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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))
- with sequence listing part of description (Rule 5.2(a))

(88) Date of publication of the international search report:  
28 October 2010

(54) Title: COMPOSITIONS AND METHODS FOR TREATING RETROVIRUS INFECTIONS

(57) Abstract: The present invention relates to at least one nucleic acid (i) comprising or consisting of, or (ii) encoding a nucleic acid comprising or consisting of, a sequence selected from the group consisting of : 1 ) SEQ ID NO: 1, SEQ ID NO: 2, SEQ ID NO: 3, and SEQ ID NO: 4, and 2) a sequence derived from SEQ ID NO: 1 to 4 by substitution deletion or insertion of at least one nucleotide, provided that a nucleic acid consisting of the sequence derived from SEQ ID NO: 1 to 4 is liable to induce HIV-1 expression in latent HIV-1 -infected cells, for use as a medicament, in particular for treating retrovirus infections.



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INTERNATIONAL SEARCH REPORT

International application No  
PCT/EP2009/065929

**A. CLASSIFICATION OF SUBJECT MATTER**  
INV. A61K31/7105 A61P31/18

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

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, BIOSIS, COMPENDEX, EMBASE, 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,P	WO 2009/029681 A2 (UNIV CALIFORNIA [US]; DAVID MICHAEL [US]) 5 March 2009 (2009-03-05) paragraphs [0016], [0076]; claim 7; figure 1; sequence 3	1-4,6-9
X	JP 2008 239596 A (JAPAN HEALTH SCIENCE FOUND) 9 October 2008 (2008-10-09) abstract	1-3,6-9
A	WO 2007/042899 A2 (COUNCIL SCIENT IND RES [IN]; BRAHMACHARI SAMIR KUMAR [IN]; HARIHARAN M) 19 April 2007 (2007-04-19) the whole document	1-9
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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 <b>31 May 2010</b>	Date of mailing of the international search report <b>03/09/2010</b>
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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, Fax: (+31-70) 340-3016	Authorized officer <b>Bochelen, Damien</b>
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## INTERNATIONAL SEARCH REPORT

International application No  
PCT/EP2009/065929

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>ESAU ET AL: "Therapeutic potential for microRNAs" ADVANCED DRUG DELIVERY REVIEWS, ELSEVIER BV, AMSTERDAM, NL LNKD- DOI:10.1016/J.ADDR.2007.03.007, vol. 59, no. 2-3, 30 March 2007 (2007-03-30), pages 101-114, XP022087317 ISSN: 0169-409X the whole document</p> <p>-----</p>	1-9
A	<p>PROVOST P ET AL: "HIV-1 and the microRNA-guided silencing pathway: An intricate and multifaceted encounter" VIRUS RESEARCH, AMSTERDAM, NL LNKD- DOI:10.1016/J.VIRUSRES.2006.06.015, vol. 121, no. 2, 1 November 2006 (2006-11-01), pages 107-115, XP024957163 ISSN: 0168-1702 [retrieved on 2006-11-01] the whole document</p> <p>-----</p>	1-9

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/EP2009/065929

## 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.:
  
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.:

1-9

### 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

miRNA having a sequence of SEQ ID NO: 1-4 for use as a medicament  
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2. claims: 10-14

compounds inhibiting the activity of a component of the miRNA pathway for the treatment of retrovirus infection.  
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3. claims: 15-17, 19(all partially)

use of a miRNA having a sequence of SEQ ID NO: 1-4 for producing retroviral particles in vitro  
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4. claims: 16, 18(completely); 15, 17, 19(partially)

use of a compound inhibiting the activity of the miRNA pathway for producing retroviral particles in vitro  
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# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/EP2009/065929
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2009029681	A2	05-03-2009	NONE
JP 2008239596	A	09-10-2008	NONE
WO 2007042899	A2	19-04-2007	AU 2006300864 A1 19-04-2007
			CA 2625731 A1 19-04-2007
			EP 1943340 A2 16-07-2008
			US 2007087335 A1 19-04-2007