

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
13 September 2007 (13.09.2007)

PCT

(10) International Publication Number
WO 2007/102797 A3

(51) International Patent Classification:
A61K 39/02 (2006.01) **A61K 39/095** (2006.01)

(21) International Application Number:
PCT/US2005/046886

(22) International Filing Date:
22 December 2005 (22.12.2005)

(25) Filing Language: English

(26) Publication Language: English

(71) Applicant (for all designated States except US): **SANOVI PASTEUR, INC.** [US/US]; One Discover Drive, Swiftwater, PA 18370 (US).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **RYALL, Robert, P.** [US/US]; 411 Main Street, Stroudsburg, PA 18360 (US).

(74) Agent: **BORDNER, Thomas, J.**; Sanofi Pasteur, Inc., One Discover Drive, Swiftwater, PA 18370 (US).

(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, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, 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.

(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, 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
- with information concerning one or more priority claims considered void

(88) Date of publication of the international search report:
16 April 2009

(54) Title: MULTIVALENT MENINGOCOCCAL DERIVATIZED POLYSACCHARIDE-PROTEIN CONJUGATES AND VACCINE

(57) Abstract: The present invention describes derivatized polysaccharide-protein conjugates, a composition comprising one or more of such derivatized polysaccharide-protein conjugates and methods of immunizing human patients with the same. The derivatized polysaccharide-protein conjugates are purified capsular polysaccharides from *Neisseria meningitidis* serogroups A, C, W-135, and/or Y, derivatized chemically activated and selectively attached to a carrier protein by means of a covalent chemical bond, forming polysaccharide-protein conjugates capable of eliciting long-lasting immunity to a variety of *N. meningitidis* strains.



WO 2007/102797 A3

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US05/46886

A. CLASSIFICATION OF SUBJECT MATTER IPC: A61K 39/02(2006.01),39/095(2006.01) USPC: 424/184.1,234.1,249.1,250.1 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. : 424/184.1,234.1,249.1,250.1 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.
Y	US 5,425,946 (TAI et al) June 20 1995 (06.20.1995). Whole document	1-12
Y	MITCHELL L.A. Analysis of Meningococcal Serogroup C-specific Antibody Levels in British Columbian Children and Adolescents. J. Infect Dis. April 1996, Vol. 173, pages 1009-1013. See abstract.	1-12
Y	CAMPBELL J.D. Safety, Reactogenicity and Immunogenicity of a Tetravalent Meningococcal Polysaccharide-Diphtheria Toxoid Conjugate Vaccine Given to Healthy Adults. J. Infect. Dis. 2002, Vol. 186, pages 1848-1851. Whole document especially under "Subjects and Methods.	1-12
Y,P	TROTTER C.L. Effectiveness of Meningococcal Serogroup C Conjugate Vaccine 4 years After Introduction. LANCET July, 2004, Vol. 364, pages 365-367.	1-12
Y,P	SNAPE. M.D. Meningococcal Polysaccharide-Protein Conjugate Vaccines. Lancet Infect. Dis. January 2005, Vol. 5, pages 21-30.	1-12
☒ 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	"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
"E"	earlier application or patent published on or after the international filing date	"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
"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)	"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
"O"	document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"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 13 May 2008 (13.05.2008)		Date of mailing of the international search report 04 JUN 2008
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201		Authorized officer Shannon Foley Telephone No. 571-272-0864