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(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

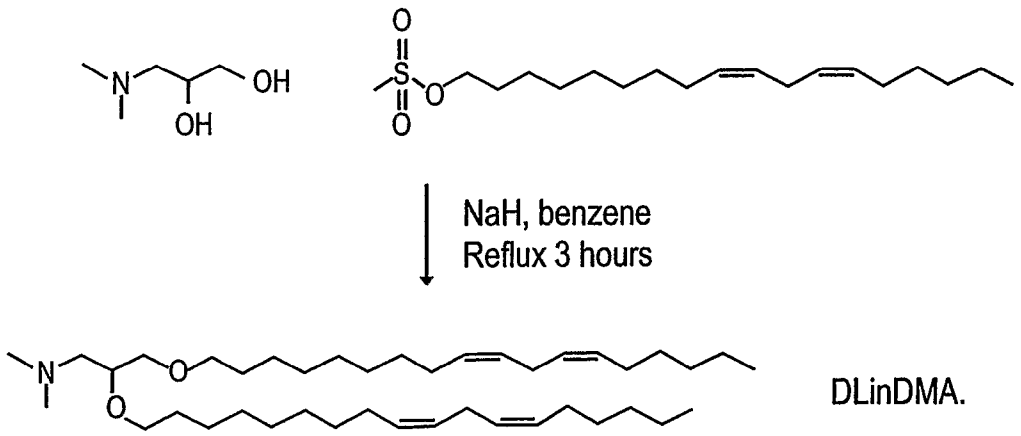
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Published:
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20 September 2007

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.

(54) Title: CATIONIC LIPIDS AND METHODS OF USE



(57) Abstract: The present invention is directed to compositions comprising cationic with alkyl side chains from about 10 to about 20 carbon atoms having more than a single site of unsaturation, liposomes and nucleic acid-lipid particles comprising the cationic lipids, and methods of introducing a bioactive agent (eg. nucleic acid) to a cell comprising such compositions, liposomes and nucleic acid-lipid particles.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/CA2005/000885

A. CLASSIFICATION OF SUBJECT MATTER
IPC(7): C12N 15/88, C07C 217/46, A61K 9/127, A61K 48/00, A61K 31/7088

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): C12N 15/88, C07C 217/46, A61K 9/127, A61K 48/00, A61K 31/7088

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

Electronic database(s) consulted during the international search (name of database(s) and, where practicable, search terms used)
Databases: STN, CAPLUS, DELPHION, CANADIAN PATENT DATABASE
KEYWORDS/SEARCH PARAMETERS: Structure search of Formula I (see e.g. claim 1), cationic lipid, unsaturation, liposome, diether

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	ARPICCO, S. et al., "Preparation and characterization of novel cationic lipids developed for gene transfection". Proceed. Int'l. Symp. Control. Rel. Bioact. Mater. (Controlled Release Society, Torchilin, V.P.; Veronese Francesco m., Eds), 1999, Vol. 26, pp.759-760, ISSN 1022-0178 whole document, especially Scheme 1 (page 759), Results and Discussion and Conclusions	1-4
A		5-44
P,X	ARPICCO, S. et al., "Synthesis, characterization and transfection activity of new saturated and unsaturated cationic lipids". Il Farmaco, November 2004, Vol. 59, Number 11, pp. 869-878, ISSN 0014-827X see Compound 13 (Scheme 1, page 871 and section 2.2.2., page 872), Page 876, right column, first full paragraph Figure 3	1-4
A		5-44

[X] Further documents are listed in the continuation of Box C. [X] 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 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	Date of mailing of the international search report
25 September 2005 (25-09-2005)	7 October 2005 (07-10-2005)
Name and mailing address of the ISA/CA Canadian Intellectual Property Office Place du Portage I, C114 - 1st Floor, Box PCT 50 Victoria Street Gatineau, Quebec K1A 0C9 Facsimile No.: 001(819)953-2476	Authorized officer Raffaele Salvino (819) 997-3031

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of the 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. [X] Claim Nos. : 15, 16 and 44
because they relate to subject matter not required to be searched by this Authority, namely :

Claims 15, 16 and 44, directed to a method for treatment of the human or animal body by surgery or therapy which the International Search Authority is not required to search under Rule 39.1(iv) of the PCT. Regardless, this Authority has carried out a search based on the alleged effects of the product defined in claims 15, 16 and 44.

2. [ ] Claim 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. [ ] Claim Nos. :
because they are dependant 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 :

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 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 claim 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 claim Nos. :

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.

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	CEVC, G., "How membrane chain-melting phase-transition temperature is affected by lipid chain asymmetry and degree of unsaturation: An effective chain-length model." Biochemistry, July 1991, Vol. 30, No. 29, pp. 7186-7193, ISSN 0006-2960 see whole document	1-44
A	KEOUGH, K.M., "Influence of chain unsaturation and chain position on thermotropism and intermolecular interactions in membranes." Biochem. Soc. Transactions, 1990, Vol. 18, No. 5, pp. 835-837, ISSN 0300-5127 see whole document	1-44
A	WO 02/072068 A2 CANCER RESEARCH CAMPAIGN TECHNOLOGY LIMITED, [GB/GB] 19 September 2002 Abstract page 18 line 5 to page 21 line 13 Figures 3, 4 and 9 Example 91 Claims 111-122	8-16
A	WO 02/087541 A1 PROTIVA BIOTHERAPEUTICS INC., [CA/CA] 7 November 2002 page 4 line 22 to page 8 line 26, page 23 line 29 to page 24 line 9 Figures 2 to 1 Claims	17-44

Patent Document Cited in Search Report	Publication Date	Patent Family Member(s)	Publication Date
WO02072068 A2	19-09-2002	GB0106041D D0	02-05-2001
WO02087541 A1	07-11-2002	US2003077829 A1	24-04-2003