Title: METHODS AND COMPOSITIONS FOR ENHANCING THE DELIVERY OF A NUCLEIC ACID TO A CELL

Abstract: The present invention relates to methods and compositions useful for enhancing the efficiency of delivery of a nucleic acid to a cell. Preferably the cell is a mammalian cell. The method comprises providing to a cell an agent capable of enhancing the cytoskeletal permissiveness of the cell for transfection. The method also comprises providing to the cell a nucleic acid delivery system for the transfection of the cell, whereby the efficiency of delivery of a nucleic acid to the cell is enhanced. Compositions and kits for enhancing the efficiency of delivery of a nucleic acid to a cell are also included.
For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 A61K48/00 A61K38/17 A61K38/22 A61K31/40

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 7 A61K

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

Electronic database consulted during the international search (name of database and, where practical, search terms used)

EPO-Internal, CHEM ABS Data, EMBASE, MEDLINE

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
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<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
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<tr>
<td>X</td>
<td>WO 99 343831 A (UNIVERSITY OF WASHINGTON ) 15 July 1999 (1999-07-15) page 20, line 10 - line 26 page 8, line 20 -page 14, line 8 claims 1-20</td>
<td>1.3-5, 26-28,33</td>
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Further documents are listed in the continuation of box C.

* 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 doubt on priority claim(s) or which is cited to establish the priority 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

*F* 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

*V* 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.

*G* document member of the same patent family

Date of the actual completion of the international search

23 July 2002

Date of mailing of the international search report

06/08/2002

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) 340-3076

Authorized officer

Siatou, E

Form PCT/ISA/210 (second sheet) (July 1992)
<table>
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INTERNATIONAL SEARCH REPORT

Box I  Observations where certain claims were found unsearchable (Continuation of item 1 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. \( \square \) Claims Nos.; because they relate to subject matter not required to be searched by this Authority, namely:

2. \( \square \) 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. \( \square \) 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 II  Observations where unity of invention is lacking (Continuation of Item 2 of first sheet)

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

1. \( \square \) As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. \( \square \) As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. \( \square \) 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. \( \square \) 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

\( \square \) The additional search fees were accompanied by the applicant’s protest.

\( \square \) No protest accompanied the payment of additional search fees.

Form PCT/ISA/210 (continuation of first sheet (1)) (July 1998)
Continuation of Box I.2

Present claims 1-33 relate to methods for enhancing the efficiency of delivery of a nucleic acid to a cell, compositions and kits defined by reference to a desirable characteristic or property, namely "agent capable of enhancing the cytoskeletal permissiveness of the cell".

The claims cover all methods, compositions and kits having this characteristic or property, whereas the application provides support within the meaning of Article 6 PCT and/or disclosure within the meaning of Article 5 PCT for only a very limited number of such products/compounds/methods/apparatus. In the present case, the claims so lack support, and the application so lacks disclosure, that a meaningful search over the whole of the claimed scope is impossible. Independent of the above reasoning, the claims also lack clarity (Article 6 PCT). An attempt is made to define the methods, compositions and kits by reference to a result to be achieved. Again, this lack of clarity in the present case is such as to render a meaningful search over the whole of the claimed scope impossible. Consequently, the search has been carried out for those parts of the claims which appear to be clear, supported and disclosed, namely those parts relating to the agents disclosed in claims 6-10, 18, 20, 25 and 26 of the present application.

The applicant's attention is drawn to the fact that claims, or parts of 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.
<table>
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