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(57) Abstract: An immunogenic composition which may be formulated for protection of a host against disease caused by infection by Respiratory Syncytial Virus (RSV) is provided. The immunogenic preparation comprises at least one protein of RSV or at least one immunogenic fragment of the at least one protein and is not adjuvanted. The at least one RSV protein may be the F, G or M protein from a RSV A or RSV B strain. The compositions may be stabilized for storage. Methods of immunization using the immunogenic preparations are also provided.

#### INTERNATIONAL SEARCH REPORT

Intern Nal Application No PCT/CA 01/01104

A. CLASSIFICATION OF SUBJECT MATTER IPC 7 A61K39/155 A61P31/14

According to International Patent Classification (IPC) or to both national classification and IPC

#### B. FIELDS SEARCHED

 $\begin{array}{ccc} \text{Minimum documentation searched} & \text{(classification system followed by classification symbols)} \\ IPC & 7 & C07K & A61K \end{array}$ 

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)

WPI Data, EPO-Internal, MEDLINE, SCISEARCH, CHEM ABS Data, EMBASE

C. DOCUMENTS CONSIDERED TO BE RELEVANT			
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	
X	WO 98 02457 A (CONNAUGHT LAB ;CATES GEORGE A (CA); KLEIN MICHEL H (CA); OOMEN RAY) 22 January 1998 (1998-01-22) cited in the application the whole document	1-39	
X	WO 00 35481 A (SAMBHARA SURYAPRAKASH; CONNAUGHT LAB (CA); BURT DAVID (CA); CATES) 22 June 2000 (2000-06-22) the whole document	1-39	
X	WO 87 04185 A (UNIV NORTH CAROLINA) 16 July 1987 (1987-07-16) the whole document	1-39	
X	US 5 639 853 A (ARUMUGHAM RASAPPA ET AL) 17 June 1997 (1997-06-17) the whole document 	1	
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Further documents are listed in the continuation of box C.	Patent family members are listed in annex.
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Date of the actual completion of the international search  11 February 2002	Date of mailing of the international search report $21/02/2002$
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  Niemann, F

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# INTFRNATIONAL SEARCH REPORT

Intern 1al Application No
PCT/CA 01/01104

Category °	ation) DOCUMENTS CONSIDERED TO BE RELEVANT  Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Jaiegury 1	Oileanon of document, with indication, where appropriate, or the relevant passages	. Govern to signification
A	ADAMS, GERALD D. J.: "Lyophilization of vaccines" VACCINE PROTOC. (1996), 167-185. EDITOR(S): ROBINSON, ANDREW; FARRAR, GRAHAM H.; WIBLIN, CHRISTOPHER N. PUBLISHER: HUMANA, TOTOWA, N. J., - 1996 XP001053472 the whole document	30-39
A	GUPTA C K ET AL: "Stabilization of respiratory syncytial virus (RSV) against thermal inactivation and freeze-thaw cycles for development and control of RSV vaccines and immune globulin" VACCINE, BUTTERWORTH SCIENTIFIC. GUILDFORD, GB, vol. 14, no. 15, 1 October 1996 (1996-10-01), pages 1417-1420, XP004070953 ISSN: 0264-410X the whole document	30-39
A	WO 99 62500 A (BURKE CARL J ; MERCK & CO INC (US); SHEU SU PI (US); VOLKIN DAVID B) 9 December 1999 (1999-12-09) the whole document	30-39
A	EP 0 028 563 A (MERCK & CO INC) 13 May 1981 (1981-05-13) the whole document	30-39

# INTERNATIONAL SEARCH REPORT

havermation on patent family members

Intern. al Application No
PCT/CA 01/01104

					CA 01/01104
Patent document cited in search report		Publication date		Patent family member(s)	Publication date
WO 9802457	A	22-01-1998	US AU BR CA WO CN DE EP ES JP US	6020182 A 716378 B2 3431197 A 9712970 A 2259594 A1 9802457 A1 1230197 A 942928 T1 0942928 A1 2141065 T1 2000501418 T 6309649 B1	01-02-2000 24-02-2000 09-02-1998 28-08-2001 22-01-1998 22-01-1998 29-09-1999 02-03-2000 22-09-1999 16-03-2000 08-02-2000 30-10-2001
WO 0035481	Α	22-06-2000	AU WO EP	1544200 A 0035481 A2 1140164 A2	03-07-2000 22-06-2000 10-10-2001
WO 8704185	A	16-07-1987	AT AU DE DE EP HK JP WO US	101200 T 605476 B2 6941287 A 3689622 D1 3689622 T2 0290446 A1 51597 A 8173171 A 8704185 A1 5149650 A 5716823 A	15-02-1994 17-01-1991 28-07-1987 17-03-1994 16-06-1994 17-11-1988 25-04-1997 09-07-1996 16-07-1987 22-09-1992 10-02-1998
US 5639853	A	17-06-1997	US CA US AT AU DE DK EP JP KR WO	5223254 A 1336955 A1 5691449 A 163682 T 636838 B2 2613388 A 3856141 D1 3856141 T2 79190 A 0390799 A1 0814089 A2 3502687 T 9613578 B1 8902935 A1	29-06-1993 12-09-1995 25-11-1997 15-03-1998 13-05-1993 18-04-1989 09-04-1998 25-06-1998 07-05-1990 10-10-1990 29-12-1997 20-06-1991 09-10-1996 06-04-1989
WO 9962500	A	09-12-1999	US AU EP WO	6290967 B1 4322599 A 1083883 A1 9962500 A1	18-09-2001 20-12-1999 21-03-2001 09-12-1999
EP 0028563	A	13-05-1981	AT DE DK EP ES ES GR IE JP	6908 T 3067376 D1 455880 A , 0028563 A1 496358 D0 8202584 A1 70319 A1 50276 B1 1640061 C	15-04-1984 10-05-1984 8, 30-04-1981 13-05-1981 01-02-1982 01-05-1982 10-09-1982 19-03-1986 18-02-1992

# INTERNATIONAL SEARCH REPORT

lurormation on patent family members

Intern: al Application No
PCT/CA 01/01104

Patent document cited in search report		Publication date		Patent family member(s)	Publication date
EP 0028563	Α	£	JP	3001290 B	10-01-1991
			JP	57114527 A	16-07-1982
			PT	71926 A ,B	01-11-1980
			US	4338335 A	06-07-1982
			US	4337242 A	29-06-1982

Form PCT/ISA/210 (patent family annex) (July 1992)