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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, RO, RS, RU, 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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Declarations under Rule 4.17:

— of inventorship (Rule 4.17(iv))

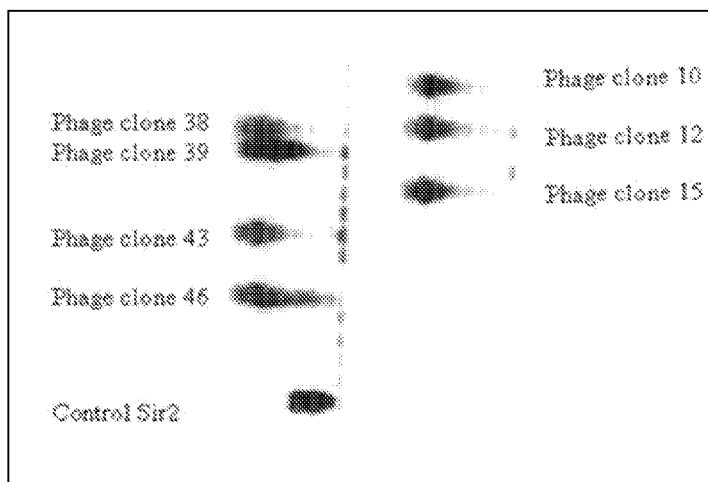
Published:

- 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))
- with information concerning one or more priority claims considered void (Rule 26bis.2(d))

(88) Date of publication of the international search report:  
12 March 2015

(54) Title: NEOEPITOPE DETECTION OF DISEASE USING PROTEIN ARRAYS

FIG-2



(57) Abstract: A biosensor for use in detecting the presence of diseases, the biosensor comprising a detector for detecting a presence of at least one marker indicative of a specific disease. A method of determining efficacy of a pharmaceutical for treating a disease or staging disease by administering a pharmaceutical to a sample containing markers for a disease, detecting the amount of at least one marker of the disease in the sample, and analyzing the amount of the marker in the sample, whereby the amount of marker correlates to pharmaceutical efficacy or disease stage. Markers for gynecological disease. An immuno-imaging agent comprising labeled antibodies, whereby the labeled antibodies are isolated and reactive to proteins overexpressed in vivo. Informatics software for analyzing the arrays, the software including analyzing means for analyzing the arrays.



INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US2011/045228

<p><b>A. CLASSIFICATION OF SUBJECT MATTER</b>                  IPC(8) - C12Q 1/68 (2014.01)                  CPC - C12Q 1/6883 (2014.12)                  According to International Patent Classification (IPC) or to both national classification and IPC</p>																							
<p><b>B. FIELDS SEARCHED</b></p> <p>Minimum documentation searched (classification system followed by classification symbols)                  IPC(8) - C12Q 1/68; C40B 30/04; G01N 33/53, 33/574 (2014.01)                  USPC - 435/6, 7.1, 7.23; 506/9</p> <p>Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched                  CPC - A61B 5/00, 5/0215; C12Q 1/6886, 1/6883, 2600/106, 2600/112, 2600/118, 2600/136, 2600/158; G01N 33/57407, 33/57411, 33/57415, 33/57442, 33/57484, 33/57449, 2800/52, 2800/56, 2800/364; G06F 19/00, 19/20 (2014.12) (keyword delimited)</p> <p>Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)                  PatBase, Google Patents, PubMed</p> <p>Search terms used: biosensor biomarker microarray ovarian cancer cervical cancer breast cancer peritoneal carcinoma endometriosis</p>																							
<p><b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b></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</td> <td>US 2008/0300141 A1 (TAINSKY et al) 04 December 2008 (04.12.2008) entire document</td> <td>1-16, 19-21, 24, 26-28</td> </tr> <tr> <td>A</td> <td>US 2009/0208939 A1 (FLORES et al) 20 August 2009 (20.08.2009) entire document</td> <td>1-16, 19-21, 24, 26-28</td> </tr> <tr> <td>A</td> <td>US 2009/0204379 A1 (FERNANDEZ) 13 August 2009 (13.08.2009) entire document</td> <td>1-16, 19-21, 24, 26-28</td> </tr> <tr> <td>A</td> <td>US 2009/0208939 A1 (FLORES et al) 20 April 2009 (20.04.2009) entire document</td> <td>1-16, 19-21, 24, 26-28</td> </tr> <tr> <td>A</td> <td>US 2005/0214836 A1 (NAKAMURA et al) 29 September 2005 (29.09.2005) entire document</td> <td>1-16, 19-21, 24, 26-28</td> </tr> <tr> <td>A</td> <td>US 2004/0058340 A1 (DAI et al) 25 March 2004 (25.03.2004) entire document</td> <td>1-16, 19-21, 24, 26-28</td> </tr> </tbody> </table>			Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	X	US 2008/0300141 A1 (TAINSKY et al) 04 December 2008 (04.12.2008) entire document	1-16, 19-21, 24, 26-28	A	US 2009/0208939 A1 (FLORES et al) 20 August 2009 (20.08.2009) entire document	1-16, 19-21, 24, 26-28	A	US 2009/0204379 A1 (FERNANDEZ) 13 August 2009 (13.08.2009) entire document	1-16, 19-21, 24, 26-28	A	US 2009/0208939 A1 (FLORES et al) 20 April 2009 (20.04.2009) entire document	1-16, 19-21, 24, 26-28	A	US 2005/0214836 A1 (NAKAMURA et al) 29 September 2005 (29.09.2005) entire document	1-16, 19-21, 24, 26-28	A	US 2004/0058340 A1 (DAI et al) 25 March 2004 (25.03.2004) entire document	1-16, 19-21, 24, 26-28
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<p><input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/></p>																							
<p>* Special categories of cited documents:</p> <table border="0"> <tr> <td>"A" document defining the general state of the art which is not considered to be of particular relevance</td> <td>"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</td> </tr> <tr> <td>"E" earlier application or patent but published on or after the international filing date</td> <td>"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</td> </tr> <tr> <td>"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)</td> <td>"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</td> </tr> <tr> <td>"O" document referring to an oral disclosure, use, exhibition or other means</td> <td>"&amp;" document member of the same patent family</td> </tr> <tr> <td>"P" document published prior to the international filing date but later than the priority date claimed</td> <td></td> </tr> </table>			"A" document defining the general state of the art which is not considered to be of particular relevance	"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	"E" earlier application or patent but published on or after the international filing date	"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	"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)	"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	"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family	"P" document published prior to the international filing date but later than the priority date claimed												
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<p>Date of the actual completion of the international search 04 January 2015</p>		<p>Date of mailing of the international search report <b>14 JAN 2015</b></p>																					
<p>Name and mailing address of the ISA/US                  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:                  Blaine R. Copenheaver                  PCT Helpdesk: 571-272-4300                  PCT OSP: 571-272-7774</p>																					

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2011/045228

**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.: 17, 18, 22, 23  
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:  
  
Claims 17, 18, 22, and 23 are held unsearchable due to applicant's failure to provide a valid electronic or paper sequence listing.
  
3.  Claims Nos.: 25  
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.