Abstract:
This disclosure relates to the typing of human leucocyte antigen (HLA) alleles. More particularly, the present invention relates to HLA typing as a method of identify patients at risk of a hypersensitivity reaction to drugs such as abacavir and/or to diagnose disease (e.g., Behçet’s disease).
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER

INV. C12Q1/68
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
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<tr>
<td>Y</td>
<td>US 2012/135418 AI (KIM TAI GYU [KR] ET AL) 31 May 2012 (2012-05-31) the whole document</td>
<td>1,2,5,6,8-10</td>
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<td>Y</td>
<td>C. MALDINI ET AL: &quot;Relation onshi ps of HLA-B51 or b5 genotype with Behcet's disease clinical characters: systematics and meta-analyses of observational studies&quot;, RHEUMATOLOGY, vol. 51, no. 5, 11 January 2012 (2012-01-11), pages 887-900, XP055155397, ISSN: 1462-0324, DOI: 10.1093/rheumatology/ker428 the whole document</td>
<td>1,2,5,6,8-10</td>
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Further documents are listed in the continuation of Box C.

See patent family annex.

Date of the actual completion of the international search: 7 April 2015
Date of mailing of the international search report: 17/04/2015

Name and mailing address of the ISA:
European Patent Office, P.B. 5818 Patentlaan 2 NL-2280 HJ, The Netherlands
Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016

Authorized officer: Mue II er, Frank
<table>
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<th>Category</th>
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<th>Relevant to claim No.</th>
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<td>X</td>
<td>MASAO OTA ET AL: &quot;The Critical Region for Behget Disease in the Human Major Histocompatibility Complex Is Reduced to a 46-kb Segment Centromeric of HLA-B, by Association Analysis Using Refined Mixture Mapping&quot;, THE AMERICAN JOURNAL OF HUMAN GENETICS, vol. 64, no. 5, 1 May 1999 (1999-05-01), pages 1406-1410, XP055165398, ISSN: 0002-9297, DOI: 10.1086/302364 the whole document</td>
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<td>X</td>
<td>AMIRA HAMZA0UI ET AL: &quot;Contribution of HLA-B51 in the susceptibility and specific clinical features of Behcet's disease in Tunisian patients&quot;, EUROPEAN JOURNAL OF INTERNAL MEDICINE, ELSEVIER, AMSTERDAM, NL, vol. 23, no. 4, 22 December 2011 (2011-12-22), pages 347-349, XP028479844, ISSN: 0953-6205, DOI: 10.1161/EJIM.2G11.12.011 [retrieved on 2012-01-06] the whole document</td>
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<td>X</td>
<td>YVONNI KOUWANTAKI ET AL: &quot;HLA-B75101 in Greek Patients with Behget's Disease&quot;, HUMAN IMMUNOLOGY, vol. 59, no. 4, 1 April 1998 (1998-04-01), pages 250-255, XP055165399, ISSN: 0198-8859, DOI: 10.1016/S0198-8859(98)00011-1 the whole document</td>
<td>1,2,5,6,8-10</td>
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</table>
**INTERNATIONAL SEARCH REPORT**

**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. \( \square \) Claims Nos.: because they relate to subject matter not required to be searched by this Authority, namely:

2. \( \square \) claims Nos. 3, 4, 11, 12, 16-18, 22-28 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. \( \square \) 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 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 additional sheet

1. \( \square \) As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. \( \square \) As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of additional fees.

3. \( \square \) 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. \( \square \) 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.:

   6, 8-12, 22 (completely) ; 1, 2, 5, 18-21, 24-28 (partially)

**Remark on Protest**

\( \square \) The additional search fees were accompanied by the applicant’s protest and, where applicable, the payment of a protest fee.

\( \square \) 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.

\( \square \) No protest accompanied the payment of additional search fees.
This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 6, 8-12, 22(completely) ; 1, 2, 5, 18-21, 24-28(partially)
   The use of HLA alleles for diagnosing Behcet's disease

2. claims: 7, 13-17, 23(completely) ; 1, 2, 5, 18-21, 24-28(partially)
   The use of HLA alleles for diagnosing being at risk of a hypersensitivity reaction to abacavir
Continuation of Box II.2

Claims Nos.: 3, 4, 11, 12, 16-18, 22-28

The specific sequences of claims 3, 4, 11, 12, 16-18, 22-28 have, according to PCT Rule 13ter. I.d. not been searched since the Sequence Listing as present in the description does not comply with WIPO Standard ST25 prescribed in the administrative instructions under Rule 5.2. The Sequence Listing has been furnished neither in paper form nor in machine readable form as provided for in the same instructions and the applicant has not remedied the disclosed deficiencies within the time limit fixed in the invitation pursuant to PCT Rule 13ter. I.a.

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. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guidelines C-IV, 7.2), should the problems which led to the Article 17(2) declaration be overcome.
<table>
<thead>
<tr>
<th>Patent document cited in search report</th>
<th>Publication date</th>
<th>Patent family member(s)</th>
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<td>US 2012135418 Al</td>
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