A61K 51/00 (2006.01) C12Q 1/70 (2006.01)

Abstract:

Using a method to measure the effect of downregulation of certain cellular proteins on HIV integration, host proteins implicated in HTV infection were identified. The identified proteins and encoding nucleic acids provide targets for inhibiting HIV infection and for evaluating the ability of compounds to inhibit HTV infection. Compounds inhibiting HTV infection include compounds targeting identified proteins and compounds targeting nucleic acids encoding the proteins.
## INTERNATIONAL SEARCH REPORT

**International application No**
PCT/US 06/30856

### A CLASSIFICATION OF SUBJECT MATTER

**IPC(8):** A61K 51/00; C12Q 1/70 (2007.01)
**USPC:** 424/9.2; 435/5

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(8):** A61K 51/00, G12Q 1/70 (2007 01)
**USPC:** 249 2; 435/5

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

### C DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category*</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>US 2005/0079610 A1 (POLISKY et al.) 14 April 2005 (14 04 2005), para [0145], [0152], [0153], [0205], [0234], [0376], [0388], [0401], [0443], [0446]</td>
<td>1-3</td>
</tr>
<tr>
<td>Y</td>
<td>US 2005/0170373 A1 (MONFORTE) 4 August 2005 (04 08 2005), para [0183], [0191], [0235]</td>
<td>7</td>
</tr>
</tbody>
</table>

### I J Further documents are listed in the continuation of Box C

| **"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 another citation or other special reason (as specified) |
| **"O"** | document referring to an oral disclosure, e.g. 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 prior to the 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 novel or 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**
18 May 2007 (18 05 2007)

**Date of mailing of the international search report**
02 AUG 2007

**Name and mailing address of the ISA/US**
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**Form PCT/ISA/210 (second sheet) (April 2005)**
INTERNATIONAL SEARCH REPORT

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 I I Claims Nos because they relate to subject matter not required to be searched by this Authority, namely:

2 I I 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 D 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:

Group I Claims 1-3 and 7
Group II Claims 4-6 and 8-9

Group I consists of claims 1-3 directed to methods of identifying a host cellular protein involved in HIV infection comprising, in part, transfecting human cells with the siRNA library targeting several cell factors, and claim 7 directed to a method of identifying a biological pathway involved in HIV infection comprising in part identifying genes targeted by siRNA analysis of host cellular genes whose downregulation inhibits HIV infection. These claims are directed to siRNA modulation of gene regulation involved with HIV infection.

Group II consists of claims 4, directed to isolated cellular proteins involved in HIV infection, claims 5-6 directed to an assay for identifying a compound as an HIV inhibitor, and claims 8-9 directed to methods of screening a compound which down-regulates the expression of one or more components of a DNA repair pathway, thereby decreasing HIV infection. These claims are all directed to proteins and compounds which would be directly involved with or inhibiting HIV infection.

-Please see continuation sheet-

1 I I As all required additional search fees were timely paid by the applicant, this International search report covers all searchable claims.

2 I I As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.

3 I I 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 1-3 and 7.

4 X 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 1-3 and 7.

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.
III. Observations of where unity of invention is lacking

It will be readily understood that the claims of group I involving the genetic modulation of HIV infection are distinct from the claims of group II involving the chemical modulation of HIV infection. While the claims of both groups are concerned with inhibiting HIV infections, treating HIV infection by various methods is known, and thus there is no common unknown feature that provides an underlying unity of invention.