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

**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:
7 January 2010

(54) Title: METHODS FOR THE REPAIR AND/OR REGENERATION OF DAMAGED MYOCARDIUM USING VARIANTS OF HEPATOCYTE GROWTH FACTOR

(57) Abstract: Methods for repairing damaged myocardium and/or myocardial cells including the administration of variants of hepatocyte growth factor or activated cardiac stem cells are disclosed and claimed. In addition, methods for forming coronary vasculature including the administration of variants of hepatocyte growth factor or activated cardiac stem cells are described. In particular, administration of variants of hepatocyte growth factor, such as NK1, 1K1, and HP11, are useful for the repair and/or regeneration of damaged myocardium or formation of coronary vasculature. Methods of activating cardiac stem cells in vitro are also disclosed.

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# INTERNATIONAL SEARCH REPORT

International application No
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A. CLASSIFICATION OF SUBJECT MATTER
INV. A61K33/04 A61K38/18 A61K38/28 A61K38/30 A61K38/40
A61K45/06 A61P9/10

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)
A61K A61P

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, EMBASE, CHEM ABS Data, COMPENDEX, BIOSIS

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| X | WO 02/02593 A (LONG ISLAND JEWISH RES INST [US]; PILLARISETTI SIVARAM [US]; GOLDBERG) 10 January 2002 (2002-01-10) page 15, line 13 - line 23 page 22, line 5 - line 13 page 27, line 33 - page 28, line 5 claims | 1-43 |
| X | WO 2007/058776 A (RECEPTOR BIOLOG INC [US]; JIN PEI [US]; SHEPARD H MICHAEL [US]; NI IRE) 24 May 2007 (2007-05-24) page 13, line 29 - page 14, line 21 claims | 1-43 |
| X | US 2005/037431 A1 (KIRCHHOFER DANIEL K [US] ET AL) 17 February 2005 (2005-02-17) paragraph [0042] | 1 |

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[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

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| Date of the actual completion of the international search | Date of mailing of the international search report |
|---|---|
| 29 October 2009 | 05/11/2009 |

| Name and mailing address of the ISA/ | Authorized officer |
|---|---|
| European Patent Office, P.B. 5818 Patentlaan 2<br>NL - 2280 HV Rijswijk<br>Tel. (+31-70) 340-2040,<br>Fax: (+31-70) 340-3016 | Fey-Lamprecht, F |

# INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2008/082967

## Box No. I Nucleotide and/or amino acid sequence(s) (Continuation of item 1.b of the first sheet)

1. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, the international search was carried out on the basis of:

   a. type of material

   [X] a sequence listing

   [ ] table(s) related to the sequence listing

   b. format of material

   [X] on paper

   [X] in electronic form

   c. time of filing/furnishing

   [ ] contained in the international application as filed

   [ ] filed together with the international application in electronic form

   [X] furnished subsequently to this Authority for the purpose of search

2. [ ] In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

3. Additional comments:

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 2007/100530 A (NEW YORK MEDICAL COLLEGE [US]; ANVERSA PIERO [US])<br>7 September 2007 (2007-09-07)<br>page 51, line 8 - line 12<br>claims | 1-43 |
| X | US 2003/054973 A1 (ANVERSA PIERO [US])<br>20 March 2003 (2003-03-20)<br>paragraph [0048]<br>paragraphs [0152], [0153]<br>paragraph [0287]<br>example 3<br>claims | 1-43 |
| X | URBANEK KONRAD ET AL: "Cardiac stem cells possess growth factor-receptor systems that after activation regenerate the infarcted myocardium, improving ventricular function and long-term survival"<br>CIRCULATION RESEARCH, GRUNE AND STRATTON, BALTIMORE, US,<br>vol. 97, no. 7,<br>1 September 2005 (2005-09-01), pages 663-673, XP002521032<br>ISSN: 0009-7330<br>the whole document | 1-43 |
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| X | WO 02/088354 A (MEDICAL RES COUNCIL [GB]; GHERARDI ERMANNO [GB]; LIETHA DANIEL [GB]; B) 7 November 2002 (2002-11-07)<br>sequence 1<br>claims | 1-43 |

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International application No
PCT/US2008/082967

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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Information on patent family members

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