

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
7 June 2007 (07.06.2007)

PCT

(10) International Publication Number  
**WO 2007/065016 A3**

(51) International Patent Classification:  
A61F 2/06 (2006.01)

(21) International Application Number:  
PCT/US2006/046296

(22) International Filing Date:  
4 December 2006 (04.12.2006)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
60/741,855 2 December 2005 (02.12.2005) US

(71) Applicants and

(72) Inventors: AU, Jessie, L.S. [US/US]; 2287 Palmleaf Court, Columbus, OH 43235 (US). WIENTJES, Guillaume, M. [US/US]; 2287 Palmleaf Court, Columbus, OH 43235 (US).

(74) Agents: MUELLER, Jerry, K. et al.; Mueller Smith & Matto, 7700 Rivers Edge Drive, Columbus, OH 43235 (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, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, 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, LS, MW, MZ, NA, 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, IS, IT, LT, LU, LV, 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:  
8 January 2009

(54) Title: METHODS AND COMPOSITIONS TO IMPROVE ACTIVITY AND REDUCE TOXICITY OF STENTS

(57) Abstract: Disclosed is a method of improving the efficacy of endovascular drug-releasing stents implanted in a subject, wherein one or more modulators of drug transport are administered at such a time as is beneficial to maintain nearby tissue concentrations of the drug released by the stent within their therapeutically effective range, wherein one or more modulators of drug activity are administered at such a time as is beneficial to prevent restenosis, and wherein one or more modulators of drug activity are administered at such a time as is beneficial to promote the early healing or reendothelialization process.



WO 2007/065016 A3

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 06/46296

<b>A. CLASSIFICATION OF SUBJECT MATTER</b> IPC(8) - A61F 2/06 (2008.04) USPC - 623/1.42 According to International Patent Classification (IPC) or to both national classification and IPC																									
<b>B. FIELDS SEARCHED</b> Minimum documentation searched (classification system followed by classification symbols) USPC 623/1.42 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched All USPC; USPC 623/1.11, 623/1.15, 623/1.43, 623/1.46, 623/23.7; IPC A61F2/06 Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) PubWEST(USPT,PGPB,EPAB,JPAB); Google: @PD<20051202; stent; endovascular drug-releas\$; growth factor; modulat\$; DRUG NEAR3 sens\$; transport; growth factor NEAR2 inhibitor; suramin; liposome; pegylat\$; nanopartic\$; gelatin; cancer; chemosensitiz\$; (albumin OR gelatin\$ or liposome); (amiodarone OR amitriptyline) etc.																									
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>																									
<table border="1"> <thead> <tr> <th>Category*</th> <th>Citation of document, with indication, where appropriate, of the relevant passages</th> <th>Relevant to claim No.</th> </tr> </thead> <tbody> <tr> <td>X -- Y</td> <td>US 2003/0040790 A1 (Furst, et. al.) 27 Feb 2003 (27.02.2003); Abstract; para [0004], [0024], [0027], [0031], [0034], [0036], [0095]</td> <td>1, 6-7, 11-13, 20-21, 27-31, 34 -- 2-5, 8-10, 14-19, 22-26, 32-33</td> </tr> <tr> <td>Y</td> <td>US 6,663,880 B1 (Roorda, et. al.) 16 Dec 2003 (16.12.2003); Abstract; col 2</td> <td>2-5</td> </tr> <tr> <td>Y</td> <td>US 2005/0010170 A1 (Shanley, et. al.) 13 Jan 2005 (13.01.2005); Abstract; para [0052]-[0053]; Fig 10, 11</td> <td>8</td> </tr> <tr> <td>Y</td> <td>US 2005/0002865 A1 (Klaveness, et. al.) 6 Jan 2005 (06.01.2005); para [0009], [0033], [0076], [0112]</td> <td>9-10, 35-39</td> </tr> <tr> <td>Y</td> <td>WO 2003/026574 A2 (Au, et. al.) 3 Apr 2003 (03.04.2003); pg 1-2, 35, claim 3</td> <td>14, 15, 22, 23, 32, 33, 35-39</td> </tr> <tr> <td>Y</td> <td>US 6,599,912 B1 (Au, et. al.) 29 Jul 2003 (29.07.2003); col 1-2, 59-60</td> <td>16-19, 35-39</td> </tr> <tr> <td>Y</td> <td>US 2003/0083646 A1 (Sirhan, et. al.) 1 May 2003 (01.05.2003); Abstract; para [0053]-[0054]</td> <td>24-26</td> </tr> </tbody> </table>	Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	X -- Y	US 2003/0040790 A1 (Furst, et. al.) 27 Feb 2003 (27.02.2003); Abstract; para [0004], [0024], [0027], [0031], [0034], [0036], [0095]	1, 6-7, 11-13, 20-21, 27-31, 34 -- 2-5, 8-10, 14-19, 22-26, 32-33	Y	US 6,663,880 B1 (Roorda, et. al.) 16 Dec 2003 (16.12.2003); Abstract; col 2	2-5	Y	US 2005/0010170 A1 (Shanley, et. al.) 13 Jan 2005 (13.01.2005); Abstract; para [0052]-[0053]; Fig 10, 11	8	Y	US 2005/0002865 A1 (Klaveness, et. al.) 6 Jan 2005 (06.01.2005); para [0009], [0033], [0076], [0112]	9-10, 35-39	Y	WO 2003/026574 A2 (Au, et. al.) 3 Apr 2003 (03.04.2003); pg 1-2, 35, claim 3	14, 15, 22, 23, 32, 33, 35-39	Y	US 6,599,912 B1 (Au, et. al.) 29 Jul 2003 (29.07.2003); col 1-2, 59-60	16-19, 35-39	Y	US 2003/0083646 A1 (Sirhan, et. al.) 1 May 2003 (01.05.2003); Abstract; para [0053]-[0054]	24-26	<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/>
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.																							
X -- Y	US 2003/0040790 A1 (Furst, et. al.) 27 Feb 2003 (27.02.2003); Abstract; para [0004], [0024], [0027], [0031], [0034], [0036], [0095]	1, 6-7, 11-13, 20-21, 27-31, 34 -- 2-5, 8-10, 14-19, 22-26, 32-33																							
Y	US 6,663,880 B1 (Roorda, et. al.) 16 Dec 2003 (16.12.2003); Abstract; col 2	2-5																							
Y	US 2005/0010170 A1 (Shanley, et. al.) 13 Jan 2005 (13.01.2005); Abstract; para [0052]-[0053]; Fig 10, 11	8																							
Y	US 2005/0002865 A1 (Klaveness, et. al.) 6 Jan 2005 (06.01.2005); para [0009], [0033], [0076], [0112]	9-10, 35-39																							
Y	WO 2003/026574 A2 (Au, et. al.) 3 Apr 2003 (03.04.2003); pg 1-2, 35, claim 3	14, 15, 22, 23, 32, 33, 35-39																							
Y	US 6,599,912 B1 (Au, et. al.) 29 Jul 2003 (29.07.2003); col 1-2, 59-60	16-19, 35-39																							
Y	US 2003/0083646 A1 (Sirhan, et. al.) 1 May 2003 (01.05.2003); Abstract; para [0053]-[0054]	24-26																							
<p>* Special categories of cited documents:</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent 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 11 September 2008 (11.09.2008)	Date of mailing of the international search report <b>04 NOV 2008</b>																								
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. 571-273-3201	Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774																								