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For two-letter codes and other abbreviations, refer to the "Guid-
ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.

(54) Title: NOVEL METHODS FOR THE DELIVERY OF POLYNUCLEOTIDES TO CELLS

(57) Abstract: Process are described for the delivery of a polynucleotide to a cell. The process comprises forming a salt stable complex between the polynucleotide and a cationic surfactant. Ternary complexes are also made by associating an amphipathic compound with the binary complex. The resultant complexes are suitable for delivery of the polynucleotide to cells in vitro and in vivo.

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/18759

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : A61K 31/70; C12N 15/00, 15/63, 15/88; C07H 21/04

US CL : 514/44; 435/320.1, 455, 458; 536/24.5

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)

U.S. : 514/44; 435/320.1, 455, 458; 536/24.5

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.
X --- Y	US 6,217,900 A (CICCARELLI et al) 17 April 2001, see Summary of the Invention, particularly line 53 of col. 5 continues to line 64 of col. 6; line 18-21 of col. 4; col. 13, lines 23-39; line 65 of col. 15 continues to line 11 of col. 16.	1-2, 4-5, 7 and 10 ----- 3, 12 and 8-9
X --- Y	US 5,965,434 A (WOLFF et al) 12 October 1999, line 40 of col. 15 continues to line 21 of col. 17; lines 43-53 of col. 17; lines 3-10 of col. 18 and example 5.	1-2, 4-5, 7 and 10 ----- 3, 12 and 8-9
X --- Y	US 6,096,335 A (THIERRY, A.R.) 01 August 2000, see Summary of the Invention, particularly, col. 5, lines 3-35, lines 62-67; col. 6, lines 60-67.	1-2, 4-5, 7 and 10 ----- 3, 12 and 8-9
X --- Y	US 5,837,283 A (McDONALD et al) 17 November 1998, see Summary of the Invention, particularly cols. 20-21.	1-2, 4-5, 7 and 10 ----- 3, 12 and 8-9



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:		"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
"A"	document defining the general state of the art which is not considered to be of particular relevance	"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
"E"	earlier application or patent published on or after the international filing date	"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
"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)	"&"	document member of the same patent family
"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		

Date of the actual completion of the international search

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INTERNATIONAL SEARCH REPORT

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C. (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y	WO 99/21591 (AMERICAN HOME PRODUCTS CORPORATION) 06 May 1999, see Summary of the Invention, especially page 5, lines 18-21; page 8, lines 14-26; page 13, lines 1-12; pages 27-28.	1-2, 4-5, 7 and 10 ----- 3, 12 and 8-9

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International application No.

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Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claim Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☒ Claim Nos.: 6,11 and 13-20
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:
Please See Continuation Sheet
3. ☐ Claim 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. ☐ 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.

INTERNATIONAL SEARCH REPORT

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Continuation of Box I Reason 2:

Claims 6 and 15 are dependent on themselves, whereas claims 16 and 19 are dependent on non-existent claims 22 and 26, respectively. The metes and bounds of these claims and their dependent claims are not clearly determined, and therefore no meaningful search could be conducted.

Continuation of B. FIELDS SEARCHED Item 3:

APS, MEDLINE, EMBASE, BIOSIS

Search terms: gene delivery, cationic surfactant, CTAB, DNA, oligonucleotide, polynucleotide, vector