

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
12 February 2004 (12.02.2004)

PCT

(10) International Publication Number
WO 2004/012657 A3

- (51) International Patent Classification⁷: **A61K 31/715**, 39/385, C07H 1/00
- (21) International Application Number:
PCT/US2003/023741
- (22) International Filing Date: 30 July 2003 (30.07.2003)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
60/400,377 1 August 2002 (01.08.2002) US
- (71) Applicant (*for all designated States except US*): **IMMUSONIC, INC.**, [US/US]; 3107 North Deer Run Road, #14, Carson City, NV 89509 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (*for US only*): **HUNTER, Kenneth, W.**, [US/US]; 3460 Southampton Drive, Reno, NV 89509 (US). **JORDAN, Frank, M.**, [US/US]; 900 South Meadow Parkway, #2621, Reno, NV 89511 (US). **GAULT, Ruth, A.**, [US/US]; 1265 Antelope Valley Road, Reno, NV 89506 (US).
- (74) Agent: **JOHNSON, William, E., Jr.**; The Matthews Firm, Suite 1800, 1900 West Loop South, Houston, TX 77027 (US).
- (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- Published:**
— *with international search report*
— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*
- (88) Date of publication of the international search report:
8 July 2004
- 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: BETA-GLUCAN CONTAINING COMPOSITES, METHODS FOR MANUFACTURING AND FOR USING SUCH COMPOSITES

(57) Abstract: A microparticulate beta-glucan is used as a vaccine adjuvant for animals and humans, binding to glucan receptors on a variety of phagocytic cells to enhance their immunological functions. The particles contain about 1-10% partially deacetylated N-acetylglucosamine and are predominantly 0.3-3 microns in diameter, preferably 1 - 2 microns in diameter, to cause the expression of co-stimulatory molecules on antigen presenting cells (APC's). The microparticle upregulates the expression of the co-stimulatory molecule B7 based upon such microparticles containing beta- (1,3) and beta (1,6) glucan.



WO 2004/012657 A3

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/23741

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : A61K 31/715, 39/385; C07H 1/00
 US CL : 424/194.1; 514/54; 536/123.12

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)
 U.S. : 424/194.1; 514/54; 536/123.12

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)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5,032,401 A (JAMAS et al.) 16 July 1991 (16.07.91), see the entire document.	1-23
A	US 6,242,594 A (KELLY) 05 June 2001 (05.06.01), see the entire document.	1-23

Further documents are listed in the continuation of Box C. See patent family annex.

<p>* Special categories of cited documents:</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent published on or after the international filing date</p> <p>"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)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p>	<p>"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</p> <p>"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</p> <p>"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</p> <p>"&" document member of the same patent family</p>
---	---

<p>Date of the actual completion of the international search</p> <p>04 January 2004 (04.01.2004)</p>	<p>Date of mailing of the international search report</p> <p style="text-align: center; font-size: 1.2em;">11 MAY 2004</p>
<p>Name and mailing address of the ISA/US</p> <p>Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703)305-3230</p>	<p>Authorized officer</p> <p style="text-align: center;">Raymond J. Henley III <i>Henley</i></p> <p>Telephone No. 703-308-1235</p>