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(71) Applicant (for all designated States except US): **EPIGENOMICS AG** [DE/DE]; Kleine Präsidentenstrasse 1, 10178 Berlin (DE).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **LOFTON-DAY, Catherine** [US/US]; 4816 Linden Ave N., Seattle, WA 98103 (US). **EBERT, Matthias** [DE/DE]; Adam-Berg-Strasse 176, 81735 München (DE).

(74) Agents: **KRAUSS, Jan, B.** et al.; Boehmert & Boehmert, Anwaltssozietät, Pettenkoferstrasse 20-22, 80336 Munich (DE).

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(54) Title: METHODS AND NUCLEIC ACIDS FOR THE DETECTION OF COLORECTAL CELL PROLIFERATIVE DISORDERS

(57) Abstract: The invention provides methods, nucleic acids and kits for detecting, or for distinguishing between or among colorectal cell proliferative disorders. The invention discloses genomic sequences the methylation patterns of which have utility for the improved detection of and differentiation between said class of disorders, thereby enabling the improved diagnosis and treatment of patients.



WO 2007/118704 A3

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2007/003380

A. CLASSIFICATION OF SUBJECT MATTER INV. C12Q1/68		
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 practical, search terms used) EPO-Internal, BIOSIS, EMBASE, WPI Data, PAJ, Sequence Search		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2004/074441 A (GOVERNMENT OF THE UNITED STATES OF AMERICA REPRESENTED BY THE SECRETAR) 2 September 2004 (2004-09-02) cited in the application pages 1-2, paragraph 3-5; table 1	1-6, 11, 12, 25, 26, 29
Y	US 6 783 933 B1 (ISSA JEAN-PIERRE) 31 August 2004 (2004-08-31) columns 3-5	1-6, 11, 12
Y	WO 03/042661 A (EOS BIOTECHNOLOGY, INC; AFAR, DANIEL; AZIZ, NATASHA; GINSBURG, WENDY,) 22 May 2003 (2003-05-22) abstract; table 8a	1-6, 11, 12
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<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex.		
* 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 document 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 another 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	*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 *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 *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	Date of mailing of the international search report	
18 July 2007	13/11/2007	
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer Dolce, Luca	

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International application No
PCT/EP2007/003380

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	RUSSELL S E HILARY ET AL: "Isolation and mapping of a human septin gene to a region on chromosome 17q, commonly deleted in sporadic epithelial ovarian tumors" CANCER RESEARCH, vol. 60, no. 17, 1 September 2000 (2000-09-01), pages 4729-4734, XP002394761 ISSN: 0008-5472 abstract	1-6
Y	WO 2005/000087 A (CHIRON CORP [US]; RANDAZZO FILIPPO [US]; MOLER EDWARD [US]; ESCOBEDO J) 6 January 2005 (2005-01-06) claims 6-9	1-6,11, 12
A	MCILHATTON MICHAEL A ET AL: "Genomic organization, complex splicing pattern and expression of a human septin gene on chromosome 17q25.3" ONCOGENE, vol. 20, no. 41, 13 September 2001 (2001-09-13), pages 5930-5939, XP002394762 ISSN: 0950-9232 the whole document	1-6,11, 12,25, 26,29
A	KALIKIN L M ET AL: "Genomic and Expression Analyses of Alternatively Spliced Transcripts of the MLL Septin-like Fusion Gene (MSF) That Map to a 17q25 Region of Loss in Breast and Ovarian Tumors" GENOMICS, ACADEMIC PRESS, SAN DIEGO, US, vol. 63, no. 2; 15 January 2000 (2000-01-15), pages 165-172, XP004439437 ISSN: 0888-7543 the whole document	1-6,11, 12,25, 26,29

INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP2007/003380

Box 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.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box 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:

see additional sheet

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.:

see additional sheet(s)

Remark on Protest

- The additional search fees were accompanied by the applicant's protest.
- No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

Invention 1 (claims 1-6, 11-12, 25-26, 29 all partially).

Methods for detecting and/or classifying cell proliferative disorders determining the expression level of Septin 9.
Nucleic acids derived from such sequences and kits thereof for use in such methods.

Invention 2 (claims 1-6, 11-12, 25-26, 29 all partially).

Same as above for gene ALX4

Invention 3: (claims 7-24, 27-29 all partially).

Methods for detecting and/or classifying cell proliferative disorders determining the CpG methylation level of Septin 9.
Nucleic acids derived from such sequences and kits thereof for use in such methods.

Invention 4 (claims 7-24, 27-29 all partially)

Same as above for gene ALX4

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/EP2007/003380

Patent document cited in search report	A	Publication date	Patent family member(s)	Publication date
WO 2004074441	A	02-09-2004	NONE	
<hr style="border-top: 1px dashed black;"/>				
US 6783933	B1	31-08-2004	AU 783645 B2	17-11-2005
			AU 7586900 A	17-04-2001
			AU 2006200264 A1	23-02-2006
			CA 2388419 A1	22-03-2001
			EP 1218399 A1	03-07-2002
			JP 2003509039 T	11-03-2003
			WO 0119845 A1	22-03-2001
			US 2005026207 A1	03-02-2005
<hr style="border-top: 1px dashed black;"/>				
WO 03042661	A	22-05-2003	NONE	
<hr style="border-top: 1px dashed black;"/>				
WO 2005000087	A	06-01-2005	CA 2528077 A1	06-01-2005
			EP 1639079 A2	29-03-2006
			JP 2007525950 T	13-09-2007
			WO 2005001046 A2	06-01-2005
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