



- (51) International Patent Classification:
C12Q 1/68 (2006.01)
- (21) International Application Number:
PCT/IB2013/054898
- (22) International Filing Date:
14 June 2013 (14.06.2013)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:

61/662,878	21 June 2012 (21.06.2012)	US
61/682,725	13 August 2012 (13.08.2012)	US
61/695,795	31 August 2012 (31.08.2012)	US
61/711,172	8 October 2012 (08.10.2012)	US
13/801,748	13 March 2013 (13.03.2013)	US

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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, BN, 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, 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, PA, 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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(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK,

[Continued on next page]

(54) Title: MUTATIONAL ANALYSIS OF PLASMA DNA FOR CANCER DETECTION

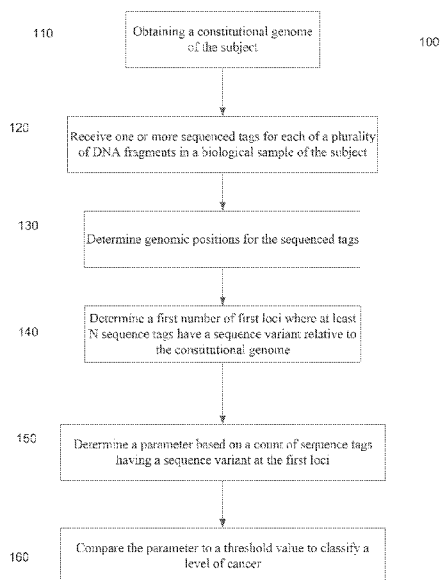


FIG. 1

(57) Abstract: A frequency of somatic mutations in a biological sample (e.g., plasma or serum) of a subject undergoing screening or monitoring for cancer, can be compared with that in the constitutional DNA of the same subject. A parameter can be derived from these frequencies and used to determine a classification of a level of cancer. False positives can be filtered out by requiring any variant locus to have at least a specified number of variant sequence reads (tags), thereby providing a more accurate parameter. The relative frequencies for different variant loci can be analyzed to determine a level of heterogeneity of tumors in a patient.

WO 2013/190441 A3



EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU,
LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK,
SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ,
GW, KM, ML, MR, NE, SN, TD, TG).

— *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))*

Published:

— *with international search report (Art. 21(3))*

(88) Date of publication of the international search report:

27 February 2014

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB2013/054898

A. CLASSIFICATION OF SUBJECT MATTER

C12Q 1/68 (2006.01)

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)

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)

EPODOC, WPI, MEDLINE, HCAPLUS, BIOSIS, EMBASE, BIOTECHABS: cancer, whole genome sequencing, variant, mutant, copy number, loci, align, mapping, cutoff, threshold, heterogeneity and like terms.

Google Scholar: cancer + inventor and applicant names

Espacenet: inventor and applicant names with DNA or cancer in the title or abstract

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
	Documents are listed in the continuation of Box C	

 Further documents are listed in the continuation of Box C
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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	"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	
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Date of the actual completion of the international search 23 December 2013	Date of mailing of the international search report 23 December 2013
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA Email address: pct@ipaustalia.gov.au Facsimile No.: +61 2 6283 7999	Authorised officer Jonathan Konrad AUSTRALIAN PATENT OFFICE (ISO 9001 Quality Certified Service) Telephone No. +61 2 6283 2601

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		PCT/IB2013/054898
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X	WO 2009/013496 A1 (THE CHINESE UNIVERSITY OF HONG KONG) 29 January 2009 See the whole document, particularly [0052] and [0106]	1-66
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X	GB 2485635 A (Verinata Health, Inc.) 23 May 2012 See the whole document, particularly page 13 lines 20-32, page 29 paragraph 2, page 50 last paragraph to page 52 second paragraph, page 56 second paragraph to page 57 fourth paragraph, page 60 second paragraph and Example 9	1-66
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Due to data integration issues this family listing may not include 10 digit Australian applications filed since May 2001.

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