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(71) Applicant (for all designated States except US): **THE BRIGHAM AND WOMEN'S HOSPITAL INC.** [US/US]; Corporate Sponsored Research and Licensing, 101 Huntington Avenue, 4th Floor, Boston, MA 02199-8001 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **DUFFIELD, Jeremy, S.** [GB/US]; 120 Williams Street, Jamaica Plain,

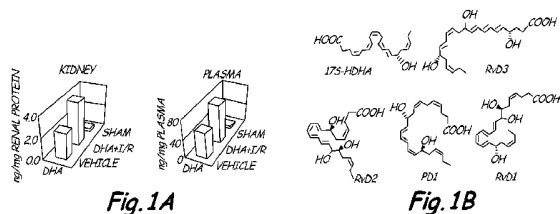
MA 02130 (US). **HONG, Song** [CN/US]; Edenborn Courts & Gardens Apt. #204, 3311 Edenborn Ave., Metairie, LA 70002 (US). **SERHAN, Charles, N.** [US/US]; 23 Smith Street, Needham, MA 02492 (US). **BONEVENTRE, Joseph, V.** [US/US]; 101 Boston Post Road, Wayland, MA 01778 (US).

(74) Agents: **ROTHENBERGER, Scott, D.** et al.; Dorsey & Whitney LLP, Intellectual Property Department, Suite 1500, 50 South Sixth Street, Minneapolis, MN 55402-1498 (US).

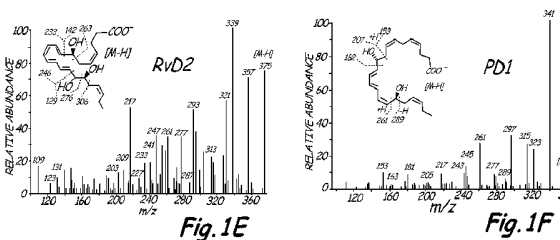
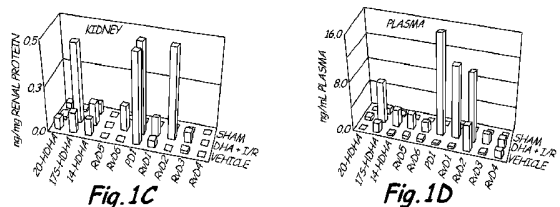
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[Continued on next page]

(54) Title: RESOLVIN D SERIES AND PROTECTIN D1 MITIGATE ACUTE KIDNEY INJURY



(57) Abstract: The use of DHA (docosahexaenoic acid) analogs termed "resolvins" to treat and, more importantly, to prevent kidney injury is disclosed.





(84) **Designated States** (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, 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).

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INTERNATIONAL SEARCH REPORT

International application No.
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A. CLASSIFICATION OF SUBJECT MATTER

INV. A61K31/095 A61K31/164 A61K31/20 A61K31/201 A61K31/275
A61P13/12

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)
A61K

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 practical, search terms used)

EPO-Internal, CHEM ABS Data, WPI Data, BIOSIS

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,X	WO 2006/117664 A (PRONOVA BIOCARE AS [NO]; BRYHN MORTEN [NO]; HOLMEIDE ANNE KRISTIN [NO]) 9 November 2006 (2006-11-09) page 23, paragraph 4 pages 38,39	1-4
P,X	----- DUFFIELD JEREMY S ET AL: "Resolvin D series and Protectin D1 mitigate acute kidney injury" JOURNAL OF IMMUNOLOGY, vol. 177, no. 9, November 2006 (2006-11), pages 5902-5911, XP008092386 ISSN: 0022-1767 page 5902, column 1 - column 2 page 5903, column 1, paragraph 1 figure 1b page 6907, column 1, paragraph 3 - paragraph 4 ----- -/--	1-4

☒ 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 document 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.
- *G* document member of the same patent family

Date of the actual completion of the international search

4 June 2008

Date of mailing of the international search report

01/09/2008

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) 340-3016

Authorized officer

Bonzano, Camilla

INTERNATIONAL SEARCH REPORT

International application No

PCT/US2007/080960

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P, X	BONVENTRE JOSEPH V: "Pathophysiology of acute kidney injury: roles of potential inhibitors of inflammation." CONTRIBUTIONS TO NEPHROLOGY 2007, vol. 156, 2007, pages 39-46, XP008092396 ISSN: 0302-5144 abstract page 44, paragraph 3 -----	1-4
X	WO 2005/089744 A (BRIGHAM & WOMENS HOSPITAL [US]; SERHAN CHARLES N [US]; LEVY BRUCE D [U] 29 September 2005 (2005-09-29) page 23, paragraph 4; claim 1 page 24, last line -----	1-4
Y	WO 2004/014835 A (BRIGHAM & WOMENS HOSPITAL [US]; SERHAN CHARLES N [US]) 19 February 2004 (2004-02-19) page 143, paragraph 3 page 28, lines 13,29 claims 1,5,9 -----	1-4
X	WO 98/18751 A (SCOTIA HOLDINGS PLC [GB]; HORROBIN DAVID F [GB]; MANKU MEHAR [GB]; MCM) 7 May 1998 (1998-05-07) example 2 page 20, paragraph 3 - page 21, paragraph 2 -----	1-4
Y	WO 03/105776 A (RESOLVYX PHARMACEUTICALS [US]; GOODMAN DANIEL W [US]; HANLEY MICHAEL R) 24 December 2003 (2003-12-24) page 2, line 15 - line 24 page 31, paragraph 2 -----	1-4
A	BLAKE P G ET AL: "CD59 PROTECTIN IS EXTENSIVELY EXPRESSED ON TUBULAR EPITHELIUM AND VASCULAR ENDOTHELIUM OF NORMAL AND DISEASED HUMAN KIDNEY" CLINICAL AND INVESTIGATIVE MEDICINE, vol. 15, no. 4 SUPPL, 1992, page A90, XP008092395 & ANNUAL MEETING OF THE CANADIAN SOCIETY FOR CLINICAL INVESTIGATION AND THE ROYAL COLLEGE OF PHYSICIAN ISSN: 0147-958X the whole document -----	1-4

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2007/080960

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:

Although claims 1-4 are directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.
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:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers allsearchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an 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 reportcovers 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.:

see annex

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.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-4 (partially)

Use for treating kidney inflammatory conditions of a oxygenated docosahexaenoic acid derivative, namely a compound of the formulas I-XIV, XXI-XXIV, XXXV-XXXVIII (bis-oxygenated docosahexaenoic acid derivatives, with six double bonds).

2. claims: 1-4 (partially)

Use for treating kidney inflammatory conditions of a oxygenated docosahexaenoic acid derivative, namely a compound of the formula XV-XVI (bis-oxygenated docosahexaenoic acid derivatives, with two triple bonds).

3. claims: 1-4 (partially)

Use for treating kidney inflammatory conditions of a oxygenated docosahexaenoic acid derivative, namely a compound of the formulas XVII, XVIII, XXXXIII-XXXXIV (bis-oxygenated docosahexaenoic acid derivatives, with a phenyl and a triple bond).

4. claims: 1-4 (partially)

Use for treating kidney inflammatory conditions of a oxygenated docosahexaenoic acid derivative, namely a compound of the formulas XIX, XX, XXXXV-XXXXVI (bis-oxygenated docosahexaenoic acid derivatives, with six double bonds, with a U moiety).

5. claims: 1-4 (partially)

Use for treating kidney inflammatory conditions of a oxygenated docosahexaenoic acid derivative, namely a compound of the formulas XXV-XXVI (bis-oxygenated docosahexaenoic acid derivatives, with six double bonds, with an epoxide).

6. claims: 1-4 (partially)

Use for treating kidney inflammatory conditions of a oxygenated docosahexaenoic acid derivative, namely a compound of the formulas XXVII-XXX, XXXIII-XXXIV (tris-oxygenated docosahexaenoic acid derivatives, with six double bonds).

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

7. claims: 1-4 (partially)

Use for treating kidney inflammatory conditions of a oxygenated docosahexaenoic acid derivative, namely a compound of the formulas XXXI-XXXII (mono-oxygenated docosahexaenoic acid derivatives, with six double bonds, with an epoxide).

8. claims: 1-4 (partially)

Use for treating kidney inflammatory conditions of a oxygenated docosahexaenoic acid derivative, namely a compound of the formulas XXXIX,XXXX (tris-oxygenated docosahexaenoic acid derivatives, with five double bonds, with a terminal phenyl).

9. claims: 1-4 (partially)

Use for treating kidney inflammatory conditions of a oxygenated docosahexaenoic acid derivative, namely a compound of the formulas XXXXI-XXXXII (tris-oxygenated docosahexaenoic acid derivatives, with two triple bonds).

10. claims: 1-4 (partially)

Use for treating kidney inflammatory conditions of a oxygenated docosahexaenoic acid derivative, namely a compound of the formulas XXXXVII-LVIII (mono-oxygenated docosahexaenoic acid derivatives, with six double bonds).

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2007/080960

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