



(51) International Patent Classification:

*A61L 31/04* (2006.01) *A61L 31/16* (2006.01)  
*A61L 31/10* (2006.01)

(21) International Application Number:

PCT/US2008/057061

(22) International Filing Date:

14 March 2008 (14.03.2008)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

60/894,944 15 March 2007 (15.03.2007) US

(71) Applicant (for all designated States except US):  
**BOSTON SCIENTIFIC LIMITED** [BB/BB]; Seaton  
House, Hastings, Christ Church (BB).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **BENCO, John, S.**  
[US/US]; 139 Rolling Meadow Drive, Holliston, MA  
01746 (US).

(74) Agent: **KENYON & KENYON LLP**; 1500 K Street, N.  
W., Suite 700, Washington, DC 20005-1257 (US).

(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, 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, 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, HR, HU, IE, IS, IT, LT, LU, LV,  
MC, MT, NL, NO, 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 (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:

24 September 2009

(54) Title: METHODS TO IMPROVE THE STABILITY OF CELLULAR ADHESIVE PROTEINS AND PEPTIDES

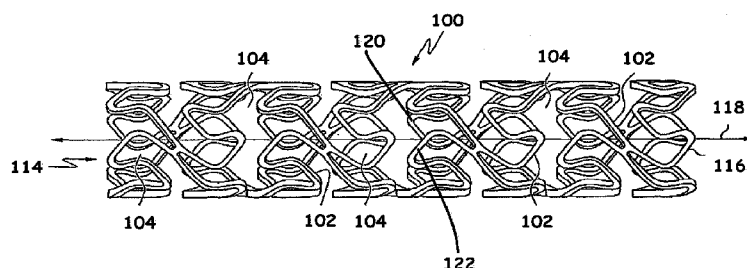


Fig. 1

(57) Abstract: The present disclosure provides surface-binding cell adhesion polypeptides including cell adhesion polypeptides attached to a surface-binding moiety having binding affinity for one or more materials present in a metallic and/or non-metallic inorganic surface. The surface-binding cell adhesion polypeptides are useful for forming a layer having improved adhesion to and stability on at least a portion of a surface of an implantable medical device, such as a stent.

## INTERNATIONAL SEARCH REPORT

International application No

PCT/US2008/057061

**A. CLASSIFICATION OF SUBJECT MATTER**

INV. A61L31/04 A61L31/10 A61L31/16

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, INSPEC, EMBASE

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>US 6 497 729 B1 (MOUSSY FRANCIS [US] ET AL) 24 December 2002 (2002-12-24)</p> <p>column 1, lines 20-25  column 1, line 46 - column 2, line 47  column 4, line 66 - column 5, line 33  column 7, lines 22-67  column 9, lines 17-39  column 12, line 63 - column 13, line 13  claims 1,4,5,7-13,18  figure 1</p> <p style="text-align: center;">----- -/--</p>	1-8, 11-18

☒ Further documents are listed in the continuation of Box C.☒ 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 document but published on or after the international filing date
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- \*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

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\*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

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\*&\* document member of the same patent family

Date of the actual completion of the international search

30 June 2009

Date of mailing of the international search report

14/08/2009

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

Cadamuro, Sergio

## INTERNATIONAL SEARCH REPORT

International application No

PCT/US2008/057061

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>GERMANIER Y ET AL: "enhanced bone apposition around biofunctionalized sandblasted and acid-etched titanium implant surfaces, a histomorphometric study i miniature pigs"</p> <p>CLINICAL ORAL IMPLANTS RESEARCH, MUNKSGAARD INTERNATIONAL PUBLISHERS, DK, vol. 17, 1 January 2006 (2006-01-01), pages 251-257, XP002419124 ISSN: 0905-7161 abstract page 253, column 3, paragraph 3 - page 254, column 1, paragraph 1 page 254, column 3, paragraph 3 - page 255, column 3, paragraph 2</p>	19,20
X	<p>JEFFREY LAWRENCE DALSIN: "Mussel Adhesive-Inspired Surface Modification for the Preparation of Nonfouling Biomaterials"</p> <p>December 2004 (2004-12), , EVANSTON, ILLINOIS, USA , XP002533788 pages 1-6 page 11 pages 34-41 pages 142-149 page 164, paragraph 1 - page 168, paragraph 1</p>	1,9,12
A	<p>US 2003/229393 A1 (KUTRYK MICHAEL J B [CA] ET AL) 11 December 2003 (2003-12-11) paragraphs [0002], [0014] - [0019], [0028] - [0030], [0033], [0049], [0062], [0069] figure 1a claims 1-4</p>	1-9, 11-20
A	<p>OPIE SHAUN R ET AL: "Local endovascular delivery, gene therapy, and cell transplantation for peripheral arterial disease."</p> <p>JOURNAL OF ENDOVASCULAR THERAPY : AN OFFICIAL JOURNAL OF THE INTERNATIONAL SOCIETY OF ENDOVASCULAR SPECIALISTS DEC 2004, vol. 11 Suppl 2, December 2004 (2004-12), pages II151-II162, XP002534318 ISSN: 1526-6028 abstract pages II-157, column 2, paragraph 2 - pages II-158, column 1, paragraph 1</p>	1-9, 11-20

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US2008/057061

## Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 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.:  
because they relate to subject matter not required to be searched by this Authority, namely:
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 No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers allsearchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search reportcovers 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.:

1-6, 12-14 and 19-20 (all in part); 7-9, 11 and 15-18 (entirely)

### Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ 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: 1-6,12-14 and 19-20 (all in part); 7-9, 11 and 15-18 (entirely)

An implantable medical device coated on at least part of one surface with a surface binding cell adhesion polypeptide comprising a DOPA containing polypeptidic surface binding moiety bound to the surface and a cell adhesion polypeptide attached to the surface-binding moiety

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2. claims: 1-6, 12-14, 19-20 (all in part); 10 (entirely)

An implantable medical device coated on at least part of one surface with a surface binding cell adhesion polypeptide comprising a polybisphosphonate surface binding moiety bound to the surface and a cell adhesion polypeptide attached to the surface-binding moiety.

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# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2008/057061

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 6497729	B1	24-12-2002	US 2003099682 A1	29-05-2003
US 2003229393	A1	11-12-2003	NONE	