

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
9 December 2010 (09.12.2010)

PCT

(10) International Publication Number  
**WO 2010/139792 A3**

(51) International Patent Classification:  
A61L 27/38 (2006.01)

(21) International Application Number:  
PCT/EP2010/057847

(22) International Filing Date:  
4 June 2010 (04.06.2010)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
09161976.7 4 June 2009 (04.06.2009) EP

(71) Applicants (for all designated States except US): **UNIVERSITE CATHOLIQUE DE LOUVAIN** [BE/BE]; Place de l'Université 1, B-1348 Louvain la Neuve (BE). **CLINIQUES UNIVERSITAIRES SAINT-LUC** [BE/BE]; Avenue Hippocrate 10, B-1200 Bruxelles (BE).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **DUFRANE, Denis** [BE/BE]; 11 rue Sainte-Anne, B-1300 Wavre (BE). **DELLOYE, Christian** [BE/BE]; 125A Avenue Leopold III, B-1970 Wezembeek-Oppem (BE).

(74) Agents: **TOUATI, Catherine** et al.; Cabinet Plasseraud, 52 rue de la Victoire, F-75440 Paris Cedex 09 (FR).

(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, 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, PE, PG, PH, PL, PT, RO, RS, RU, 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, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, 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, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

**Declarations under Rule 4.17:**

— of inventorship (Rule 4.17(iv))

**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))

(88) Date of publication of the international search report:  
19 May 2011



WO 2010/139792 A3

(54) Title: MULTI-DIMENSIONAL BIOMATERIAL AND METHOD FOR PRODUCING THE SAME

(57) Abstract: Biomaterial having a multi-dimensional structure and comprising differentiated MSCs tissue and demineralised bone matrix, wherein said demineralised bone matrix is dispersed within the differentiated MSCs tissue, method for producing the same and use thereof.

INTERNATIONAL SEARCH REPORT

International application No  
PCT/EP2010/057847

A. CLASSIFICATION OF SUBJECT MATTER  
INV. A61L27/38  
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)  
A61L  
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, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 02/062357 A1 (COMMW SCIENT IND RES ORG [AU]; IND TECH RES INST; WERKMEISTER JEROME A) 15 August 2002 (2002-08-15) claims 61-85 -----	1-4,6-8, 16,17
X	US 2005/002910 A1 (WOLFINBARGER LLOYD [US] ET AL WOLFINBARGER JR LLOYD [US] ET AL) 6 January 2005 (2005-01-06) claims 1-91 ----- -/--	1-15

Further documents are listed in the continuation of Box C.

See patent family annex.

\* Special categories of cited documents :

<p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"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)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p>	<p>"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</p> <p>"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</p> <p>"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.</p> <p>"&amp;" document member of the same patent family</p>
--	--

Date of the actual completion of the international search <b>16 March 2011</b>	Date of mailing of the international search report <b>24/03/2011</b>
---	---

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

## INTERNATIONAL SEARCH REPORT

International application No  
PCT/EP2010/057847

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>TSIRIDIS E ET AL: "In vitro proliferation and differentiation of human mesenchymal stem cells on hydroxyapatite versus human demineralised bone matrix with and without osteogenic protein-1", EXPERT OPINION ON BIOLOGICAL THERAPY, ASHLEY, LONDON, GB, vol. 9, no. 1, 1 January 2009 (2009-01-01) , page 19, XP008133775, ISSN: 1471-2598, DOI: DOI:10.1517/14712590802622473 the whole document</p>	1-15
A	<p>----- WO 2008/073331 A (TEVA PHARMA [IL]; TEVA PHARMA [US]; GINIS IRENE [IL]; SCHWARTZ AHARON) 19 June 2008 (2008-06-19) claims 1,2,7,19,27,30</p>	1-15
A	<p>----- SHUANHU ZHOU ET AL: "Demineralized bone promotes chondrocyte or osteoblast differentiation of human marrow stromal cells cultured in collagen sponges", CELL AND TISSUE BANKING, KLUWER ACADEMIC PUBLISHERS, DO, vol. 6, no. 1, 1 March 2005 (2005-03-01), pages 33-44, XP019234045, ISSN: 1573-6814 the whole document</p> <p>-----</p>	1-15

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/EP2010/057847
---

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 02062357	A1	15-08-2002	CA 2437212 A1 15-08-2002
			CN 1520306 A 11-08-2004
			EP 1365784 A1 03-12-2003
			JP 2004531297 T 14-10-2004
			NZ 527565 A 29-04-2005
			TW I258372 B 21-07-2006
			US 2009098177 A1 16-04-2009
			US 2005089578 A1 28-04-2005
-----			
US 2005002910	A1	06-01-2005	US 2007105222 A1 10-05-2007
-----			
WO 2008073331	A	19-06-2008	AU 2007332799 A1 19-06-2008
			EP 2099290 A2 16-09-2009
			KR 20090086260 A 11-08-2009
			US 2008152630 A1 26-06-2008
-----			