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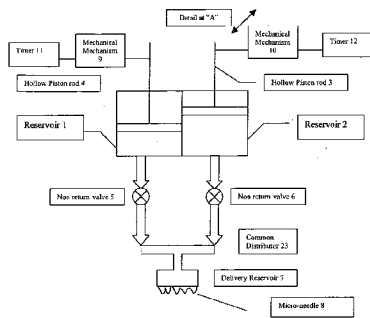
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- Published:**
- with international search report (Art. 21(3))
  - before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

[Continued on next page]

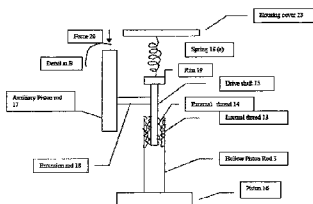
(54) Title: A DEVICE AND A SYSTEM FOR DELIVERY OF BIOLOGICAL MATERIAL

FIGURE 1  
MECHANISM FOR PROGRAMMED DELIVERY OF BIOLOGICAL MATERIAL

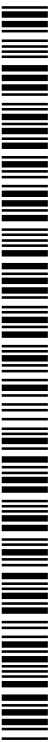
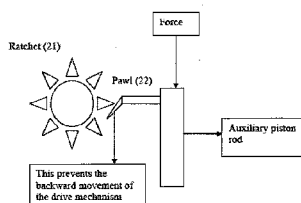


(57) Abstract: The present application provides a device and a system for the delivery of biological material across the biological tissue. The device may be for the programmed delivery of biological material through a needle or a micro-needle or micro-needles or biodegradable micro-needles.

Details at A



Details at B



**(88) Date of publication of the international search report:**  
28 January 2010

## INTERNATIONAL SEARCH REPORT

International application No

PCT/IB2009/052382

A. CLASSIFICATION OF SUBJECT MATTER  
 INV. A61M5/168 A61M37/00

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)  
 A61M

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 A	WO 03/026726 A (NOVO NORDISK AS [DK]) 3 April 2003 (2003-04-03) page 10, lines 21-34 page 18, lines 5-34 page 21, line 5 - page 22, line 23; figure 1b page 25, line 32 - page 26, line 16; figures 4a-5 page 26, line 35 - page 27, line 16; figures 7a-c page 28, lines 1-10	1,4,5, 10,11,24 7
X A	WO 2006/060106 A (HEWLETT PACKARD DEVELOPMENT CO [US]; NICKEL JANICE H [US]) 8 June 2006 (2006-06-08) page 4, line 9 - page 18, line 10; figures 1-3	1,4-6, 10,11,24 7
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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
- \*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

28 August 2009

Date of mailing of the international search report

08/12/2009

Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2  
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## INTERNATIONAL SEARCH REPORT

International application No

PCT/IB2009/052382

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2006/127905 A (CHRONO THERAPEUTICS INC [US]; HUANG JOSEPH ZHILI [US]; DIPIERRO GUY [U] 30 November 2006 (2006-11-30)	1,4-6, 10,11,24
A	paragraphs [0085] - [0091]; figures 11-13	7
X	WO 2007/108987 A (SEATTLE MEDICAL TECHNOLOGIES I [US]; ALFERNESS CLIFTON A [US]; ADAMS J) 27 September 2007 (2007-09-27)	1,4,5, 10,11,24
A	paragraphs [0026] - [0034]; figures 1-4 paragraphs [0039] - [0044]; figures 7a-12	7
X	US 2007/088271 A1 (RICHARDS CYNTHIA C [US]) 19 April 2007 (2007-04-19)	1,4,5, 10,11,24
A	paragraphs [0020] - [0051]; figures 1-5	7
X	US 5 527 288 A (GROSS JOSEPH [IE] ET AL) 18 June 1996 (1996-06-18)	1,4,5, 10,11,24
A	column 9, line 35 - column 10, line 24; figures 7-9	7
X	US 5 860 957 A (JACOBSEN STEPHEN C [US] ET AL) 19 January 1999 (1999-01-19)	1,4,5, 10,11,24
A	column 4, line 44 - column 9, line 17; figures 1-3 column 11, line 41 - column 13, line 10; figures 8a-9	7
X	US 2007/073267 A1 (MULLER DAVID F [US]) 29 March 2007 (2007-03-29)	1,4,5, 10,11,24
	paragraphs [0037] - [0043]; figure 1 paragraphs [0055] - [0063]; figures 3-6	

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

Continuation of Box II.1

Claims Nos.: 12, 18-20, 21, 25

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

Rule 39.1(iv) PCT - Method for treatment of the human or animal body by therapy

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Continuation of Box II.2

Claims Nos.: 21, 25

The claims are written in a form contrary to Rule 6.2(a) (PCT).

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guideline C-VI, 8.2), should the problems which led to the Article 17(2)PCT declaration be overcome.

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/IB2009/052382

## 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.: 12, 18-20, 21, 25  
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  
Rule 39.1(iv) PCT - Method for treatment of the human or animal body by therapy
2.  Claims Nos.: 21, 25  
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:  
see FURTHER INFORMATION sheet PCT/ISA/210
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 all searchable 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 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.:

see annex

### 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, 4-11, 24 (when dependent on claim 1)

A device for programmed delivery of biological materials across biological barrier wherein the device comprises

- (a) at least two reservoirs
  - (b) a drive mechanism
  - (c) a means for actuating drive mechanism
  - (d) at least one needle or micro-needle
- 

2. claims: 2, 13-17, 24 (when dependent on claim 2)

A device for delivery of a biodegradable micro-needle comprising of a therapeutically active principle and a biodegradable polymer across a biological barrier, wherein the device comprises

- (a) a micro-needle strip comprising of biodegradable micro-needle, and
  - (b) a mechanism to cut selected portion of biodegradable micro-needle corresponding to the selected biodegradable micro-needle to be delivered;
- the mechanism further comprising a main piston and an auxiliary piston for positioning and applying the biodegradable micro-needles to the skin surface;
- a roll for loading the micro-needle strip of biodegradable micro-needles;
- a cutter for cutting the biodegradable micro-needles; a flexible wall comprising an opening for discharge of micro-needles and housing holding all the components of the device; wherein the micro-needles strips comprising at least one biodegradable micro-needle.
- 

3. claims: 3, 22-23, 24 (when dependent on claim 3)

A device for transport of biological materials across biological barrier wherein the device comprises one hollow micro-needle attached to a needle cap.

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## INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/IB2009/052382

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 03026726	A	03-04-2003	AT 420681 T EP 1432464 A1 JP 2005503242 T	15-01-2009 30-06-2004 03-02-2005
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