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ance Notes on Codes and Abbreviations" appearing at the begin-  
ning of each regular issue of the PCT Gazette.

(54) Title: COMPOSITIONS AND METHODS FOR TREATING OR PREVENTING FLAVIVIRIDAE INFECTIONS

(57) Abstract: The present disclosure relates generally to compositions having a glucosidase inhibitor (castanospermine or a deriva-  
tive thereof, such as celgosivir) in combination with adjunctive therapies of compounds that alter immune function (such as inter-  
feron) and compounds that alter viral replication (such as nucleoside analogues like ribavirin), which can be used to treat or prevent  
infections caused by or associated with a virus of the Flaviviridae family, particularly infections caused by or associated with Hep-  
atitis C virus (HCV).



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INTERNATIONAL SEARCH REPORT

International application No  
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A. CLASSIFICATION OF SUBJECT MATTER  
INV. A61K45/06 A61K31/437 A61K38/21 A61K31/7056 A61K31/435  
A61P31/14

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)  
A61K A61P

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, BIOSIS, EMBASE, CHEM ABS Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2004/147549 A1 (TYMS ALBERT STANLEY [GB] ET AL) 29 July 2004 (2004-07-29)  claims 1-26	1-15, 17, 22-24, 26, 29, 30, 32, 34-42
X	EP 0 295 538 A (MERRELL DOW PHARMACEUTICALS INC) 21 December 1988 (1988-12-21) claim 4	28
X	WO 01/54692 A (JACOB, GARY, S; JORDAN, ROBERT; BLOCK, TIMOTHY, M; ZITZMANN, NICOLE; D) 2 August 2001 (2001-08-02) page 4, line 5 - page 5, line 22  -/--	1, 23-25, 27, 28

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	*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
*E* earlier document but published on or after the international filing date	*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
*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)	*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.
*O* document referring to an oral disclosure, use, exhibition or other means	*Z* document member of the same patent family
*P* document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search  22 September 2006	Date of mailing of the international search report  19/10/2006
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Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer  Lemarchand, Aude
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## INTERNATIONAL SEARCH REPORT

International application No  
PCT/US2006/004927

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>GISH R ET AL: "Safety and efficacy of viramidine in combination with pegylated interferon alfa-2a for treatment of hepatitis C in therapy-naive patients" JOURNAL OF HEPATOLOGY, vol. 40, no. Suppl. 1, April 2004 (2004-04), pages 141-142, XP002399812 &amp; ABSTRACTS OF THE 39TH ANNUAL MEETING OF THE EUROPEAN ASSOCIATION FOR THE STUDY OF THE LIVER; BERLIN, GERMANY; APRIL 14-18, 2004 ISSN: 0168-8278 the whole document</p>	1,14-18
X	<p>WHITBY KEVIN ET AL: "Action of celgosivir (6 O-butanoyl castanospermine) against the pestivirus BVDV: implications for the treatment of hepatitis C." ANTIVIRAL CHEMISTRY &amp; CHEMOTHERAPY. MAY 2004, vol. 15, no. 3, May 2004 (2004-05), pages 141-151, XP009072655 ISSN: 0956-3202 page 145 - page 146, left-hand column page 149, right-hand column page 150, conclusions</p>	1-42
A	<p>RANEY A K ET AL: "HEP DART 2003: FRONTIERS IN DRUG DEVELOPMENT FOR VIRAL HEPATITIS" EXPERT OPINION ON INVESTIGATIONAL DRUGS, ASHLEY PUBLICATIONS LTD., LONDON, GB, vol. 13, no. 3, 2004, pages 289-293, XP001203944 ISSN: 1354-3784 pages 292-293, paragraph 5-7</p>	1-42
A	<p>AFDAHL, NEZAM ET AL.: "Final Phase I/II Trial Results for NM283, a New Antiviral for Hepatitis C: Antiviral Efficacy and Tolerance in Patients with HCV-1 Infection"[Online] 2004, XP007901145 Retrieved from the Internet: URL:<a href="http://www.idenix.com/products/datapre_s_nm283/AfdhalAASLD04_10-04.pdf">http://www.idenix.com/products/datapre_s_nm283/AfdhalAASLD04_10-04.pdf</a> [retrieved on 2006-09-20] slides 16-17</p>	19,21

## INTERNATIONAL SEARCH REPORT

International application No  
PCT/US2006/004927

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>STANDRING DAVID N.: "NM283 has potent antiviral activity against chronic infection with hepatitis C virus, genotype 1, in the chimpanzee"[Online] 3 July 2003 (2003-07-03), XP007901144 EASL Congress, Geneva, July 3rd-6rd, 2003 Retrieved from the Internet: URL:http://www.idenix.com/products/nm283_d atapres.html&gt; [retrieved on 2006-09-20] slides 6-7</p>	19,21
E	<p>WO 2006/037227 A (MIGENIX INC; DUGOURD, DOMINIQUE) 13 April 2006 (2006-04-13) the whole document</p>	1-42
P,X	<p>DUGOURD DOMINIQUE ET AL: "Celgosivir and castanospermine are highly synergistic against bovine viral diarrhea virus when combined with interferon alpha 2b or with interferon alpha 2b and ribavirin" ANTIVIRAL RESEARCH, vol. 70, no. 1, May 2006 (2006-05), page A56, XP002399813 &amp; 19TH INTERNATIONAL CONFERENCE ON ANTIVIRAL RESEARCH; SAN JUAN, PR, USA; MAY 07 -11, 2006 ISSN: 0166-3542 the whole document</p>	1-42
P,X	<p>DUGOURD DOMINIQUE ET AL: "Synergistic inhibition of flaviridae virus by celgosivir in combination with ribavirin or interferon-alpha" ANTIVIRAL RESEARCH, vol. 65, no. 3, March 2005 (2005-03), page A59, XP002399814 &amp; 18TH INTERNATIONAL CONFERENCE ON ANTIVIRAL RESEARCH; BARCELONA, SPAIN; APRIL 11 -14, 2005 ISSN: 0166-3542 the whole document</p>	1-42
P,A	<p>DUGOURD DOMINIQUE ET AL: "Antiviral activity of the alpha-glucosidase inhibitors celgosivir and castanospermine combined with NM-107, amantadine, and NB-DNJ" ANTIVIRAL RESEARCH, vol. 70, no. 1, May 2006 (2006-05), page A56, XP002399815 &amp; 19TH INTERNATIONAL CONFERENCE ON ANTIVIRAL RESEARCH; SAN JUAN, PR, USA; MAY 07 -11, 2006 ISSN: 0166-3542 the whole document</p>	1-42

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## INTERNATIONAL SEARCH REPORT

International application No  
PCT/US2006/004927

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,A	HUANG ET AL: "Recent development of therapeutics for chronic HCV infection" ANTIVIRAL RESEARCH, ELSEVIER SCIENCE BV., AMSTERDAM, NL, vol. 71, no. 2-3, September 2006 (2006-09), pages 351-362, XP005605099 ISSN: 0166-3542 the whole document	1-42
P,A	----- SORBERA L A ET AL: "Celgosivir - alpha-glucosidase inhibitor anti-hepatitis C virus drug" DRUGS OF THE FUTURE, vol. 30, no. 6, June 2005 (2005-06), pages 545-552, XP002399816 ISSN: 0377-8282 page 547, right-hand column -----	1-42

# INTERNATIONAL SEARCH REPORT

International application No.  
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## Box 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:  
Although claims 29-40 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:  
see FURTHER INFORMATION sheet PCT/ISA/210
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 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.

No protest accompanied the payment of additional search fees.

## FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box II.1

Although claims 29-40 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.

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Continuation of Box II.2

Claims Nos.: -

The present claims 1-42 relate to an extremely large number of possible compositions comprising compounds defined by non limitative features, for instance functional features, desiderata or broad Markush Formula. Support and disclosure in the sense of Article 6 and 5 PCT is to be found however for only a very small proportion of the compositions comprising 1) castanospermine/celgosivir as glucosidase inhibitor, 2) interferons, and 3) ribavirin, viramidine, or a nucleoside analogue being preferably NM283, NM107 (see page 70-71 and 75-78) and the use of these compositions in the treatment of Hepatitis C Virus. The non-compliance with the substantive provisions is to such an extent, that the search was performed taking into consideration the non-compliance in determining the extent of the search of claim 1-42 (PCT Guidelines 9.19 and 9.23).

The search of claims 1-42 was restricted to those compositions which appear to be supported and clearly disclosed, namely to compositions comprising 1) compounds of claims 9-13 as glucosidase inhibitors, 2) interferons as agent that alters immune function (claims 14-16), and 3) ribavirin, viramidine, or a nucleoside analogue being preferably NM283, NM107 and the use of this three drugs combination in the treatment of Flaviviridae infections, for instance HCV (as supported page 3, lines 1-14).

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guideline C-VI, 8.5), should the problems which led to the Article 17(2) declaration be overcome.

## INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2006/004927

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
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