

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
1 April 2004 (01.04.2004)

PCT

(10) International Publication Number
WO 2004/026189 A3

(51) International Patent Classification:
A61F 2/44 (2006.01)

(21) International Application Number:
PCT/US2003/029278

(22) International Filing Date:
16 September 2003 (16.09.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10/245,955 18 September 2002 (18.09.2002) US

(71) Applicant (for all designated States except US): **SDGI HOLDINGS, INC.** [US/US]; 300 Delaware Avenue Suite 508, Wilmington, DE 19801 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **TRIEU, Hai, H.** [US/US]; 1323 Graystone Lane, Cordova, TN 38018 (US). **SHERMAN, Michael, C.** [US/US]; 5854 Haymaker Road, Memphis, TN 38120 (US).

(74) Agents: **BINDSEIL, James, J.** et al.; LC340, 710 Medtronic Parkway NE, Minneapolis, MN 55432 (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, 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, 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 (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, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declaration under Rule 4.17:

— as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))

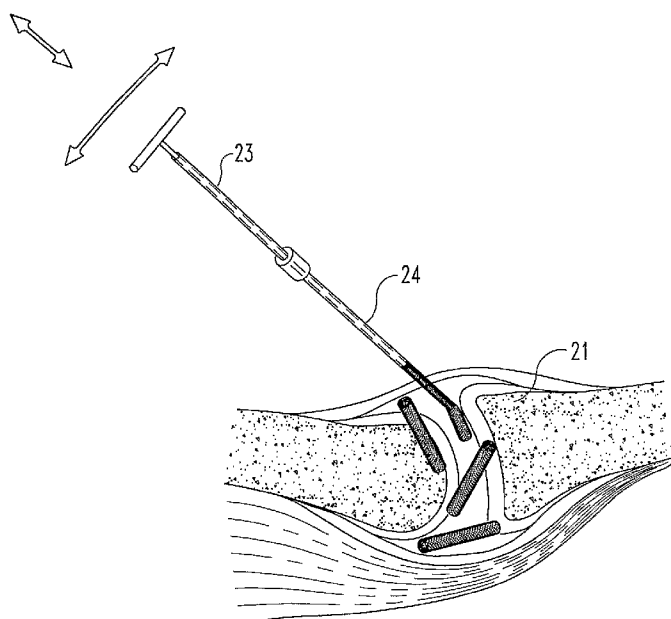
Published:

— with international search report

(88) Date of publication of the international search report:
21 December 2007

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: COLLAGEN-BASED MATERIALS AND METHODS FOR AUGMENTING INTERVERTEBRAL DISCS



(57) Abstract: A method of augmenting an intervertebral disc by injecting particles of collagen-based material into the disc. The particles may be dehydrated before implantation, and rehydrated after implantation, or they may be implanted in a "wet" state - such as a slurry or gel. Radiocontrast materials may be included to enhance imaging of the injected material. Other additives may include analgesics, antibiotics, proteoglycans, growth factors, and/or other cells effective to promote healing and/or proper disc function.



WO 2004/026189 A3

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 03/29278

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A61F2/44

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 A61F

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)

EP0-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 02/40070 A (DESROSIERS ERIC ANDRE ;CHAPUT CYRIL (CA); BERRADA MOHAMMED (CA); B) 23 May 2002 (2002-05-23) claims 1,8,9,12,21,23,27-29,41,45,56-58,61,64,68, 71; figures 1-3 ---	
A	WO 02/054978 A (INTRINSIC ORTHOPEDICS INC) 18 July 2002 (2002-07-18) figure 61C paragraphs [0027]-[0030], [0159], [0227], [0230]-[0236] ---	
A	US 2002/120347 A1 (ANGELUCCI CHRISTOPHER M ET AL) 29 August 2002 (2002-08-29) claims 6-12 paragraphs [0008],[0068] ---	
	-/--	

☒ 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

21 May 2004

Date of mailing of the international search report

02/06/2004

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

Stach, R

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 03/29278

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2002/029083 A1 (ZUCHERMAN JAMES F ET AL) 7 March 2002 (2002-03-07) paragraphs [0091]-[0095], [0112]-[0114] ---	
A	US 6 264 695 B1 (STOY VLADIMIR A) 24 July 2001 (2001-07-24) claims 1,15 -----	

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 03/29278

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 0240070	A	23-05-2002	AU 2137002 A	27-05-2002
			WO 0240070 A2	23-05-2002
			CA 2429168 A1	23-05-2002
			EP 1335687 A2	20-08-2003
WO 02054978	A	18-07-2002	US 6508839 B1	21-01-2003
			CA 2425951 A1	18-07-2002
			EP 1328221 A2	23-07-2003
			WO 02054978 A2	18-07-2002
			US 2002151979 A1	17-10-2002
			US 2003125807 A1	03-07-2003
			US 2003014117 A1	16-01-2003
			US 2003009227 A1	09-01-2003
			US 2003014118 A1	16-01-2003
			US 2003093155 A1	15-05-2003
			US 2004024465 A1	05-02-2004
			US 2004010317 A1	15-01-2004
			US 2004044412 A1	04-03-2004
			US 2004030392 A1	12-02-2004
			US 2004034429 A1	19-02-2004
US 2002120347	A1	29-08-2002	US 2003045935 A1	06-03-2003
			CA 2439278 A1	12-09-2002
			WO 02069818 A2	12-09-2002
			WO 03020143 A1	13-03-2003
			US 2002120346 A1	29-08-2002
			US 2002120338 A1	29-08-2002
			US 2002120335 A1	29-08-2002
			WO 03020142 A1	13-03-2003
US 2002029083	A1	07-03-2002	US 6371984 B1	16-04-2002
			CA 2444629 A1	03-10-2002
			EP 1383444 A2	28-01-2004
			WO 02076336 A2	03-10-2002
			AU 7375000 A	17-04-2001
			CA 2387522 A1	22-03-2001
			EP 1274369 A2	15-01-2003
			JP 2003516775 T	20-05-2003
			WO 0119283 A2	22-03-2001
			US 2001032019 A1	18-10-2001
US 6264695	B1	24-07-2001	AU 768903 B2	08-01-2004
			AU 7843200 A	30-04-2001
			CA 2388794 A1	05-04-2001
			CZ 20021137 A3	11-09-2002
			EP 1231868 A2	21-08-2002
			JP 2003510129 T	18-03-2003
			WO 0122902 A2	05-04-2001
			US 2003055506 A1	20-03-2003

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.1

Claims Nos.: 1-34

Claims 1-17: Rule 39.1(iv) PCT - Method for treatment of the human or animal body by surgery

Claims 18-34: The subject matter of these claims concerns an intervertebral disc within a living body and is thus neither susceptible of industrial application nor patentable. The International Search Authority is therefore not required to search this subject matter (see Article 17(2)(a)(i) and PCT International Search Guidelines, Chapter VIII-1.1). Consequently, in the light of the description, the search has been restricted to the particulate collagen-based material mentioned in the claims.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 03/29278

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.: 1-34
because they relate to subject matter not required to be searched by this Authority, namely:
see FURTHER INFORMATION sheet PCT/ISA/210
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:

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.