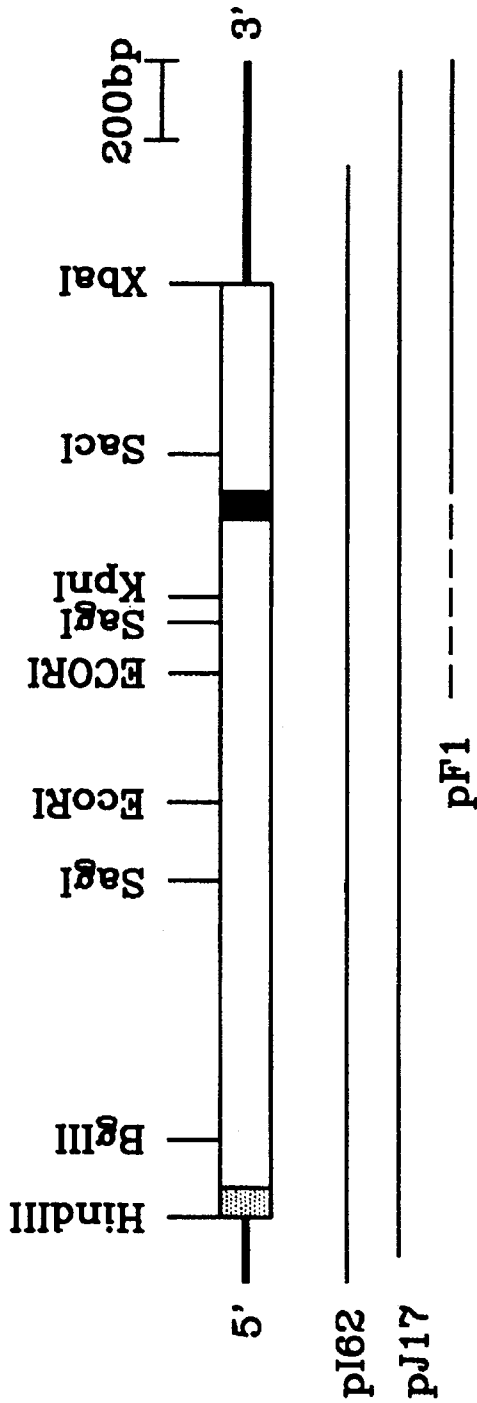
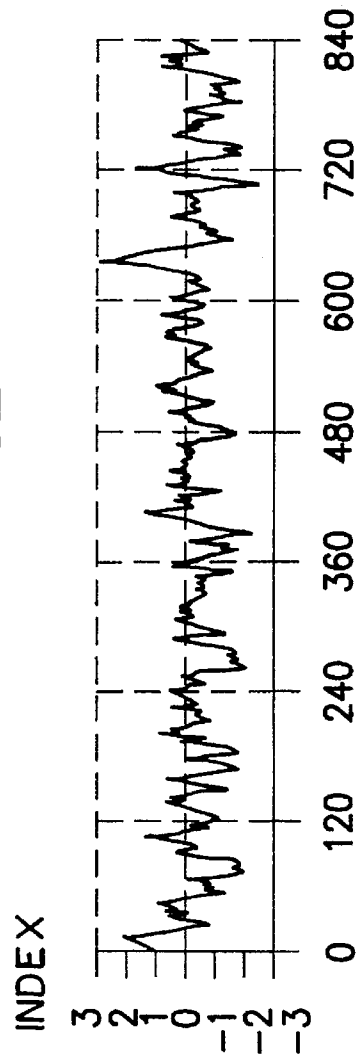


FIG. 2B



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