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- (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, CL, 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, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.
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8 May 2014



(54) Title: TREATMENT OF PAIN USING PLACENTAL STEM CELLS

(57) Abstract: Provided herein are methods of treatment of an individual having pain, e.g., neuropathic pain, comprising administering to the individual a therapeutically effective amount of tissue culture plastic adherent placental stem cells (PDAC™).

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US 12/40081

<p>A. CLASSIFICATION OF SUBJECT MATTER IPC(8) - A61K 35/50, A61P 29/00 (2012.01) USPC - 424/93.7 According to International Patent Classification (IPC) or to both national classification and IPC</p>																						
<p>B. FIELDS SEARCHED</p> <p>Minimum documentation searched (classification system followed by classification symbols) IPC(8): A61K 35/50, A61P 29/00 (2012.01) USPC: 424/93.7</p> <p>Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched USPC: 435/325, 424/583</p> <p>Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) PubWEST (DB=PGPB,USPT,USOC,EPAB,JPAB; PLUR=NO; OP=ADJ), Google Scholar, Google Patents Search Terms Used: placent\$, stem cells, pain, CD10+, CD34-, CD105+, CD200+, CD45-, CD90+, CD80-, CD86-, ELOVL2, ST3GAL6, ST6GALNACS, SLC12A8, ARTS-I, IER3, IL6, KRT18, LRAP, MEST, NFE2L3, TGFB2, ANTHROGENESIS</p>																						
<p>C. DOCUMENTS CONSIDERED TO BE RELEVANT</p> <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 2010/0047214 A1 (ABRAMSON et al.) 25 February 2010 (25.02.2010) esp: abstract, paras [0004], [0006], [0024], [0030], [0033], [0095], [0253], [0266].</td> <td>1-5, 12, 20, 22, 30-32, 39-42, 49, 57, 59, 67-69 <hr/>6-11, 16, 18, 19, 21, 23-29, 43-48, 58, 60-66</td> </tr> <tr> <td>X</td> <td>US 2007/0275362 A1 (EDINGER et al.) 29 November 2007 (29.11.2007) esp: paras [0183], [0229], [0085], [0342], [0411], [0425], [0428]</td> <td>1, 12-14, 39, 49, 50</td> </tr> <tr> <td>Y</td> <td>US 2004/0267099 A1 (MCMAHON et al.) 30 December 2004 (30.12.2004) esp: abstract, paras [0006], [0007], [0030], [0036], [0040], [0050], Fig. 1, Figs 3-9</td> <td>6-11, 43-48</td> </tr> <tr> <td>Y</td> <td>US 2008/0032401 A1 (EDINGER et al.) 7 February 2008 (07.02.2008) esp: abstract, para [0009], [0011], [0021], [0022], [0220], [0221], [0402].</td> <td>16, 18, 19, 21, 23-29, 58, 60-66</td> </tr> <tr> <td>Y</td> <td>US 2004/0019289 A1 (ROSS) 29 January 2004 (29.01.2004) entire document.</td> <td>6-11</td> </tr> <tr> <td>X, P</td> <td>US 2011/0311491 A1 (EDINGER et al.) 22 December 2011 (22.12.2011) entire document.</td> <td>1-5, 12-14, 16, 18-32</td> </tr> </tbody> </table>		Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	X — Y	US 2010/0047214 A1 (ABRAMSON et al.) 25 February 2010 (25.02.2010) esp: abstract, paras [0004], [0006], [0024], [0030], [0033], [0095], [0253], [0266].	1-5, 12, 20, 22, 30-32, 39-42, 49, 57, 59, 67-69 <hr/> 6-11, 16, 18, 19, 21, 23-29, 43-48, 58, 60-66	X	US 2007/0275362 A1 (EDINGER et al.) 29 November 2007 (29.11.2007) esp: paras [0183], [0229], [0085], [0342], [0411], [0425], [0428]	1, 12-14, 39, 49, 50	Y	US 2004/0267099 A1 (MCMAHON et al.) 30 December 2004 (30.12.2004) esp: abstract, paras [0006], [0007], [0030], [0036], [0040], [0050], Fig. 1, Figs 3-9	6-11, 43-48	Y	US 2008/0032401 A1 (EDINGER et al.) 7 February 2008 (07.02.2008) esp: abstract, para [0009], [0011], [0021], [0022], [0220], [0221], [0402].	16, 18, 19, 21, 23-29, 58, 60-66	Y	US 2004/0019289 A1 (ROSS) 29 January 2004 (29.01.2004) entire document.	6-11	X, P	US 2011/0311491 A1 (EDINGER et al.) 22 December 2011 (22.12.2011) entire document.	1-5, 12-14, 16, 18-32
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<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/>																						
<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>																						
<p>Date of the actual completion of the international search</p> <p>10 September 2012 (10.09.2012)</p>	<p>Date of mailing of the international search report</p> <p>18 SEP 2012</p>																					
<p>Name and mailing address of the ISA/US</p> <p>Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201</p>	<p>Authorized officer:</p> <p>Lee W. Young</p> <p>PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774</p>																					

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**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.: 15, 17, 33-38, 51-56, and 70-75  
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:

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 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.:

**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.

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 12/40081

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	US 20110/280843 A1 (EDINGER et al.) 17 November 2011 (17.11.2011) entire document	1-5, 12-14, 16, 18-32
X, P	US 2011/0206645 A1 (ZHANG et al.) 25 August 2011 (25.08.2011) entire document	1-5, 12-14, 16, 18-32