

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
27 February 2003 (27.02.2003)

PCT

(10) International Publication Number
WO 03/016342 A3

- (51) **International Patent Classification⁷:** **C12N 15/85**, 15/86, 15/863, A61K 48/00, C07K 14/47, C12N 9/02, C07K 14/705, A61K 38/17
- (74) **Agents:** **BARTOSZEWICZ, Lola, A.** et al.; Sim & McBurney, 330 University Avenue, 6th Floor, Toronto, Ontario M5G 1R7 (CA).
- (21) **International Application Number:** PCT/CA02/01269
- (22) **International Filing Date:** 16 August 2002 (16.08.2002)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
60/313,438 17 August 2001 (17.08.2001) US
60/313,572 17 August 2001 (17.08.2001) US
60/313,573 17 August 2001 (17.08.2001) US
60/313,574 17 August 2001 (17.08.2001) 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, SD, SE, SG, SI, 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, IE, IT, LU, MC, NL, PT, SE, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- (71) **Applicant (for all designated States except US):** **AVENTIS PASTEUR LIMITED** [CA/CA]; Connaught Campus, 1755 Steeles Avenue West, Toronto, Ontario M2R 3T4 (CA).
- (72) **Inventors; and**
- (75) **Inventors/Applicants (for US only):** **EMTAGE, Peter, C., R.** [CA/CA]; 202-100 Parkway Forest Drive, Toronto, Ontario, M2J 6L1 (CA). **KARUNAKARAN, Liza** [CA/CA]; 349 Brownbridge Drive, Thornhill, Ontario, L4J 5X2 (CA). **PEDYCZAK, Artur** [CA/CA]; 1399 Colmar Avenue, Pickering, Ontario, L1W 1C2 (CA). **BARBER, Brian, H.** [CA/US]; 15 Stewart Place, Apt. 8J, White Plains, NY 10603 (US).
- 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:**
27 November 2003
- 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:** TUMOR ANTIGENS FOR PREVENTION AND/OR TREATMENT OF CANCER

(57) **Abstract:** The present invention relates to peptides, polypeptides, and nucleic acids and the use of the peptide, polypeptide or nucleic acid in preventing and / or treating cancer. In particular, the invention relates to peptides and nucleic acid sequences encoding such peptides for use in diagnosing, treating, or preventing melanoma.



WO 03/016342 A3

INTERNATIONAL SEARCH REPORT

Internal Application No
PCT/CA 02/01269

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C12N15/85 C12N15/86 C12N15/863 A61K48/00 C07K14/47
C12N9/02 C07K14/705 A61K38/17

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 A61K C07K

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, SEQUENCE SEARCH

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 844 075 A (KAWAKAMI YUTAKA ET AL) 1 December 1998 (1998-12-01) cited in the application example 6; table 5 ---	1-38
X	WO 00 49041 A (YUI KATSUYUKI ;SHINBARA NAOKI (JP); UDONO HEIICHIRO (JP); SUMITOMO) 24 August 2000 (2000-08-24) Abstract, SEQ ID NO:26 and 27 ---	1-38
X	WO 97 03703 A (PHILIP RAMILA ;LEBKOWSKI JANE S (US); RHONE POULENC RORER PHARMA () 6 February 1997 (1997-02-06) page 58; table 6 --- -/--	1-38

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in 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.

* & * document member of the same patent family

Date of the actual completion of the international search

12 September 2003

Date of mailing of the international search report

03.10.2003

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

Cupido, M

INTERNATIONAL SEARCH REPORT

International Application No.

PCT/CA 02/01269

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 00 20581 A (UNIV BRUXELLES ;LUDWIG INST CANCER RES (US)) 13 April 2000 (2000-04-13) page 54 -page 57; example 8 ----	1-38
X	WO 00 24778 A (KAWAKAMI YUTAKA ;PARKHURST MARIA R (US); US HEALTH (US); ROBBINS P) 4 May 2000 (2000-05-04) compare SEQ 64 with that of TRP-1 245 page 5, line 20 - line 28 ----	1-38
X	WO 99 45954 A (EPIMMUNE INC) 16 September 1999 (1999-09-16) compare sequences on page 60 with MAGE-A3 115 and sequences on page 66 with MAGE-A3 276 ----	1-38
P,X	WO 01 62776 A (EPIMMUNE INC) 30 August 2001 (2001-08-30) page 30 peptides 41.0071 and 41.0083, page 31 peptides 41.0096 and 41.0134. claim 1 ----	1-38
P,X	WO 01 78655 A (LIVINGSTON PHILIP ;HOE MEE (US); HOUGHTON ALAN (US); MAYHEW MARK () 25 October 2001 (2001-10-25) page 30 ----	36, 37
A	DE 199 49 594 A (DEUTSCHES KREBSFORSCHUNGSZENTRUM HEIDELBERG) 26 April 2001 (2001-04-26) the whole document -----	1-38

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CA 02/01269

Box I Observations where certain claims were found unsearchable (Continuation of item 1 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 31 and 38 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.
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 II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

As a result of the prior review under R. 40.2(e) PCT,
no additional fees are to be refunded.

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 an additional fee, this Authority did not invite payment of any additional fee.
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 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.:

Remark on Protest

- ☒ The additional search fees were accompanied by the applicant's protest.
- ☐ 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: 1-38 (all partially)

Expression vectors encoding MART-1 tumor antigens, the corresponding peptides, pharmaceutical compositions containing these vectors or peptides, their use in preventing or treating cancer.

2. Claims: 1-38 (all partially)

Expression vectors encoding MAGE-A3 tumor antigens, the corresponding peptides, pharmaceutical compositions containing these vectors or peptides, their use in preventing or treating cancer.

3. Claims: 1-38 (all partially)

Expression vectors encoding tyrosinase tumor antigens, the corresponding peptides, pharmaceutical compositions containing these vectors or peptides, their use in preventing or treating cancer.

4. Claims: 1-38 (all partially)

Expression vectors encoding TRP-1 tumor antigens, the corresponding peptides, pharmaceutical compositions containing these vectors or peptides, their use in preventing or treating cancer.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/CA 02/01269

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5844075	A	01-12-1998	US 5874560 A 23-02-1999
		AU 706443 B2 17-06-1999	
		AU 2395895 A 16-11-1995	
		CA 2188432 A1 02-11-1995	
		EP 0756604 A1 05-02-1997	
		FI 964235 A 20-12-1996	
		JP 10505481 T 02-06-1998	
		US 6537560 B1 25-03-2003	
		WO 9529193 A2 02-11-1995	
		US 6270778 B1 07-08-2001	
		US 5994523 A 30-11-1999	
		US 2003144482 A1 31-07-2003	
WO 0049041	A	24-08-2000	WO 0049041 A1 24-08-2000
WO 9703703	A	06-02-1997	AU 6504596 A 18-02-1997
		CA 2227065 A1 06-02-1997	
		EP 0840622 A1 13-05-1998	
		JP 11510046 T 07-09-1999	
		WO 9703703 A1 06-02-1997	
		ZA 9606169 A 17-06-1997	
WO 0020581	A	13-04-2000	US 6291430 B1 18-09-2001
		AU 6042099 A 26-04-2000	
		EP 1119623 A1 01-08-2001	
		JP 2002526110 T 20-08-2002	
		WO 0020581 A1 13-04-2000	
		US 6426217 B1 30-07-2002	
WO 0024778	A	04-05-2000	AU 1598500 A 15-05-2000
		WO 0024778 A1 04-05-2000	
WO 9945954	A	16-09-1999	WO 9945954 A1 16-09-1999
		AU 6465598 A 27-09-1999	
		CA 2323632 A1 16-09-1999	
		EP 1064022 A1 03-01-2001	
		JP 2002507397 T 12-03-2002	
WO 0162776	A	30-08-2001	WO 0162776 A1 30-08-2001
		AU 3242700 A 03-09-2001	
		BR 0017136 A 25-02-2003	
		CA 2400215 A1 30-08-2001	
		EP 1263775 A1 11-12-2002	
		JP 2003524016 T 12-08-2003	
WO 0178655	A	25-10-2001	AU 5707201 A 30-10-2001
		AU 5708601 A 30-10-2001	
		AU 5708701 A 30-10-2001	
		CA 2406472 A1 25-10-2001	
		EP 1284986 A1 26-02-2003	
		WO 0178655 A2 25-10-2001	
		WO 0179259 A1 25-10-2001	
		WO 0178772 A1 25-10-2001	
DE 19949594	A	26-04-2001	DE 19949594 A1 26-04-2001
		AU 1993701 A 23-04-2001	
		WO 0127295 A1 19-04-2001	
		EP 1228224 A1 07-08-2002	