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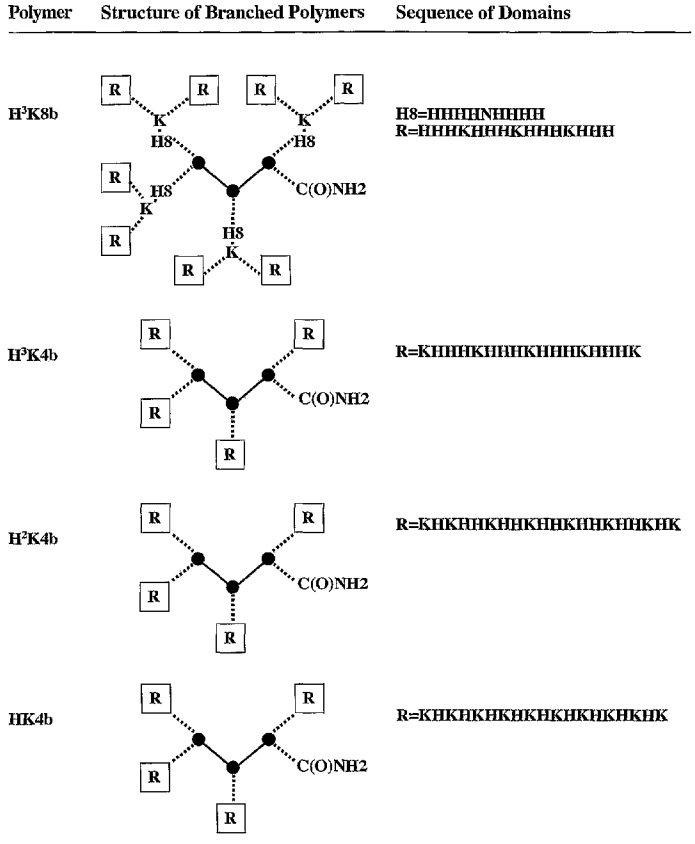
[Continued on next page]

(54) Title: HIGHLY BRANCHED HK PEPTIDES AS EFFECTIVE CARRIERS OF siRNA



(57) Abstract: The present invention is directed to methods of transfecting cells with siRNA, by contacting a transfection complex with one or more cells, where the transfection complex includes a transport polymer and siRNA. The transport polymer may include for example, H^3K8b and/or structurally similar compounds. The invention is also directed to such transfection complexes, and to compositions that include such transfection complexes. The invention is further directed to methods of treating patients using the transfection complexes of the present invention.

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FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— *with international search report*

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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

International application No.
PCT/US05/41785

A. CLASSIFICATION OF SUBJECT MATTER
IPC: A61K 31/70(2006.01)

USPC: 514/44
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)
U.S. : 514/44

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 practicable, search terms used)
Please See Continuation Sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2003/0045465 A1 (MIXSON) 06 March 2003 (06.03.2003), see whole document, especially page 2.	1-15, 25-28
Y	US 6,506,559 B1 (FIRE et al) 14 January 2003 (14.01.2003), see whole document especially column 26.	1-15, 25-28
A	OPALINSKA et al. Nucleic-acid therapeutics: Basic principles and recent applications. Nature Reviews. July 2002, Vol. 1, pages 803-814.	1-15, 25-28

☐ 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

"E" earlier application or patent 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
10 October 2006 (10.10.2006)

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29 NOV 2006

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US05/41785

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:
Please See Continuation 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 additional fees, this Authority did not invite payment of any 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.: 1-15 and 25-28

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

International application No.
PCT/US05/41785

BOX III. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I, claim(s) 1-15 and 25-28, drawn to an in vivo method of transfecting cells with siRNA.

Group II, claim(s) 1-15, 29, and 30, drawn to an ex vivo method of transfecting cells with siRNA.

Group III, claim(s) 16-24, drawn to a method of making a transfection complex comprising mixing siRNA with a transport polymer comprising histidine and lysine.

The inventions listed as Groups I-III do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: and a transport polymer comprising histidine and lysine, wherein the transport polymer comprises between about 6 to 10 terminal branches.

However, MIXSON (US 20030045465A1) teaches a transfection complex comprising antisense and a transport polymer comprising histidine and lysine, wherein the transport polymer comprises between about 6 to 10 terminal branches (Page 2). In addition, FIRE et al. (US 6,506,599 B1) teaches that siRNA is more efficient than antisense at inhibiting gene expression in cells in vitro. See column 5.

Therefore, the technical feature linking the inventions of Groups I-III does not constitute a special technical feature as defined by PCT Rule 13.2, as it does not define a contribution over the prior art.

The special technical feature of Group I is considered to be an in vivo method of transfecting cells.
The special technical feature of Group II is considered to be an in vitro method of transfecting cells.
The special technical feature of Group III is considered to be a transfection complex.

Accordingly, Groups I-III are not so linked by the same or a corresponding technical feature as to form a single general inventive concept.

Continuation of B. FIELDS SEARCHED Item 3:
WEST, STN
search terms: siRNA, RNAi, dsRNA, histidine, lysine, h3k8b, poly-histidine