

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference B281-0008WO1	FOR FURTHER ACTION see Form PCT/ISA/220 as well as, where applicable, item 5 below.	
International application No. PCT/EP2018/068441	International filing date (<i>day/month/year</i>) 6 July 2018 (06-07-2018)	(Earliest) Priority Date (<i>day/month/year</i>) 7 July 2017 (07-07-2017)
Applicant NIPD GENETICS PUBLIC COMPANY LIMITED		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 6 sheets.

It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the **language**, the international search was carried out on the basis of:

- the international application in the language in which it was filed
 a translation of the international application into _____, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b))

b. This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6*bis*(a)).

c. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. **Certain claims were found unsearchable** (See Box No. II)

3. **Unity of invention is lacking** (see Box No III)

4. With regard to the **title**,

- the text is approved as submitted by the applicant
 the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

- the text is approved as submitted by the applicant
 the text has been established, according to Rule 38.2, by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority

6. With regard to the **drawings**,

- a. the figure of the **drawings** to be published with the abstract is Figure No. _____
 as suggested by the applicant
 as selected by this Authority, because the applicant failed to suggest a figure
 as selected by this Authority, because this figure better characterizes the invention
- b. none of the figures is to be published with the abstract

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Box No. I Nucleotide and/or amino acid sequence(s) (Continuation of item 1.c of the first sheet)

1. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of a sequence listing:
 - a. forming part of the international application as filed:
 - in the form of an Annex C/ST.25 text file.
 - on paper or in the form of an image file.
 - b. furnished together with the international application under PCT Rule 13ter.1(a) for the purposes of international search only in the form of an Annex C/ST.25 text file.
 - c. furnished subsequent to the international filing date for the purposes of international search only:
 - in the form of an Annex C/ST.25 text file (Rule 13ter.1(a)).
 - on paper or in the form of an image file (Rule 13ter.1(b) and Administrative Instructions, Section 713).
2. In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that forming part of the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
3. Additional comments:

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A. CLASSIFICATION OF SUBJECT MATTER
 INV. C12Q1/6806 C12Q1/6883 C12Q1/6886
 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, BIOSIS, Sequence Search, EMBASE, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 2014/130890 A1 (TOMA BIOSCIENCES INC [US]) 28 August 2014 (2014-08-28) paragraph [0540]; claims 1-5; examples 15,16 -----	1-28
Y	WO 2012/092426 A1 (FOUNDATION MEDICINE INC [US]; DOWNING SEAN R [US]; JAROSZ MIRNA [US];) 5 July 2012 (2012-07-05) page 95; claims 1-11; example 13 -----	1-28
Y	WO 2016/189388 A1 (NIPD GENETICS LTD [CY]) 1 December 2016 (2016-12-01) claims 1,5-22 -----	1-28
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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 4 October 2018	Date of mailing of the international search report 22/10/2018
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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 Gabriels, Jan
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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.
Y	ERIC J DUNCAVAGE ET AL: "Targeted next generation sequencing of clinically significant gene mutations and translocations in leukemia", MODERN PATHOLOGY, vol. 25, no. 6, 16 March 2012 (2012-03-16), pages 795-804, XP055235397, GB ISSN: 0893-3952, DOI: 10.1038/modpathol.2012.29 table 1	1-28
Y	----- EP 2 902 500 A1 (NATERA INC [US]) 5 August 2015 (2015-08-05) paragraph [0150] - paragraph [0163]	1-28
Y	----- US 2017/051355 A1 (ZIMMERMANN BERNHARD [US] ET AL) 23 February 2017 (2017-02-23) paragraph [0303] - paragraph [0306]; claim 1	1-28
Y	----- US 2015/203907 A1 (GILBERT DAVID M [US] ET AL) 23 July 2015 (2015-07-23) paragraph [0129]; figure 2	1-28
Y	----- US 2011/039304 A1 (CHURCH GEORGE M [US] ET AL) 17 February 2011 (2011-02-17) example 1	1-28
Y	----- US 2008/194414 A1 (ALBERT THOMAS J [US] ET AL) 14 August 2008 (2008-08-14) paragraph [0062]	1-28
Y	----- WO 2016/024134 A2 (OXFORD GENE TECHNOLOGY OPERATIONS LTD [GB]) 18 February 2016 (2016-02-18) page 5	1-28
Y	----- US 2016/068889 A1 (GOLE JEFF [US] ET AL) 10 March 2016 (2016-03-10) paragraph [0057]	1-28
Y	----- XI LIN ET AL: "Applications of targeted gene capture and next-generation sequencing technologies in studies of human deafness and other genetic disabilities", HEARING RESEARCH, ELSEVIER SCIENCE PUBLISHERS, AMSTERDAM, NL, vol. 288, no. 1, 6 January 2012 (2012-01-06), pages 67-76, XP028519246, ISSN: 0378-5955, DOI: 10.1016/J.HEARES.2012.01.004 [retrieved on 2012-01-14] page 69, left-hand column	1-28

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Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date	
WO 2014130890	A1	28-08-2014	CA 2902207 A1	28-08-2014
			CN 105339507 A	17-02-2016
			EP 2959016 A1	30-12-2015
			GB 2526736 A	02-12-2015
			HK 1217971 A1	27-01-2017
			JP 2016513959 A	19-05-2016
			SG 11201506660R A	29-09-2015
			US 2016186267 A1	30-06-2016
			US 2016222427 A1	04-08-2016
			US 2018148756 A1	31-05-2018
			WO 2014130890 A1	28-08-2014
WO 2012092426	A1	05-07-2012	AU 2011352070 A1	18-07-2013
			AU 2017203322 A1	08-06-2017
			AU 2017208342 A1	17-08-2017
			AU 2017239591 A1	02-11-2017
			AU 2017276313 A1	18-01-2018
			AU 2018201701 A1	05-04-2018
			AU 2018203684 A1	14-06-2018
			AU 2018211304 A1	23-08-2018
			BR 112013016708 A2	04-10-2016
			CA 2823621 A1	05-07-2012
			EP 2659003 A1	06-11-2013
			EP 3225697 A2	04-10-2017
			JP 6054303 B2	27-12-2016
			JP 2014507133 A	27-03-2014
			JP 2017077244 A	27-04-2017
			JP 2018134083 A	30-08-2018
			KR 20140024270 A	28-02-2014
			SG 191818 A1	30-08-2013
			US 2012208706 A1	16-08-2012
			WO 2012092426 A1	05-07-2012
WO 2016189388	A1	01-12-2016	AU 2016269332 A1	04-01-2018
			CA 2986200 A1	01-12-2016
			EA 201792570 A1	31-05-2018
			EP 3298166 A1	28-03-2018
			US 2016340733 A1	24-11-2016
			WO 2016189388 A1	01-12-2016
EP 2902500	A1	05-08-2015	EP 2902500 A1	05-08-2015
			EP 3187597 A1	05-07-2017
US 2017051355	A1	23-02-2017	US 2013123120 A1	16-05-2013
			US 2014094373 A1	03-04-2014
			US 2014141981 A1	22-05-2014
			US 2017051355 A1	23-02-2017
US 2015203907	A1	23-07-2015	NONE	
US 2011039304	A1	17-02-2011	NONE	
US 2008194414	A1	14-08-2008	US 2008194414 A1	14-08-2008
			US 2010222232 A1	02-09-2010
WO 2016024134	A2	18-02-2016	EP 3180444 A2	21-06-2017
			JP 2017529069 A	05-10-2017
			US 2017226501 A1	10-08-2017

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
		WO 2016024134 A2	18-02-2016
US 2016068889	A1 10-03-2016	US 2016068889 A1	10-03-2016
		WO 2016040446 A1	17-03-2016