Title: GENETIC MARKERS ASSOCIATED WITH ENDOMETRIOSIS AND USE THEREOF

Abstract: The present invention relates to novel genetic markers associated with endometriosis and risk of developing endometriosis, and methods and materials for determining whether a human subject has endometriosis or is at risk of developing endometriosis.
A. CLASSIFICATION OF SUBJECT MATTER

C12N 15/09(2006.01)i, C12Q 1/68(2006.01)i, G01N 33/33(2006.01)i

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)

IPC C12Q, C12N

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)
eKIPASS(KIPO Internal)

Keywords: genetic marker, endometriosis, SNP detection, linkage disequilibrium

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
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<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
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* 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 application or patent 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 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

"I" 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

"N" 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 16 JANUARY 2009 (16.01.2009)

Date of mailing of the international search report 16 JANUARY 2009 (16.01.2009)

Authorized officer KIM, JUNG HEE

Name and mailing address of the ISA/KR

Korean Intellectual Property Office
Government Complex-Daejeon, 139 Seoung-ro, Seo-gu, Daejeon 302-701, Republic of Korea
Facsimile No. 82-42-472-7140

Telephone No. 82-42-481-8191

Form PCT/ISA/210 (second sheet) (July 2008)
INTERNATIONAL SEARCH REPORT

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.: 6-10, 43-50
   because they relate to subject matter not required to be searched by this Authority, namely:
   Claims 6 to 10, 43 to 50 relate to diagnostic methods, which ISA is not required to search under PCT Article 17(2)(a)(i) and PCT Rule 39.1(iv).

2. ☒ Claims Nos.: 11-42
   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 the extra sheet.

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:

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 fee, this Authority did not invite payment of any additional fee.

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.

Form PCT/ISA/210 (continuation of first sheet (2)) (July 2008)
Continuation of Box No. II

1. Claims 11 to 25 relate to amplified or isolated polynucleotides with one of SNPs of Table 1-196. However, the sequence except for the region of the SNP is not certain according to the content provided in those claims. In addition, the claimed polynucleotide is broader than the sequence corresponding to SEQ ID Nos. disclosed in this application. Therefore, the extent of those claimed invention is too obscure and broad to make a meaningful search.

2. Claims 26 to 31 relate to kits comprising the polynucleotide according to claim 14 or 18. With the same reason mentioned for claims 11-25, the extent of claimed invention is too obscure and broad to make a meaningful search.

3. Claims 32 to 36 relate to methods of detecting a nucleic acid polymorphism indicative of an altered risk of developing endometriosis, comprising; contacting a test sample with a polynucleotide containing SNP of Table 1 to 196 indicative of an altered risk of developing endometriosis.

The meaning of 'altered risk' is unclear. And the polynucleotide to measure according to the certain type of the altered (increased or decreased) risk is too obscure, because the polynucleotide has not been characterized according to the type of altered risks.

In addition, the subject matter of claims 32 to 36 is not fully supported by the description because the description only discloses a general instruction at paragraph [0044] as characterized in claims without providing the polynucleotides of Table 1 to 196 sorted out for 'susceptibility (high-risk)' or 'protective', so that it is hard to generalize the effect of detecting the altered risk status of 'a certain test sample' from the constitutional elements characterized in these claims.

4. Claims 37 to 39 relate to apparatus comprising DNA chip array comprising a plurality of polynucleotides containing a polymorphism of Table 1 or 2. Regarding to the polynucleotides, the extent of these claims is not clear as mentioned above for claims 11 to 31.

5. In claims 40 to 42, the object polymorphism to identify was characterized to encompass 'any polymorphism in LD with a polymorphism set forth in Tables 1-196', which encompasses broader than 'polymorphisms of Table 3-196 in LD with polymorphisms of Table 1 or 2' disclosed in the description. Therefore, the extent of those claimed invention is too broad to make a meaningful search.

Therefore, ISA is not required to search for these claims under PCT Article 17(2)(a)(ii).
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