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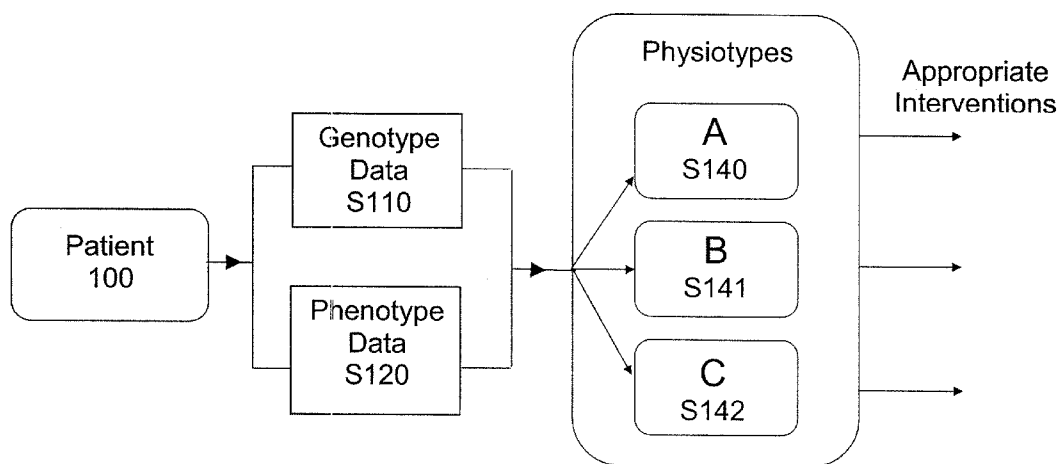
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(54) Title: A PHYSIOGENOMIC METHOD FOR PREDICTING CLINICAL OUTCOMES OF TREATMENTS IN PATIENTS



(57) Abstract: A physiogenomic-based method for predicting the outcome of treatment regimens in human patients based upon association screening to identify genetic markers and related physiological characteristics that influence the disease status of a patient, the progression to disease and response to the treatment. By repeating the analysis quantitatively for each of multiple treatment regimens, a profile can be created for each patient to determine which of several treatment regimens are best suited to the patient's clinical needs.

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## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 07/63501

<b>A. CLASSIFICATION OF SUBJECT MATTER</b> IPC(8) - G06F 19/00; C12Q 1/68 (2007.10) USPC - 435/6; 702/20 According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b> Minimum documentation searched (classification system followed by classification symbols) IPC(8) - G06F 19/00; C12Q 1/68 (2007.10) USPC - 435/6; 702/20 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) PUBWEST (PGPB,USPT,USOC,EPAB,JPAB), GOOGLE SCHOLAR: Snp, haplotype, tandem repeat, polymorphism, permutation, non-parametric, association test, linear regression, covariate, endophenotypes, microspheres, beads GENECORE SEQ SEARCH (PGPB,USPT, EST, GENEMBL, GENESEQ): SEQ ID NO 1-10		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X		
Y	US 2001/0034023 A1 (Stanton et al.) 25 Oct 2001 (25.10.2001); para [0015], [0017], [0171], [0444], [0518], [0531], [0580], [0594], [0595], [0600], [0712], [0932], [0944]; claims 103 and 97.	1, 2 and 11-13 3-6
Y	GLANNON. Key Concepts Endophenotypes Philosophy, Psychiatry, & Psychology Sep 2003, 10(3):277-284; especially pg 282, col 2; pg 283, col 2 and the abstract.	6
Y	US 2004/0018491 A1 (Gunderson et al.) 29 Jan 2004 (29.01.2004); para [0002], [0030], [0042], [0554], [0562], [0576] and [0577].	3-5 and 14-24
Y	US 2003/0219760 A1 (Gordon et al.) 27 Nov 2003 (27.11.2003); para [0048], SEQ ID NO: 61.	14-24
A	US 2005/0079532 A1 (Margus et al.) 14 Apr 2005 (14.04.2005); para [0080] and [0081].	1 and 13
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/>		
* 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 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 30 Nov 2007 (30.11.2007)		Date of mailing of the international search report <b>11 JAN 2008</b>
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201		Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 07/63501

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, 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 purposes 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:

Sequence search was performed on SEQ ID NO 1-10 in GenCore version 6.2.1:  
Published\_Applications\_NA\_New,  
Published\_Applications\_NA\_Main,  
Pending\_Patents\_NA\_New,  
Pending\_Patents\_NA\_Main,  
Issued\_Patents\_NA\_EST, GenEmbl, N\_Geneseq\_200701

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 07/63501

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.: 7-10  
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 SUPPLEMENTAL BOX\*\*.....

- 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 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.: 1-6 and 11-24, wherein claim 14 is limited to SEQ ID No:1 and claims 19-24 are limited to SEQ IDs No: 1-10, 1-20, 1-50, 1-100, 1-200 and 1-300, respectively.

- 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**  
Information on patent family members

International application No.

PCT/US 07/63501

SUPPLEMENTAL BOX: CONTINUATION of Observations where unity of invention is lacking (Continuation of item 3 of first sheet):

Group 1: Claims 1-6, 11-13, 14-24 directed to a physiogenomics method for predicting an individual's response to the environment (claims 1-6); to a method for treating an individual with a disease or disorder comprising preparing a physiogenomics database (claims 11-13); to an assay for constructing a physiogenomics database comprising a plurality of subpopulations of oligonucleotide probes capable of hybridizing with an oligonucleotide SEQ ID NO: 1 (claims 14-24), wherein claim 14 is limited SEQ ID No:1, claim 19 is limited to a group of at least SEQ IDs No: 1-10; claim 20 is limited to a group of at least SEQ IDs No: 1-20; claim 21 is limited to a group of at least SEQ IDs No: 1-50; claim 22 is limited to a group of at least SEQ IDs No: 1-100; claim 23 is limited to a group of at least SEQ IDs No: 1-200; claim 24 is limited to a group of at least SEQ IDs No: 1-300.

Groups 2-384: Claims 1-6, 11-13, 14-24, wherein claim 14 is limited to SEQ ID No:2-384, respectively; claim 19 is limited to a group of at least 10 SEQ IDs; claim 20 is limited to a group of at least 20 SEQ IDs; claim 21 is limited a group of at least 50 SEQ IDs; claim 22 is limited to a group of at least 100 SEQ IDs; claim 23 is limited a group of at least 200 SEQ IDs; claim 24 is limited a group of at least 300 SEQ IDs, wherein claims 19-24 include SEQ IDs No: 2-384, respectively. Due to the combinatorial nature, claims 19-24, as defined above, contain an exponential number of species because they are directed to a multiplicity of possible combinations of SEQ IDs, each separate species lacking unity of invention with the others. Applicant is required to make a specific selection of SEQ IDs pertaining to claims 19-24 should additional examination fees be paid.

The special technical feature of Group I is a physiogenomics database comprising a plurality of subpopulations of oligonucleotide probes capable of hybridizing with an oligonucleotide SEQ ID NO: 1.

US 2006/0024715 A1 (LIU et al.) 02 Feb 2006 (02.02.2006) teaches a similar method of analysis of human polymorphism, as well as SEQ ID No: 29996 that has 100% similarity with Applicant's SEQ ID NO:1. Therefore, the special technical feature of Group I is not novel and inventive and Groups 1-384 do not relate to a single general inventive concept.

In order for inventions in addition to Group I to be examined, Applicant is required to make a selection according to the above analysis and pay the appropriate additional examination fees.