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ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.*

(54) Title: SCHIZOPHRENIA ASSOCIATED GENE, PROTEINS AND BIALLELIC MARKERS

(57) Abstract: The invention concerns the human g35030 gene, polynucleotides, polypeptides biallelic markers, and human chro-
mosome 13q31-q33 biallelic markers. The invention also concerns the association established between schizophrenia and bipolar
disorder and the biallelic markers and the g35030 gene and nucleotide sequences. The invention provides means to identify com-
pounds useful in the treatment of schizophrenia, bipolar disorder and related diseases, means to determine the predisposition of
individuals to said disease as well as means for the disease diagnosis and prognosis.



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INTERNATIONAL SEARCH REPORT

International Application No

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A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C12N15/85 C07K14/47 C07K16/18 C12Q1/68 G06F17/30
G06F17/50 A01K67/027

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)

IPC 7 C12Q C07K

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)

EMBL, EPO-Internal, MEDLINE

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DATABASE EMBL [Online] EBI; ACC. NO. : AC008024, 12 July 1999 (1999-07-12) BIRREN ET AL.: "Homo sapiens clone RP11-45E4" XP002176242 abstract	1-32,36, 37,39-60
A	--- BLOUIN J-L ET AL: "SCHIZOPHRENIA SUSCEPTIBILITY LOCI ON CHROMOSOMES 13Q32 AND 8P21" NATURE GENETICS, NEW YORK, NY, US, vol. 20, no. 1, September 1998 (1998-09), pages 70-73, XP000944108 ISSN: 1061-4036 figures 1,2; tables 1,2 --- -/-	1-60

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in 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

30 August 2001

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/IB 00/01507

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DETERA-WADLEIGH S D ET AL: "A high-density genome scan detects evidence for a bipolar-disorder susceptibility locus on 13q32 and other potential loci on 1q32 and 18p11.2" PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF USA, NATIONAL ACADEMY OF SCIENCE. WASHINGTON, US, vol. 96, no. 10, 11 May 1999 (1999-05-11), pages 5604-5609, XP002134450 ISSN: 0027-8424 page 5605, right-hand column -page 5608, left-hand column; figure 1; tables 1,2 ---	1-60
A	KRUGLYAK L: "THE USE OF A GENETIC MAP OF BIALLELIC MARKERS IN LINKAGE STUDIES" NATURE GENETICS, NEW YORK, NY, US, vol. 17, no. 1, 1 September 1997 (1997-09-01), pages 22-24, XP002050647 ISSN: 1061-4036 the whole document ---	1-60
A	WO 98 11222 A (SINAI SCHOOL MEDICINE) 19 March 1998 (1998-03-19) page 17, line 1 - line 17 page 23, line 19 - line 35 page 30, line 11 -page 31, line 15 ---	7,8, 45-50
P,X	WO 00 22122 A (BOUGUELERET LYDIE ;CHUMAKOV ILYA (FR); GENSET SA (FR); COHEN DANIE) 20 April 2000 (2000-04-20) the whole document -----	1-60

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB 00/01507

Box I Observations where certain claims were found unsearchable (Continuation of item 1 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 II Observations where unity of invention is lacking (Continuation of item 2 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.:
claims 1, 3-6, 9-39, 52, 54-60 all partially 2, 7, 8, 40-51, 53 completely

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:

1. Claims: Invention 1, claims 1,3-6,9-39,52,
54-60 all partially, 2,7,8,40-51,53 completely

Polynucleotide comprising a contiguous span of at least 30 nucleotides from the human g35030 gene as identified by nt 199122 to 249803 of SEQ ID NO:1 and/or by SEQ ID NOs: 2-17, g35030 polypeptides comprising at least 6 contiguous amino acids from SEQ ID NO.: 18-23, recombinant vectors, host cells, non-human host mammal. Mammalian host or host cell comprising a disrupted g35030 gene. Use of the above mentioned polynucleotide for determining identity at a biallelic marker, the above mentioned polynucleotide attached to a solid support, optionally in an array. A diagnostic kit comprising the above mentioned polynucleotide. A method of genotyping. A method of estimating the frequency of an allele of a biallelic marker in a population. A method of detecting an association between a genotype and a trait. A method of estimating the frequency of a haplotype for a set of biallelic markers in a population. A method of detecting an association between a haplotype and a trait. A method of detecting an association between an allele and a phenotype. A method of determining whether an individual is at risk of schizophrenia or bipolar disorder. Methods for producing a g35030 polypeptide. antibodies against the g35030 gene product. A method for detecting the presence of a g35030 polypeptide. A diagnostic kit for detecting the presence of said polypeptide. A method for screening of a candidate substance. A kit for screening a candidate substance. Computer readable media and computer systems containing the above mentioned polynucleotide or polypeptide sequences and methods related thereto.

2. Claims: invention 2-5, claims 1,3-6,9-39,52,
54-60 all partially

Polynucleotide comprising a contiguous span of at least 30 nucleotides of SEQ ID NOs:24,25,28,74, whereby each individual invention is defined by each individual sequence (corresponding to A72 , A73, A76, A123 respectively). Recombinant vectors, host cells, non-human host mammal. Use of the above mentioned polynucleotide for determining identity at a biallelic marker, the above mentioned polynucleotide attached to a solid support, optionally in an array. A diagnostic kit comprising the above mentioned polynucleotide. A method of genotyping. A method of estimating the frequency of an allele of a biallelic marker in a population. A method of detecting an association between a genotype and a trait. A method of estimating the frequency of a haplotype for a set of biallelic markers in a

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

population. A method of detecting an association between a haplotype and a trait. A method of detecting an association between an allele and a phenotype. A method of determining whether an individual is at risk of schizophrenia or bipolar disorder. Computer readable media and computer systems containing the above mentioned polynucleotide sequences and methods related thereto.

3. Claims: Invention 6-10, claims 1,4-6,9-15,39,52, 54-60 all partially

Polynucleotide comprising a contiguous span of at least 30 nucleotides of SEQ ID NO: 79-132. Whereby each invention is defined by the species from which the sequences originated. Thus invention 6 is defined by SEQ ID NOs: 79-90 from Pan troglodytes, invention 7 is defined by SEQ ID NOs: 91-100 from Hylobates sp., invention 8 is defined by SEQ ID NOs:101-112 from Gorilla gorilla, invention 9 is defined by SEQ ID NOs:113-121 from Pongo pygmaeus and invention 10 is defined by SEQ ID NOs:122-132 from Macaca mulatta. Recombinant vectors, host cells, non-human host mammal. Use of the above mentioned polynucleotide for determining identity at a biallelic marker, the above mentioned polynucleotide attached to a solid support, optionally in an array. A diagnostic kit comprising the above mentioned polynucleotide. Computer readable media and computer systems containing the above mentioned polynucleotide sequences and methods related thereto.

INTERNATIONAL SEARCH REPORT

Information on patent family members

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Patent document cited in search report		Publication date		Patent family member(s)		Publication date
WO 9811222	A	19-03-1998	AU	4480997 A		02-04-1998
			WO	9811222 A1		19-03-1998

WO 0022122	A	20-04-2000	AU	6117799 A		01-05-2000
			EP	1121428 A2		08-08-2001
			WO	0022122 A2		20-04-2000
