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- (81) **Designated States (unless otherwise indicated, for every kind of national protection available):** AE, AG, AL, AM,

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(54) **Title:** IDENTIFICATION OF DIFFERENTIALLY REPRESENTED FETAL OR MATERNAL GENOMIC REGIONS AND USES THEREOF

(57) **Abstract:** The present invention provides a novel approach for identification and characterization of differentially represented fetal or maternal genomic regions in maternal circulation. Identification of overrepresented fetal genomic regions in the maternal circulation according to the present invention permit accurate analysis of fetal DNA without the need for enrichment or purification, which provides a simpler, more accurate and efficient prenatal diagnosis in early pregnancy. The present invention is particularly useful for noninvasive prenatal diagnosis during early pregnancy (e.g., during the first trimester).

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2011/044990

A. CLASSIFICATION OF SUBJECT MATTER
INV. C12Q1/68
ADD.
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)
C12Q
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 practicable, search terms used)
EPO-Internal, EMBASE, BIOSIS, Sequence Search, 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	<p>LI Q ET AL: "Influence of delay in blood-processing on the level of cell-free fetal DNA in maternal plasma sample", ACADEMIC JOURNAL OF SECOND MILITARY MEDICAL UNIVERSITY</p> <p>, vol. 29, no. 9 September 2008 (2008-09), XP002681117, ISSN: 0258-879X, DOI: 10.3724/SP.J.1008.2008.01042 Retrieved from the Internet: URL:http://pub.chinasciencejournal.com/article/getArticle.action?articleId=8586 [retrieved on 2012-07-31] abstract</p> <p style="text-align: center;">----- -/--</p>	1-61

Further documents are listed in the continuation of Box C.

See patent family annex.

* Special categories of cited documents :

<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>"&" document member of the same patent family</p>
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Date of the actual completion of the international search 31 July 2012	Date of mailing of the international search report 27/08/2012
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 Dolce, Luca

INTERNATIONAL SEARCH REPORT

International application No

PCT/US2011/044990

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>FIONA M F LUN ET AL: "Noninvasive prenatal diagnosis of monogenic diseases by digital size selection and relative mutation dosage on DNA in maternal plasma", PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES, vol. 105, no. 50, 16 December 2008 (2008-12-16), pages 19920-19925, XP002620453, NATIONAL ACADEMY OF SCIENCES, US ISSN: 0027-8424, DOI: 10.1073/PNAS.0810373105 [retrieved on 2008-12-05] abstract</p>	1-61
X	<p>ANTONIO FARINA ET AL: "Cell-free fetal DNA(SRY locus) concentration in maternal plasma is directly correlated to the time elapsed from the onset of preeclampsia to the collection of blood", PRENATAL DIAGNOSIS, vol. 24, no. 4, 1 April 2004 (2004-04-01), pages 293-297, XP055034350, ISSN: 0197-3851, DOI: 10.1002/pd.863 the whole document</p>	1-61
X	<p>ANTONIO FARINA ET AL: "Total cell-free DNA([beta]-globin gene) distribution in maternal plasma at the second trimester: a new prospective for preeclampsia screening", PRENATAL DIAGNOSIS, vol. 24, no. 9, 1 September 2004 (2004-09-01), pages 722-726, XP055034351, ISSN: 0197-3851, DOI: 10.1002/pd.973 the whole document</p>	1-61
X	<p>Y. LI ET AL: "Cell-Free DNA in Maternal Plasma: Is It All a Question of Size?", ANNALS OF THE NEW YORK ACADEMY OF SCIENCES, vol. 1075, no. 1, 1 September 2006 (2006-09-01), pages 81-87, XP055034353, ISSN: 0077-8923, DOI: 10.1196/annals.1368.010 the whole document</p>	1-61
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International application No
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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>AVENT N D ET AL: "Cell-free fetal DNA in the maternal serum and plasma: Current and evolving applications", CURRENT OPINION IN OBSTETRICS AND GYNECOLOGY</p> <p>vol. 21, no. 2 April 2009 (2009-04), XP002681118, LIPPINCOTT WILLIAMS AND WILKINS GBR ISSN: 1040-872X, DOI: 10.1097/GCO.0B013E3283294798 Retrieved from the Internet: URL:http://journals.lww.com/co-obgyn/Abstract/2009/04000/Cell_free_fetal_DNA_in_the_maternal_serum_and.12.aspx [retrieved on 2012-07-31] the whole document</p>	1-61
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A	<p>WO 2007/147074 A2 (LIVING MICROSYSTEMS INC [US]; STOUGHTON ROLAND [US]; KAPUR RAVI [US];) 21 December 2007 (2007-12-21) the whole document</p>	1-61

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Information on patent family members

International application No PCT/US2011/044990

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