



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification⁶ : C12N 15/11, A61K 31/70, C07H 21/00	A3	(11) International Publication Number: WO 99/09154 (43) International Publication Date: 25 February 1999 (25.02.99)
(21) International Application Number: PCT/US98/16345 (22) International Filing Date: 5 August 1998 (05.08.98) (30) Priority Data: 08/914,827 19 August 1997 (19.08.97) US (71) Applicant: HYBRIDON, INC. [US/US]; 155 Fortune Boulevard, Milford, MA 01757 (US). (72) Inventor: AGRAWAL, Sudhir; 61 Lamplighter Drive, Shrewsbury, MA 01545 (US). (74) Agents: KERNER, Ann-Louise et al.; Hale and Dorr LLP, 60 State Street, Boston, MA 02109 (US).		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i> (88) Date of publication of the international search report: 6 May 1999 (06.05.99)
(54) Title: NOVEL HIV-SPECIFIC SYNTHETIC OLIGONUCLEOTIDES AND METHODS OF THEIR USE (57) Abstract Disclosed are synthetic oligonucleotides having a nucleotide sequence specifically complementary to nucleotides 324 to 345 of a conserved <i>gag</i> region of the HIV-1 genome, the oligonucleotide consisting of 21 nucleotides which are linked via phosphorothioate internucleotide linkages. Also disclosed are methods for inhibiting and treating HIV-1 and HIV-2 infection.		

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 98/16345

A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 C12N15/11 A61K31/70 C07H21/00

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)

IPC 6 C12N A61K C07H

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)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 95 18813 A (HYBRIDON INC) 13 July 1995 see page 26 SEQ ID No 7 is identical to SEQ ID No 4 of the present application ---	1,13-15
Y	ZHAO Q ET AL: "EFFECT OF DIFFERENT CHEMICALLY MODIFIED OLIGODEOXYNUCLEOTIDES ON IMMUNE STIMULATION" BIOCHEMICAL PHARMACOLOGY, vol. 51, no. 2, 26 January 1996, pages 173-182, XP000610208 see abstract see figures 2,3 ---	1-39
Y	WO 97 06662 A (HYBRIDON INC) 27 February 1997 see abstract; figure 1 see examples ---	1-39
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☒ 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
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Date of the actual completion of the international search

3 March 1999

Date of mailing of the international search report

16/03/1999

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 98/16345

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,X	CHEMICAL ABSTRACTS, vol. 128, no. 13, 30 March 1998 Columbus, Ohio, US; abstract no. 151268, METELEV, V. G. ET AL: "HPLC of oligodeoxyribonucleoside phosphorothioates" XP002095237 see abstract -& BIOORG. KHIM. (1997), 23(9), 742-746 CODEN: BIKHD7;ISSN: 0132-3423, September 1997, XP002095236 see page 742, right-hand column, bottom line -----	1,13-15
P,X	DATABASE CAS REGISTRY Registry number 193635-63-1, 5 September 1997 XP002095238 see the whole document -----	1-8,10, 14,15

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 98/16345

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:
Remark: Although claims 16-30, 37-39 (all completed) and 34-36 (partially, as far as in vivo methods are concerned), 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

International Application No

PCT/US 98/16345

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9518813 A	13-07-1995	US 5627277 A AT 159947 T AU 1449395 A CA 2177958 A DE 69500988 D EP 0738272 A JP 9507574 T	06-05-1997 15-11-1997 01-08-1995 13-07-1995 11-12-1997 23-10-1996 29-07-1997
WO 9706662 A	27-02-1997	US 5652356 A AU 6953896 A US 5773601 A	29-07-1997 12-03-1997 30-06-1998