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Published:

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- 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 sequence listing part of description (Rule 5.2(a))

(88) Date of publication of the international search report:
27 August 2009



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(54) Title: USE OF MICRO-RNA AS A BIOMARKER OF IMMUNOMODULATORY DRUG ACTIVITY

(57) Abstract: Methods of determining the activity of an immunomodulatory compound by measuring the presence of an miRNA in a sample are disclosed. Additionally disclosed are methods of assessing the patient compliance in patients treated with an immunomodulatory compound.

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2008/013945

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 G01N

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, WPI Data, BIOSIS, EMBASE, 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 2007/033023 A (UNIV OHIO STATE RES FOUND [US]; CROCE CARLO M [US]; CALIN GEORGE A [US] 22 March 2007 (2007-03-22) paragraph [0112]; claim 61	20-24
Y	-----	1-19
X	WO 2007/073737 A (EXIQON AS [DK]; LITMAN THOMAS [DK]; MOLLER SOREN [DK]; ECHWALD SOREN M) 5 July 2007 (2007-07-05) claims, paragraphs 600-605 paragraphs [0354], [0600] - [0605], [0687]	1-24
X	US 2007/065844 A1 (GOLUB TODD R [US] ET AL) 22 March 2007 (2007-03-22) paragraph [0131]; table 10b	1-24
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Further documents are listed in the continuation of Box C. 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	*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 document 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	

Date of the actual completion of the international search 14 April 2009	Date of mailing of the international search report 29/06/2009
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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 Steinheimer, K
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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2008/013945

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

1. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, the international search was carried out on the basis of:
 - a. type of material
 - a sequence listing
 - table(s) related to the sequence listing
 - b. format of material
 - on paper
 - in electronic form
 - c. time of filing/furnishing
 - contained in the international application as filed
 - filed together with the international application in electronic form
 - furnished subsequently to this Authority for the purpose of search
2. In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
3. Additional comments:

INTERNATIONAL SEARCH REPORT

International application No

PCT/US2008/013945

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2007/081740 A (UNIV OHIO STATE RES FOUND [US]; CROCE CARLO M [US]; CALIN GEORGE A [US]) 19 July 2007 (2007-07-19) paragraphs [0058] - [0127] -----	1-24
Y	MOSCHOS STERGHIOS A ET AL: "Expression profiling in vivo demonstrates rapid changes in lung microRNA levels following lipopolysaccharide-induced inflammation but not in the anti-inflammatory action of glucocorticoids" BMC GENOMICS, vol. 8, July 2007 (2007-07), page Article No.: 240, XP002523516 ISSN: 1471-2164 page 240 -----	1-19
X	WO 2005/118806 A (AMBION INC [US]; BROWN DAVID; CONRAD RICK; DEVROE ERIC; GOLDRICK MARIA) 15 December 2005 (2005-12-15) p. 24, claims -----	20-24
X	EP 1 777 301 A (AGILENT TECHNOLOGIES INC [US]) 25 April 2007 (2007-04-25) cited in the application table 1 -----	20-24
P,X	WO 2008/079303 A (BRIGHAM & WOMENS HOSPITAL [US]; FEINBERG MARK W [US]) 3 July 2008 (2008-07-03) the whole document -----	1-24
P,X	WO 2008/042231 A (CHILDRENS MEDICAL CENTER [US]; IKEDA SADAKATSU [US]; PU WILLIAM [US];) 10 April 2008 (2008-04-10) claims 1-29; table 9 -----	1-24
P,X	SALTER KELLY H ET AL: "An Integrated Approach to the Prediction of Chemotherapeutic Response in Patients with Breast Cancer" PLOS ONE, vol. 3, no. 4, April 2008 (2008-04), page Article No.: e1908, XP002523517 ISSN: 1932-6203 page 1 -----	1-24

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2008/013945

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.:
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 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:

see additional sheet

1. As all required additional search fees were timely paid by the applicant, this international search report covers allsearchable claims.
2. As all searchable claims could be searched without effort justifying an 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.:

see additional sheet(s)

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.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

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

1. claims: invention 1: claims 1-26 (partial)

These claims concern methods which involve measurement of miR-130a in a method for assessing the activity of an immunomodulatory compound, assessing patient compliance with a drug treatment protocol, and kits for assaying immunomodulatory activity.

2. claims: inventions 2-10: claims 1-26 (partial)

These claims concern methods which involve measurement of (2) miR-146b, (3) miR-143, (4) miR145, (5) miR99b, (6) miR125a, (7) miR204, (8) miR-424, (9) miR-503, or (10) other miRNAs in a method for assessing the activity of an immunomodulatory compound, assessing patient compliance with a drug treatment protocol, and kits for assaying immunomodulatory activity.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2008/013945

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WO 2007033023	A	22-03-2007	AU 2006291165 A1	22-03-2007
			CA 2621441 A1	22-03-2007
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			CA 2572450 A1	15-12-2005
			EP 1771563 A2	11-04-2007
			EP 2065466 A2	03-06-2009
			JP 2008500837 T	17-01-2008
EP 1777301	A	25-04-2007	US 2007092882 A1	26-04-2007
WO 2008079303	A	03-07-2008	NONE	
WO 2008042231	A	10-04-2008	NONE	