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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
12 September 2013 (12.09.2013)

WIPO | PCT

(10) International Publication Number
WO 2013/131993 A3

(51) **International Patent Classification**:
A61K 49/00 (2006.01) *A61C 8/00* (2006.01)

(21) **International Application Number**:
PCT/EP2013/054569

(22) **International Filing Date**:
7 March 2013 (07.03.2013)

(25) **Filing Language**: English

(26) **Publication Language**: English

(30) **Priority Data**:
00329/12 8 March 2012 (08.03.2012) CH

(71) **Applicant**: **THOMMEN MEDICAL AG** [CH/CH]; Hauptstrasse 26d, CH-4437 Waldenburg (CH).

(72) **Inventors**: **SCHNABELRAUCH, Matthias**; Am Burggarten 17, 07749 Jena (DE). **MEINEL, Lorenz**; Heinrich-Zeuner-Str. 10, 97082 Würzburg (DE). **SCHLOTTIG, Falko**; Unterer Rainweg 16, CH-4414 Füllinsdorf (CH). **WYRWA, Ralf**; Burgstrasse 47, 07751 Rothenstein (DE).

(74) **Agent**: **BREMI, Tobias**; Isler & Pedrazzini AG, Postfach 1772, CH-8027 Zürich (CH).

(81) **Designated States** *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) **Designated States** *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— *with international search report (Art. 21(3))*

— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

[Continued on next page]

(54) **Title**: CHEWING GUM FOR THE DIAGNOSIS OF INFLAMMATORY TISSUES IN DENTAL APPLICATIONS

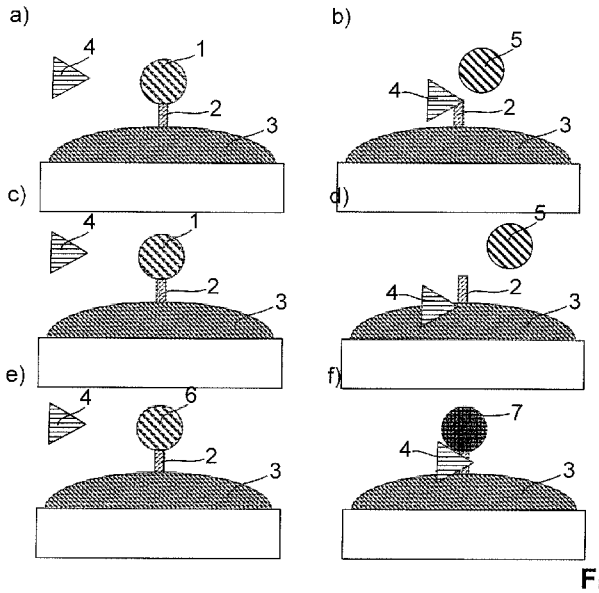

FIG. 3

(57) **Abstract**: The document proposes a diagnostic chewing gum for identifying the presence of inflammatory tissues in the mouth, in particular in or adjacent to the mandible, the maxilla, an implant or the teeth of a user, comprising a base material or particles (3) embedded and/or attached to said base material; an element (1, 5-7), like e.g. a releasable flavor molecule, attached to said base material and/or said particles, for the generation of a change in the chewing gum directly detectable by the user; wherein the element (1, 5-7) generates the change upon direct or indirect contact with a marker (4), e.g. a proteolytic enzyme, which is released by inflammatory tissue in response to bacterial mediators.

WO 2013/131993 A3

(88) Date of publication of the international search report:
31 October 2013

INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP2013/054569

Box No. I Nucleotide and/or amino acid sequence(s) (Continuation of item 1.c of the first sheet)

1. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, the international search was carried out on the basis of:

   a. (means)

   [ ] on paper

   [X] in electronic form

   b. (time)

   [ ] in the international application as filed

   [X] together with the international application in electronic form

   [ ] subsequently to this Authority for the purpose of search

2. [ ] In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

3. Additional comments:

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2013/054569

A. CLASSIFICATION OF SUBJECT MATTER
INV. A61K49/00 A61C8/00
ADD.

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)
A61K A61C

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)
EPO-Internal, EMBASE, BIOSIS, CHEM ABS Data, DISSERTATION ABS, PASCAL, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	DE 37 00 180 A1 (WEISE RICHTER HELGA [DE]) 14 July 1988 (1988-07-14) claims -----	1-15
Y	US 2011/081673 A1 (CHANDSAWANGBHUWANA CHARLIE [US] ET AL) 7 April 2011 (2011-04-07) claims -----	1-15
Y	WO 01/14875 A1 (RADIANCY INC [US]; AZAR ZION [IL]; SHALEV PINCHAS [IL]) 1 March 2001 (2001-03-01) examples claims ----- -/--	1-15

[X] Further documents are listed in the continuation of Box C.

[X] 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 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	Date of mailing of the international search report
26 August 2013	02/09/2013

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Dullaart, Anwyn

1

Form PCT/ISA/210 (second sheet) (April 2005)

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 2007/133721 A2 (INTERLEUKIN GENETICS INC [US]; KORNMAN KENNETH S [US]; WILKINS LEON [U) 22 November 2007 (2007-11-22) example 5	1-15
Y	TSCHESCHE H: "Bimolecular interaction of matrix metalloproteinases and their inhibitors timps", JOURNAL OF PROTEIN CHEMISTRY, vol. 17, no. 6, 41, 1998, pages 549-551, XP019283958, ISSN: 0277-8033 page 549 - page 551	1-15
Y	P. POZO ET AL: "Longitudinal analysis of metalloproteinases, tissue inhibitors of metalloproteinases and clinical parameters in gingival crevicular fluid from periodontitis-affected patients", JOURNAL OF PERIODONTAL RESEARCH, vol. 40, no. 3, 1 June 2005 (2005-06-01), pages 199-207, XP055029332, ISSN: 0022-3484, DOI: 10.1111/j.1600-0765.2005.00786.x page 201 page 203 page 205	1-15
Y	US 2006/275216 A1 (LAUFFER RANDALL B [US] ET AL) 7 December 2006 (2006-12-07) paragraph [0090] examples IV,VI	1-15
Y	GURSOY ULVI KAHRAMAN ET AL: "Use of host- and bacteria-derived salivary markers in detection of periodontitis: a cumulative approach.", DISEASE MARKERS, vol. 30, no. 6, 2011, pages 299-305, XP008152652, ISSN: 1875-8630, DOI: 10.3233/DMA-2011-0788 page 301; table 1	1-15
Y	ALFANT BARNETT ET AL: "Matrix metalloproteinase levels in children with aggressive periodontitis", JOURNAL OF PERIODONTOLOGY, vol. 79, no. 5, May 2008 (2008-05), pages 819-826, XP008152683, ISSN: 0022-3492, DOI: 10.1902/jop.2008.070513 page 821	1-15

-/--

1

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2013/054569

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	C. M. S. FIGUEREDO ET AL: "The short-term effectiveness of non-surgical treatment in reducing protease activity in gingival crevicular fluid from chronic periodontitis patients", JOURNAL OF CLINICAL PERIODONTOLOGY, vol. 31, no. 8, 1 August 2004 (2004-08-01) , pages 615-619, XP055029319, ISSN: 0303-6979, DOI: 10.1111/j.1600-051X.2004.00532.x abstract page 617 page 618, left-hand column -----	1-15

1

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/EP2013/054569

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 3700180 A1	14-07-1988	NONE	
US 2011081673 A1	07-04-2011	NONE	
WO 0114875 A1	01-03-2001	AU 6721500 A	19-03-2001
		US 2001012636 A1	09-08-2001
		WO 0114875 A1	01-03-2001
WO 2007133721 A2	22-11-2007	AU 2007249801 A1	22-11-2007
		CA 2652041 A1	22-11-2007
		EP 2034855 A2	18-03-2009
		US 2007275104 A1	29-11-2007
		WO 2007133721 A2	22-11-2007
US 2006275216 A1	07-12-2006	AT 268187 T	15-06-2004
		AU 726914 B2	23-11-2000
		AU 2544897 A	22-10-1997
		BR 9708470 A	13-04-1999
		CA 2247620 A1	09-10-1997
		CN 1215341 A	28-04-1999
		DE 69729380 D1	08-07-2004
		DE 69729380 T2	14-07-2005
		DK 907379 T3	16-08-2004
		EP 0907379 A2	14-04-1999
		ES 2217408 T3	01-11-2004
		HK 1016877 A1	18-03-2005
		IL 125895 A	13-09-2001
		IS 4833 A	26-08-1998
		JP 2000507577 A	20-06-2000
		JP 2004210796 A	29-07-2004
		KR 20000005422 A	25-01-2000
		KR 20060025233 A	20-03-2006
		NO 984543 A	26-11-1998
		NZ 331629 A	28-04-2000
		PT 907379 E	30-09-2004
		US 2002034476 A1	21-03-2002
		US 2004156785 A1	12-08-2004
		US 2006275216 A1	07-12-2006
		WO 9736619 A2	09-10-1997