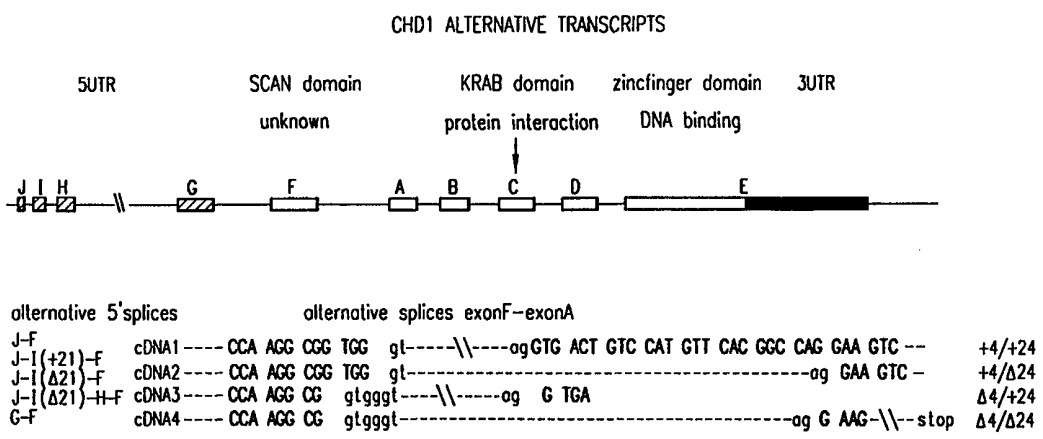




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<p>(51) International Patent Classification ⁶ : C12N 15/12, C07K 14/47, 16/18, C12P 21/08, C12N 5/12, C12Q 1/68, G01N 33/68, A61K 48/00, 38/17</p>	<p>A3</p>	<p>(11) International Publication Number: WO 99/45112 (43) International Publication Date: 10 September 1999 (10.09.99)</p>
<p>(21) International Application Number: PCT/US99/04682 (22) International Filing Date: 4 March 1999 (04.03.99) (30) Priority Data: 09/034,941 4 March 1998 (04.03.98) US 60/080,934 6 April 1998 (06.04.98) US (63) Related by Continuation (CON) or Continuation-in-Part (CIP) to Earlier Applications US 09/034,941 (CIP) Filed on 4 March 1998 (04.03.98) US 60/080,934 (CIP) Filed on 6 April 1998 (06.04.98) (71) Applicant (for all designated States except US): MYRIAD GENETICS, INC. [US/US]; 390 Wakara Way, Salt Lake City, UT 84108 (US). (72) Inventors; and (75) Inventors/Applicants (for US only): BALLINGER, Dennis, G. [US/US]; 1310 University Drive, Menlo Park, CA 94025 (US). DING, Wei [CN/US]; 624 Medical Plaza, Salt Lake City, UT 84112 (US). WAGNER, Susanne [DE/US];</p>	<p>Apartment 17E, 779 Springmeadow Road, Murray, UT 84107 (US). HESS, Mark, A. [US/US]; Apartment 627, 2100 South, 1155 East, Salt Lake City, UT 84106 (US). (74) Agents: HALEY, James, F., Jr. et al.; Fish & Neave, 1251 Avenue of the Americas, New York, NY 10020 (US). (81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i> (88) Date of publication of the international search report: 4 November 1999 (04.11.99)</p>	

(54) Title: CHROMOSOME 11-LINKED CORONARY HEART DISEASE SUSCEPTIBILITY GENE CHD1



(57) Abstract

Human coronary heart disease susceptibility gene (CHD1), some alleles of which are related to susceptibility to coronary heart disease. Germline mutations in the CHD1 gene and their use in the diagnosis of predisposition to coronary heart disease and to metabolic disorders, including hypoalphalipoproteinemia, familial combined hyperlipidemia, insulin resistant syndrome X or multiple metabolic disorder, obesity, diabetes and dyslipidemic hypertension. Presymptomatic therapy of individuals who carry deleterious alleles of the CHD1 gene (including gene therapy, protein replacement therapy, and administration of protein mimetics and inhibitors). The screening of drugs for dyslipidemic therapy.

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 99/04682

A. CLASSIFICATION OF SUBJECT MATTER IPC 6 C12N15/12 C07K14/47 C07K16/18 C12P21/08 C12N5/12 C12Q1/68 G01N33/68 A61K48/00 A61K38/17				
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 6 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)				
C. DOCUMENTS CONSIDERED TO BE RELEVANT				
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.		
X	HILLIER ET AL.: "The WashU-Merck EST Project" EMBL SEQUENCE DATABASE, 7 June 1996 (1996-06-07), XP002114882 HEIDELBERG DE Ac W55857 the whole document ---	19 1,5,6		
A	HILLIER ET AL.: "WashU-merck EST Project 1997" EMBL SEQUENCE DATABASE, 25 April 1997 (1997-04-25), XP002114883 HEIDELBERG DE Ac AA398769 the whole document ---	1,5,6,8, 19		
-/--				
<input checked="" type="checkbox"/> Further documents are listed in the continuation of box C.				
<input type="checkbox"/> Patent family members are listed in annex.				
° Special categories of cited documents :				
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none; vertical-align: top;"> "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 </td> <td style="width: 50%; border: none; vertical-align: top;"> "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 </td> </tr> </table>			"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
"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	Date of mailing of the international search report			
9 September 1999	24/09/1999			
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer Ceder, O			

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 99/04682

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	LEE ET AL.: "Zinc finger protein" EMBL SEQUENCE DATABASE, 1 November 1996 (1996-11-01), XP002114884 HEIDELBERG DE Ac Q15776 the whole document & LEE ET AL.: GENOMICS, vol. 43, 1997, pages 191-201, ---	9-11
A	STOKES ET AL.: "DNA binding and chromatin localization properties of CHD1" MOLECULAR AND CELLULAR BIOLOGY, vol. 15, no. 5, May 1995 (1995-05), pages 2745-2753, XP002114885 ---	
A	WOODAGE ET AL.: "Characterization of the CHD family of proteins " PROC NATL ACAD SCI USA, vol. 94, October 1997 (1997-10), pages 11472-11477, XP002114886 ---	
P,X	MONACO ET AL.: "Homo sapiens ZNF202 beta (ZNF202) mRNA, complete cds" EMBL SEQUENCE DATABASE, 16 November 1998 (1998-11-16), XP002114887 HEIDELBERG DE Ac AF027219 the whole document -& MONACO ET AL.: GENOMICS, vol. 52, 1998, pages 358-362, XP002114888 -----	1,5-7, 9-13

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 99/04682

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:
Remark: Although claims 28-30 and 54-56
are directed to a method of treatment of the human/animal
body, the search has been carried out and based on the alleged
effects of the compound/composition.
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:
27, 53
see FURTHER INFORMATION sheet PCT/ISA/210
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:

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.:

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

Continuation of Box I.1

Although claims 28-30 and 54-56 are directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.

Continuation of Box I.1

Rule 39.1(iv) PCT - Method for treatment of the human or animal body by therapy

Continuation of Box I.2

Claims Nos.: 27, 53

Claims 27 and 53 relating to compounds identified by methods for their selection, could not be searched as their subject-matters were not sufficiently disclosed.

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure.