

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
27 February 2003 (27.02.2003)

PCT

(10) International Publication Number  
**WO 03/016515 A3**

(51) International Patent Classification<sup>7</sup>: **C12N 15/54**,  
15/11, 9/10, G01N 33/68, C12Q 1/68, A61K 38/17, 48/00

(21) International Application Number: PCT/EP02/09036

(22) International Filing Date: 13 August 2002 (13.08.2002)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
60/312,346 16 August 2001 (16.08.2001) US

(71) Applicant (for all designated States except US): **BAYER AKTIENGESELLSCHAFT** [DE/DE]; 51368 Leverkusen (DE).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **ZHU, Zhimin** [CN/US]; 45 Hinckley Road, Waban, MA 02468 (US).

(74) Common Representative: **BAYER AKTIENGESELLSCHAFT**; 51368 Leverkusen (DE).

(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, 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, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

**Declarations under Rule 4.17:**

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, 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, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations

**Published:**

- with international search report

(88) Date of publication of the international search report:  
6 November 2003

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: REGULATION OF HUMAN GLYCEROL-3-PHOSPHATE ACYLTRANSFERASE-LIKE PROTEIN

(57) Abstract: Reagents that regulate human glycerol-3-phosphate acyltransferase-like protein and reagents which bind to human glycerol-3-phosphate acyltransferase-like protein gene products can play a role in preventing, ameliorating, or correcting dysfunctions or diseases including, but not limited to, cancer, diabetes, obesity or COPD.



**WO 03/016515 A3**

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 02/09036

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C12N15/54 C12N15/11 C12N9/10 G01N33/68 C12Q1/68  
A61K38/17 A61K48/00

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 C12N

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, SEQUENCE SEARCH, CHEM ABS Data, MEDLINE, EMBASE, BIOSIS

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages                                                                                                                                                                                                                              | Relevant to claim No.  |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| X          | <p>GANESH BHAT B ET AL: "Rat sn-glycerol-3-phosphate acyltransferase: molecular cloning and characterization of the cDNA and expressed protein" BIOCHIMICA ET BIOPHYSICA ACTA, vol. 1439, no. 3, 18 August 1999 (1999-08-18), pages 415-423, XP004277212 abstract; figure 1; table 1</p> <p>---</p> <p>-/--</p> | <p>1-12,<br/>14-16</p> |

☒ 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.

"&amp;" document member of the same patent family

Date of the actual completion of the international search

13 January 2003

Date of mailing of the international search report

28. 03. 2003

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. 31 351 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Gurdjian, D

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 02/09036

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages                                                                                                                                                                                                                                                                                                               | Relevant to claim No. |
|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| X          | SHIN D-H ET AL: "TRANSCRIPTIONAL<br>REGULATION OF P90 WITH SEQUENCE HOMOLOGY<br>TO ESCHERICHIA COLI GLYCEROL-3-PHOSPHATE<br>ACYLTRANSFERASE"<br>JOURNAL OF BIOLOGICAL CHEMISTRY, AMERICAN<br>SOCIETY OF BIOLOGICAL CHEMISTS, BALTIMORE,<br>MD, US,<br>vol. 266, no. 35,<br>15 December 1991 (1991-12-15), pages<br>23834-23839, XP001095625<br>ISSN: 0021-9258<br>abstract; figures 3,5<br>----- | 1-12,<br>14-16        |
| P,X        | WO 02 26950 A (HAFALIA APRIL J A ;INCYTE<br>GENOMICS INC (US); TRIBOULEY CATHERINE M)<br>4 April 2002 (2002-04-04)<br>page 155 -page 156; claims 1-55,82; figure<br>SEQ.27<br>-----                                                                                                                                                                                                              | 1-12                  |

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/EP 02/09036

## 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:  
  
Although claim 13 is 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.: 13,15-17 partially and 14 completely  
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:  
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:

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.:  
  
1-17 partially

### 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: 1-17 partially

Human glycerol-3-phosphate 0-acyltransferase polypeptides with amino acid sequence with seq.id.2 and corresponding nucleotide sequence with seq.id.1 , corresponding expression vector , host cell , method of production , method of detection , diagnostic kit , method of screening for modulators , and pharmaceutical compositions

2. Claims: 1-17 partially

Human glycerol-3-phosphate 0-acyltransferase polypeptides with corresponding nucleotide sequence with seq.id.3 corresponding expression vector , host cell , method of production , method of detection , diagnostic kit , method of screening for modulators , and pharmaceutical compositions .

3. Claims: 1-17 partially

Human glycerol-3-phosphate 0-acyltransferase polypeptides with amino acid sequence with seq.id.6 and corresponding nucleotide sequence with seq.id.5 corresponding expression vector , host cell , method of production , method of detection , diagnostic kit , method of screening for modulators , and pharmaceutical compositions .

4. Claims: 1-17 partially

Human glycerol-3-phosphate 0-acyltransferase polypeptides with amino acid sequence with seq.id.8 and corresponding nucleotide sequence with seq.id.7 corresponding expression vector , host cell , method of production , method of detection , diagnostic kit , method of screening for modulators , and pharmaceutical compositions .

## FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.2

Claims Nos.: 13,15-17 partially and 14 completely

Present claims 13,15-17 partially and 14 completely relate to a product/compound/method defined by reference to a desirable characteristic or property, namely modulators of the polypeptide of claim 4 or the polynucleotide of claim 1 .

The claims cover all products/compounds/methods having this characteristic or property, whereas the application provides support within the meaning of Article 6 PCT and/or disclosure within the meaning of Article 5 PCT for only a very limited number of such products/compounds/methods. In the present case, the claims so lack support, and the application so lacks disclosure, that a meaningful search over the whole of the claimed scope is impossible. Independent of the above reasoning, the claims also lack clarity (Article 6 PCT). An attempt is made to define the product/compound/method by reference to a result to be achieved. Again, this lack of clarity in the present case is such as to render a meaningful search over the whole of the claimed scope impossible. Consequently, the search has been carried out for those parts of the claims which appear to be clear, supported and disclosed, namely those parts relating to the antisense products disclosed in example 7 .

The applicant's attention is drawn to the fact that claims, or parts of 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.

Information on patent family members

PCT/EP 02/09036

Form PCT/ISA/210 (patent family annex) (July 1992)