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(72) Inventors; and

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Declarations under Rule 4.17:

— of inventorship (Rule 4.17(iv))

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))

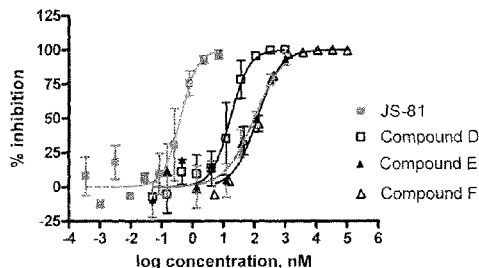
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10 March 2011

(54) Title: ANTIVIRAL PYRIMIDINES

IC<sub>50</sub> Determination. Pyrazolopyrimidine or Imidazolopyrimidine Compound Series

FIG. 3



IC<sub>50</sub> (nM)      Compound D    Compound E    Compound F    JS-81\*  
                         17                    97                    125                    0.4

(57) Abstract: Disclosed herein are novel compounds comprising substituted pyrimidines, pyrazolopyrimidines, and imidazolopyrimidines, the syntheses thereof, and compositions thereof, including pharmaceutical compositions, comprising the novel pyrimidines, pyrazolopyrimidines, imidazolopyrimidines and related compounds. Such compounds function to inhibit entry of viruses of the Flaviviridae family, including Hepatitis C virus (HCV), into cells that are susceptible to virus infection. These compounds are useful for the treatment, therapy and/or prophylaxis of viral diseases and infection, including HCV infection.

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**INTERNATIONAL SEARCH REPORT**

International application No.  
**PCT/US2010/030598**

**A. CLASSIFICATION OF SUBJECT MATTER**

*C07D 487/04(2006.01)i, A61K 31/4162(2006.01)i, A61P 31/12(2006.01)i, C07D 403/04(2006.01)i*

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)

C07D 487/04; A61K 31/4162; C07D 239/70; A61K 31/395; A61K 31/505; C07D 471/04; A61K 31/44; A61K 31/519

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

Korean utility models and applications for utility models  
Japanese utility models and applications for utility models

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

STN

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5478830 A1 (HIGLEY; C. ANNE et al.) 26 December 1995 See abstract, table 1	1-19,21,22,37-39 ,49
X	WO 2005-121107 A1 (F. HOFFMANN-LA ROCHE AG et al.) 22 December 2005 See abstract, table 1-44	1-19,21,22,37-39 ,49
A	WO 2006-132460 A1 (DONG-A PHARMACEUTICAL.CO., LTD. et al.) 14 December 2006 See claim 1	1-19,21,22,37-39 ,49
A	JP 2004-506737 A (AGOURON PHARMACEUTICALS, INC.) 04 March 2004 Seeclaim 1	1-19,21,22,37-39 ,49

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 application or patent 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 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

28 DECEMBER 2010 (28.12.2010)

Date of mailing of the international search report

**28 DECEMBER 2010 (28.12.2010)**

Name and mailing address of the ISA/KR

 Korean Intellectual Property Office  
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## INTERNATIONAL SEARCH REPORT

International application No.

**PCT/US2010/030598**

### 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.: 23-36,40-48  
because they relate to subject matter not required to be searched by this Authority, namely:  
Claims 23-36 and 40-48 pertain to methods for treatment of the human body by therapy, as well as diagnostic methods, and thus relate to a subject matter which this International Searching Authority is not required, under Article 17(2)(a)(i) of the PCT and Rule 39.1(iv) of the Regulations under the PCT, to search.
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.: 20  
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:

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 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.

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

**PCT/US2010/030598**

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5478830 A1	26. 12. 1995	None	
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Information on patent family members

International application No.

**PCT/US2010/030598**

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		JP 2002-360269 A	17.12.2002
		WO 02-16365 A1	28.02.2002