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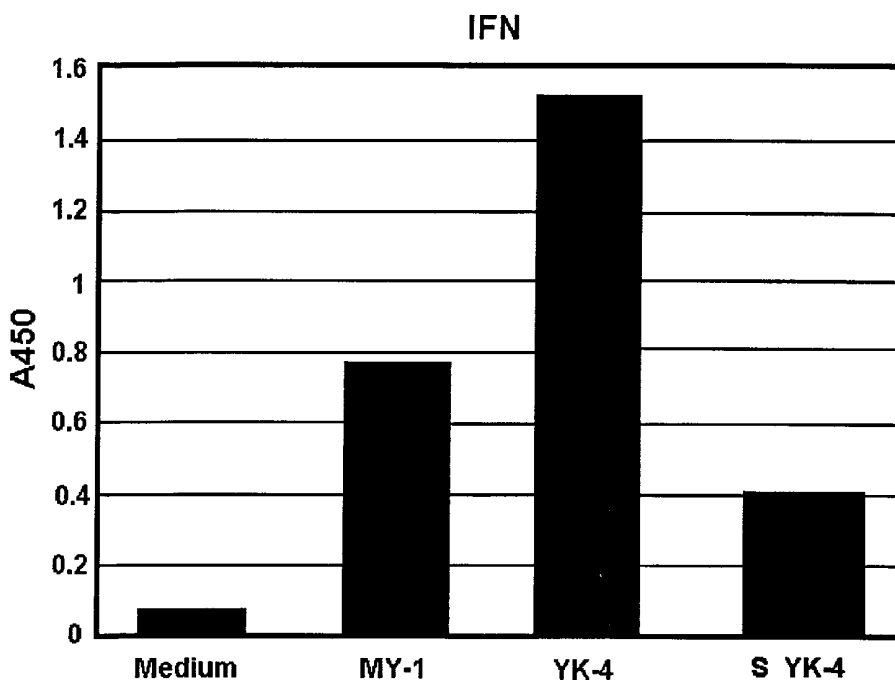
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(54) Title: DNA PALINDROME - OLIGOGUANYLIC ACID COMPOSITIONS AND USES THEREOF



(57) Abstract: The present invention provides an oligonucleotide for stimulating an immune response in a mammal. The oligonucleotides of the invention are palindromic and flanked by up to 11 guanylic acid residues. The immune response is stimulated by administering the oligonucleotides of the invention and inducing the secretion of cytokines.

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 01/20443

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C07H21/00 A61K31/70 A61P37/04

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, CHEM ABS Data, EMBL

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 98 18810 A (UNIV IOWA RES FOUND ;KLINE JOEL N (US); KRIEG ARTHUR M (US)) 7 May 1998 (1998-05-07) the whole document; in particular claim 26: GGGGTCAACGTTGAGGGGGG, page 25, lines 16-25; page 46, Seq. Id. No. 12 and No. 51; page 53, ODN 1668, ODN 1758; ---	1-16
X	WO 98 37919 A (UNIV IOWA RES FOUND) 3 September 1998 (1998-09-03) the whole document; in particular: claim 5, page 5, line 15 - page 8, line 7 ---	1-16
X	WO 99 58118 A (CPG IMMUNOPHARMACEUTICALS GMBH ;CPG IMMUNOPHARMACEUTICALS INC (US)) 18 November 1999 (1999-11-18) the whole document; in particular page 66, Seq. Id. No. 52 --- -/--	1-16



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

* Special categories of cited documents :

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O document referring to an oral disclosure, use, exhibition or other means

P document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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& document member of the same patent family

Date of the actual completion of the international search

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International Application No

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 98 52581 A (WU TONG ;DAVIS HEATHER L (CA); OTTAWA CIVIC HOSPITAL LOEB RES (CA)) 26 November 1998 (1998-11-26) the whole document; in particular page 64, ODN 1628 and ODN 1585; claim 8 ---	1-16
X	EP 0 468 520 A (MITSUI TOATSU CHEMICALS) 29 January 1992 (1992-01-29)	1,3,5-8, 14,16
Y	the whole document, in particular: page 4, lines 6-8; page 5, lines 29-32; claims 12,18,20,21; pages 22-44: sequences 1,3,6,8-12,14-20-23,26-32,35-38,48-51,53-6 6 ---	1-16
X	WO 98 16247 A (CARSON DENNIS A ;RAZ EYAL (US); ROMAN MARK (US); UNIV CALIFORNIA () 23 April 1998 (1998-04-23)	1,3,5-8, 14,16
Y	the whole document; in particular: page 10, lines 22-24; page 36, line 10 ---	1-16
X	WO 94 08053 A (IMBACH JEAN LOUIS ;BROWN DRIVER VICKIE L (US); VICKERS TIMOTHY A () 14 April 1994 (1994-04-14)	1-13
Y	the whole document, in particular: page 10, line 21, TTAGGG; page 20: 4664,4671,4672,4692; page 26: 3196 ---	1-16
X	"JOURNAL OF IMMUNOLOGY, THE WILLIAMS AND WILKINS CO. BALTIMORE, US" JOURNAL OF IMMUNOLOGY, THE WILLIAMS AND WILKINS CO. BALTIMORE, US, vol. 148, no. 12, 15 June 1992 (1992-06-15), pages 4072-4076, XP002098020 ISSN: 0022-1767	1,3,5-8, 14,16
Y	the whole document, in particular: abstract; Table 1: BCG-A4a, HUM-GAC, HUM-AAT, HUM-GCG; Table VI, M2a-AAC ---	1-16
Y	SONEHARA K ET AL: "HEXAMER PALINDROMIC OLIGONUCLEOTIDES WITH 5'-CG-3' MOTIF(S) INDUCE PRODUCTION OF INTERFERON" JOURNAL OF INTERFERON AND CYTOKINE RESEARCH, MARY ANN LIEBERT, NEW YORK, NY, US, vol. 16, no. 10, October 1996 (1996-10), pages 799-803, XP000863569 ISSN: 1079-9907 Tables 1 and 2; page 800, column 2, line 1 -----	1-16

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 01/20443

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

Although claims 6-13 are directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT
Information on patent family members

Application No
PCT/US 01/20443

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