

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
9 December 2004 (09.12.2004)

PCT

(10) International Publication Number
WO 2004/105681 A3

(51) International Patent Classification⁷: **A61K 39/12**

(21) International Application Number:
PCT/US2004/012650

(22) International Filing Date: 23 April 2004 (23.04.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/466,235 28 April 2003 (28.04.2003) US

(71) Applicant (for all designated States except US): **INNO-GENETICS N.V.** [BE/BE]; Technologiepark 6, B-9052 Zwijnaarde (BE).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **BABE, Lilia, M.** [US/US]; 812 Bayview Way, Emerald Hills, CA 94064 (US). **DE YOUNG, Lawrence, M.** [US/US]; 991 Elm Street, Montara, CA 94037 (US). **HARDING, Fiona, A** [US/US]; 772 Lewis Street, Santa Clara, CA 95050 (US). **HUANG, Manley, T., F.** [US/US]; 504 El Capitan Place, Palo Alto, CA 94304 (US). **POWER, Scott, D.** [US/US]; 524 Poplar Avenue, San Bruno, CA 94066 (US). **STICKLER, Marcia** [US/US]; 869 Georgetown Place, San Jose, CA 95126 (US).

(74) Agent: **MACKNIGHT, Kamrin, T.**; Genencor International, Inc., 925 Page Mill Road, Palo Alto, CA 94304 (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, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, 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, 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, IT, LU, 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
- 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:
24 March 2005

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: CD4+ HUMAN PAPILLOMAVIRUS (HPV) EPITOPES

(57) Abstract: The present invention provides CD4+ T-cell epitopes in E6, E7 and E2 proteins from various strains of human papillomavirus (HPV). In some preferred embodiments, the present invention provides means for the development of HPV vaccines, in particular multivalent vaccines for the prevention of infection with high-risk HPV strains. In additional embodiments, the present invention provides means for the development of therapeutic vaccines against high-risk HPV types that prevent the development of benign and/or malignant tumors in infected individuals. The present invention further provides epitopes suitable for use in prophylactic and therapeutic vaccines.



WO 2004/105681 A3

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US04/12650

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : A61K 39/12

US CL : 424/204.1

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. : 424/204.1

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)
Please See Continuation Sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 6,306,397 B1 (EDWARDS et al) 23 October 2001 (23.10.2001).	1-33
A	US 6,365,160 B1 (WEBB et al) 02 April 2002 (02.04.2002).	1-33
A	US 6,004,557 A (EDWARDS et al) 21 December 1999 (21.12.1999).	1-33

☐ 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 application or patent 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

07 December 2004 (07.12.2004)

Date of mailing of the international search report

14 JAN 2005

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. (703) 305-3230

Authorized officer

A R Salimi

Telephone No. (571) 272-1600

INTERNATIONAL SEARCH REPORT

PCT/US04/12650

Continuation of B. FIELDS SEARCHED Item 3:
MEDLINE, BIOSIS, NPL, WEST, DERWENT, CAPLUS
Search terms: Papillom?, Paillomavirus, E7, E6, E?, E33, vector