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C07H 19/207 (2006.01) **C07H 19/044** (2006.01)
A61K 31/7072 (2006.01) **C07H 19/052** (2006.01)
A61P 31/14 (2006.01) **C07H 19/10** (2006.01)
C07F 9/24 (2006.01) **C07H 19/24** (2006.01)
C07F 9/655 (2006.01) **A61K 31/664** (2006.01)
C07F 9/6558 (2006.01) **A61K 31/7056** (2006.01)
C07F 9/6561 (2006.01)

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(81) **Designated States** (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

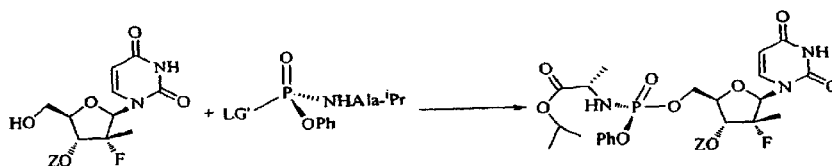
(84) **Designated States** (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report (Art. 21(3))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

(88) **Date of publication of the international search report:**
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(54) **Title:** NUCLEOSIDE PHOSPHORAMIDATES



(57) **Abstract:** Disclosed herein are nucleoside phosphoramidates and their use as agents for treating viral diseases. These compounds are inhibitors of RNA-dependent RNA viral replication and are useful as inhibitors of HCV NS5B polymerase, as inhibitors of HCV replication and for treatment of hepatitis C infection in mammals.

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2011/030725

A. CLASSIFICATION OF SUBJECT MATTER INV. C07H19/06 C07H19/207 A61K31/7072 A61P31/14 C07F9/24 C07F9/655 C07F9/6558 C07F9/6561 C07H19/04 C07H19/044 C07H19/052 C07H19/10 C07H19/24 A61K31/664 A61K31/7056		
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) C07H A61K C07F		
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, BEILSTEIN Data, CHEM ABS Data, WPI Data		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2008/121634 A2 (PHARMASSET INC [US]; SOFIA MICHAEL J [US]; DU JINFA [US]; WANG PEIYUAN) 9 October 2008 (2008-10-09) cited in the application	1-9,14
A	page 668, line 20 - line 24; compound 4 page 672 - page 678; examples 2,5-8 page 692 - page 693; example 81 page 695; compound 25 claim 2; compound 25	15,42-69
A	----- US 2007/042988 A1 (KLUMPP KLAUS [US] ET AL) 22 February 2007 (2007-02-22) page 10; compound 12e ----- -/-	1
☒ Further documents are listed in the continuation of Box C. ☒ See patent family annex.		
* Special categories of cited documents : "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "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 "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. "&" document member of the same patent family		
Date of the actual completion of the international search 27 October 2011		Date of mailing of the international search report 07/11/2011
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016		Authorized officer Mezzato, Stefano

INTERNATIONAL SEARCH REPORT

International application No

PCT/US2011/030725

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X,P	WO 2010/135569 A1 (PHARMASSET INC [US]; ROSS BRUCE S [US]; SOFIA MICHAEL JOSEPH [US]; PAM) 25 November 2010 (2010-11-25) cited in the application page 43; example 4 page 52 - page 53; compounds 10-1,10-2 -----	1-9,14, 15,42-69
X,P	MICHAEL J. SOFIA ET AL: "Discovery of a beta-D-2'-Deoxy-2'-alpha-fluoro-2'-beta-C- methyluridine Nucleotide Prodrug (PSI-7977) for the Treatment of Hepatitis C Virus", JOURNAL OF MEDICINAL CHEMISTRY, vol. 53, no. 19, 16 September 2010 (2010-09-16), pages 7202-7218, XP55004442, ISSN: 0022-2623, DOI: 10.1021/jm100863x page 7209; figure 5 page 7214 - column 2 -----	1-9

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2011/030725

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 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:

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 No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

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

see additional sheet

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 fees, this Authority did not invite payment of additional fees.
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.:

1-9, 14, 15, 42-69
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 and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☒ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-9

crystalline (S)-isopropyl
2-(((S)-(((2R,3R,4R,5R)-5-(2,4-dioxo-3,4-dihydropyrimidin-1
(2H)-yl)-4-fluoro-3-hydroxy-4-methyltetrahydrofuran-2-yl)met
hoxy)(phenoxy)phosphoryl)amino)propanoate

2. claim: 10

a method of treating a hepatitis C virus infection

3. claims: 11-13

compound of claim 11

4. claims: 16-41, 70

process for preparing the compound of claim 11

5. claims: 14, 15, 42-62

(S)-isopropyl
2-(((S)-(perfluorophenoxy)(phenoxy)phosphoryl)amino)
propanoate and related process

6. claims: 63-69

a process for preparing (S)-isopropyl
2-(((S)-(((2R,3R,4R,5R)-5-(2,4-dioxo-3,4-dihydropyrimidin-1
(2H)-yl)-4-fluoro-3-hydroxy-4-methyltetrahydrofuran-2-yl)met
hoxy)(phenoxy)phosphoryl)amino)propanoate

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2011/030725

Patent document cited in search report		Publication date		Patent family member(s)		Publication date
W0 2008121634	A2	09-10-2008	AR	066898 A1		23-09-2009
			AU	2008232827 A1		09-10-2008
			CA	2682230 A1		09-10-2008
			CN	101918425 A		15-12-2010
			CO	6260023 A2		22-03-2011
			EP	2203462 A2		07-07-2010
			JP	2010532747 A		14-10-2010
			KR	20100016041 A		12-02-2010
			TW	200904453 A		01-02-2009
			US	2010016251 A1		21-01-2010
			US	2011257122 A1		20-10-2011

US 2007042988	A1	22-02-2007	NONE			

W0 2010135569	A1	25-11-2010	US	2010298257 A1		25-11-2010
