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11 December 2008

(54) Title: ANALYSIS OF SPLICE VARIANT EXPRESSION DATA

(57) Abstract: Indicator molecules, devices, algorithms, software, systems, and methods are described for qualitatively and quantitative measuring the levels of splice variants and determining splicing patterns in a one or more samples.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US07/07671

A. CLASSIFICATION OF SUBJECT MATTER
IPC: **G01N 33/48**(2006.01)

USPC: 702/19
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)
U.S. : 702/19

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)
Please See Continuation Sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6,664,046 (Chang et al.) 16 December 2003 (16.12.2003), col. 1	1-3
Y	HU, G. K. Predicting Splice Variant from DNA Chip Expression Data. 2001. vol. 11,pages 1237-1245, especially page 1237.	1

☐ 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

"E" earlier application or patent 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
29 August 2008 (29.08.2008)

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09 SEP 2008

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US07/07671

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.: 4-16 and 18
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:
Please See Continuation 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 additional fees, this Authority did not invite payment of any 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.: 1-3

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.

INTERNATIONAL SEARCH REPORT

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BOX III. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING

Group I, claim(s) 1-3, drawn to a method for determining an expression level for a gene having two splice isoforms.

Group II, claim(s) 17, 19-20, drawn to a method for identifying alternative splicing of a gene.

Group III, claim(s) 21-27, drawn to a scatter plot of data for a plurality of indicator polynucleotides for one or more genes.

The inventions listed as Groups I through III do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: Group I is drawn to obtaining microarray expression level data for indicator polynucleotides for sections of a gene such as exons, introns, modules, or junctions and applying a mathematical algorithm to determine the expression level for the gene which is a different Special Technical feature from Group II drawn to obtaining expression level data indicator polynucleotides and applying a mathematical algorithm to calculate a value for an alternative splicing event and identifying the indicator polynucleotides for which the measure exceeds a cutoff value which is a different Special Technical feature from Group III drawn to a scatter plot of data for a plurality of polynucleotides.

Continuation of B. FIELDS SEARCHED Item 3:
DIALOG, EAST
search terms: splicing, splice, gene expression, mathematical, equation, algorithm