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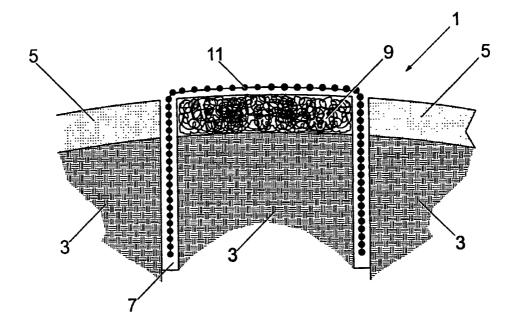
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[Continued on next page]

(54) Title: REPAIR OF DAMAGED TISSUE



(57) Abstract: The invention relates to a method for the repair of damaged tissue present at or on the surface (5, 27) of bone in an animal, the method comprising forming a narrow groove (7, 25) around at least part of said damaged tissue, which groove extends (7, 25) into the bone (3, 29) below the damaged tissue, replacing the tissue around which the groove (7, 25) extends by at least one layer of biocompatible replacement material (9), and anchoring the material (9) to the bone (3, 29) by the use of retaining means (11) extending from the material (9) into the groove (7, 25); instruments for use in the repair of damaged tissue and kits comprising said instruments.

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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.

Inter. onal Application No PCT/GB 00/04624

A. CLASSIFICATION OF SUBJECT MATTER IPC 7 A61B17/16 A61B A61F2/30 A61F2/28 A61F2/46 A61B17/32 A61L27/00 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 A61B 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) EPO-Internal C. DOCUMENTS CONSIDERED TO BE RELEVANT Relevant to claim No. Citation of document, with indication, where appropriate, of the relevant passages Category ° 18-20 US 5 782 835 A (HART) χ 21 July 1998 (1998-07-21) 21-25. the whole document Y 28,29,40 34,35 21,23 US 5 535 756 A (PARASHER) Υ 16 July 1996 (1996-07-16) the whole document 22 GB 638 892 A (ALFORD) 14 June 1950 (1950-06-14) the whole document 24 WO 96 24302 A (SCHWARTZ) Υ 15 August 1996 (1996-08-15) 18,34, the whole document Α 35,39,40 Patent family members are listed in annex. Further documents are listed in the continuation of box C. Χ ° Special categories of cited documents "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 "A" document defining the general state of the art which is not considered to be of particular relevance invention *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to *E* earlier document but published on or after the international filing date involve an inventive step when the document is taken alone *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another "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 docucitation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or ments, such combination being obvious to a person skilled *P* document published prior to the international filing date but later than the priority date claimed "&" document member of the same patent family Date of mailing of the international search report Date of the actual completion of the international search 0 3, 10, 2001 21 September 2001 Authorized officer 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, Klein, C

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Inten anal Application No
PCT/GB 00/04624

	ation) DOCUMENTS CONSIDERED TO BE RELEVANT	Relevant to claim No.
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Helevant to claim No.
P,Y	US 6 080 176 A (YOUNG) 27 June 2000 (2000-06-27) the whole document	28,29
Χ	DE 195 03 504 A (METRIMED ORVOSI MÜSZERGYÁRTÓ) 21 March 1996 (1996-03-21)	18-20
Α	the whole document	25
Х	WO 96 24304 A (THE HOSPITAL FOR JOINT DISEASES, ORTHOPAEDIC INSTITUTE) 15 August 1996 (1996-08-15)	34,35, 37-39
Υ	the whole document	25,40
Χ	US 5 067 964 A (RICHMOND) 26 November 1991 (1991-11-26)	34-36,39
Υ	the whole document	37,38
Υ	DE 198 03 673 A (MEENEN) 5 August 1999 (1999-08-05) column 7; figure 2; example 2	37,38
Α	EP 0 228 752 A (FUTURA NOVA) 15 July 1987 (1987-07-15) the whole document	23
A	US 5 964 805 A (STONE) 12 October 1999 (1999-10-12)	
A	WO 98 34569 A (SMITH & NEPHEW) 13 August 1998 (1998-08-13)	
А	US 4 649 918 A (PEGG) 17 March 1987 (1987-03-17)	
A	WO 93 07819 A (ELIAS) 29 April 1993 (1993-04-29)	
A	WO 98 08469 A (VTS HOLDINGS) 5 March 1998 (1998-03-05)	
A	WO 97 46665 A (SULZER ORTHOPEDICS) 11 December 1997 (1997-12-11)	
A	DE 43 17 448 A (GROSS) 24 November 1994 (1994-11-24)	
A	WO 94 09722 A (THM BIOMEDICAL) 11 May 1994 (1994-05-11)	
A	EP 0 505 634 A (KYOCERA CORPORATION) 30 September 1992 (1992-09-30)	

International application No. PCT/GB 00/04624

INTERNATIONAL SEARCH REPORT

Box i	Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)
This Inte	ernational Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:
1. χ	Claims Nos.: 1-17, 42 because they relate to subject matter not required to be searched by this Authority, namely: Rule 39.1(iv) PCT - Method for treatment of the human or animal body by surgery
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 Inte	ernational Searching Authority found multiple inventions in this international application, as follows:
	see additional sheet
1. X	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.:
Remar	The additional search fees were accompanied by the applicant's protest. X 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: 18-33

A set of instruments for repairing damaged tissue at or on the bone surface comprising: — means for forming a narrow groove around said damaged tissue; — means for removing said damaged tissue from the space inside said groove; — means for anchoring replacement material retaining means inside said space.

2. Claims: 34-41

A replacement element, and a replacement kit, for repairing damaged tissue at or on the bone surface comprising: - a pad of bio-compatible material shaped and sized to occupy a site from which said damaged tissue has been removed.

Information on patent family members

Interr. Onal Application No PCT/GB 00/04624

ited ir	ent document	1			S. A. M. Carrella	Dublication
	n search report		Publication date		Patent family member(s)	Publication date
10 =		A	21-07-1998	AU	712301 B2	04-11-1999
, J	7,02033	Λ	LI 0/ 1550	AU	4922296 A	23-09-1996
				EP	0814710 A1	07-01-1998
				JP	11501239 T	02-02-1999
				WO	9627333 A1	12-09-1996
				WU US	6017348 A	25-01-2000
JS 5	5535756 	Α	16-07-1996 	US	5738109 A	14-04-1998
3B 6	638 89 2	Α	14-06-1950	NONE		
WO S	9624302	Α	15-08-1996	WO	9725942 A1	24-07-1997
				US	5632745 A	27-05-1997
				AU	697372 B2	01-10-1998
				AU	4855996 A	11-08-1997
				CA	2212544 A1	15-08-1996
				EΡ	0808136 A1	26-11-1997
				EP	0814731 A1	07-01-1998
				ĴΡ	2000513240 T	10-10-2000
				WO	9624302 A1	15-08-1996
				AU	694838 B2	30-07-1998
				AU	4693396 A	27-08-1996
				JP	10504217 T	28-04-1998
				US	5769899 A	23-06-1998
				US	5749874 A	12-05-1998
			07.00.0000		5,750,7 N	
US 	6080176 	A	27 - 06-2000 	NONE		
DΕ	19503504	Α	21-03-1996	HU	76105 A2	30-06-199
				DE	19503504 A1	21-03-199
WO.	9624304	Α	15-08-1996	US	5713374 A	03-02-199
				ΑŪ	710212 B2	16-09-199
				AU	4975696 A	27-08-199
				CA	2212641 A1	15-08-199
				EP	0808137 A1	26-11-199
				JP	10513387 T	22-12-199
				WO	9624304 A1	15-08-199
US 	5067964 	A	26-11-1991 	EP 	0528080 A1 	24-02-199
DF	19803673	Α	05-08-1999	DE	19803673 A1	05-08-199
	,	-		EP	0934750 A2	11-08-199
				JP	11267193 A	05-10-199
EP	228752	A	 15-07-1987	NL	8503596 A	16-07-198
				ΑT	57827 T	15-11-199
				ΑU	588461 B2	14-09-198
				AU	7339087 A	08-12-198
				CA	1268092 A1	24-04-199
				DE	3675360 D1	06-12-199
				EP	0228752 A1	15-07-198
				US	4700713 A	20-10-198
	 5964805	A	12-10-1999	US	6110209 A	29-08-200
us	3704003					
	9834569	<u></u>	 13-08-1998	us	6146385 A	14-11-200

Information on patent family members

Intellutional Application No
PCT/GB 00/04624

					LC1/ dB	
Patent doc			Publication date		Patent family member(s)	Publication date
WO 98345	569	A	<u> </u>	AU EP WO	6275298 A 1006957 A1 9834569 A1	26-08-1998 14-06-2000 13-08-1998
US 4649	 918	Α	17-03-1987	NONE		
WO 9307	819	A	29-04-1993	US CA DE DE EP ES WO	5324300 A 2099287 A1 69224057 D1 69224057 T2 0564630 A1 2114571 T3 9307819 A2	28-06-1994 26-04-1993 19-02-1998 27-08-1998 13-10-1993 01-06-1998 29-04-1993
 WO 9808	469	A	05-03-1998	US US AU AU BR EP HU NO PL TR US WO US	5759190 A 5989269 A 731162 B2 4171097 A 9711967 A 1006950 A2 0002980 A2 990933 A 331834 A1 9900437 T2 6120514 A 9808469 A2 6283980 B1	02-06-1998 23-11-1999 22-03-2001 19-03-1998 18-01-2000 14-06-2000 29-01-2001 26-02-1999 02-08-1999 21-05-1999 19-09-2000 05-03-1998 04-09-2001
WO 9746	6665	Α	11-12-1997	WO EP JP US US	9746665 A1 0922093 A1 2000513214 T 6242247 B1 2001014473 A1	11-12-1997 16-06-1999 10-10-2000 05-06-2001 16-08-2001
DE 4317	7448	Α	24-11-1994	DE AU WO	4317448 A1 6792994 A 9426211 A1	24-11-1994 12-12-1994 24-11-1994
WO 940	9722	Α	11-05-1994	AU BR GB JP WO US US US US	5445794 A 9307280 A 2215209 A ,B 1232967 A 2820415 B2 9409722 A1 5683459 A 5904717 A 6005161 A 5755792 A 5133755 A 5366508 A	24-05-1994 01-06-1999 20-09-1989 18-09-1989 05-11-1998 11-05-1994 04-11-1997 18-05-1999 21-12-1999 26-05-1998 28-07-1992 22-11-1994
EP 505	634	Α	30-09-1992	JP JP DE DE US US	3007903 B2 4303444 A 69127354 D1 69127354 T2 0505634 A1 5458643 A 5314478 A	14-02-2000 27-10-1992 25-09-1997 22-01-1998 30-09-1992 17-10-1995 24-05-1994