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Declarations under Rule 4.17:

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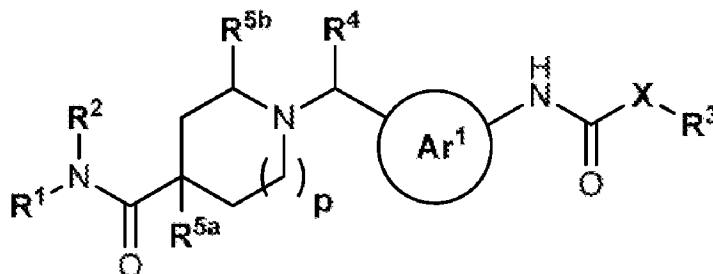
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(54) Title: 1-[M-CARBOXAMIDO(HETERO)ARYL-METHYL]-HETEROCYCLYL-CARBOXAMIDE DERIVATIVES



Formula (I)

(57) Abstract: The present invention relates to 1-[m-carboxamido(hetero)aryl-methyl]-heterocyclyl-carboxamide compounds of formula (I) wherein X, Ar¹, R¹, R², R³, R⁴, R^{5a}, R^{5b} and p are as described in the description, to their preparation, to pharmaceutically acceptable salts thereof, and to their use as pharmaceuticals, to pharmaceutical compositions containing one or more compounds of formula (I), and especially to their use as CXCR7 receptor modulators.

INTERNATIONAL SEARCH REPORT

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| International application No PCT/IB2013/055095 |
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| A. CLASSIFICATION OF SUBJECT MATTER INV. C07D401/06 A61K31/445 A61K31/4523 A61K31/4545 C07D211/62 ADD. A61P29/00 A61P35/00 A61P37/00 | | | | |
| 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) C07D A61K | | | | |
| 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) EPO-Internal, CHEM ABS Data, WPI Data | | | | |
| C. DOCUMENTS CONSIDERED TO BE RELEVANT | | | | |
| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. | | |
| X | DATABASE REGISTRY [Online] CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US; 14 April 2011 (2011-04-14), XP002716814, retrieved from STN Database accession no. 1279884-55-7 CAS Registry Numbers 1279884-55-7; 1279926-53-2 | 1-5 | | |
| X | ----- DATABASE REGISTRY [Online] CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US; 1 May 2011 (2011-05-01), XP002716815, retrieved from STN Database accession no. 1287852-41-8 CAS Registry Number 1287852-41-8 ----- -/-- | 1-5 | | |
| <input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family 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 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 </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 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 |
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| Date of the actual completion of the international search | Date of mailing of the international search report | | | |
| 6 January 2014 | 21/01/2014 | | | |
| Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016 | Authorized officer Rufet, Jacques | | | |

INTERNATIONAL SEARCH REPORT

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| International application No PCT/IB2013/055095 |
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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|-----------|---|-----------------------|
| A | WO 2008/045564 A2 (EPIX DELAWARE INC [US]; LIN JIAN [US]; CHEN DONGLI [US]; KOERNER STEFF) 17 April 2008 (2008-04-17) cited in the application abstract; claims 1-30 ----- | 1-19 |
| A | WO 2009/076404 A1 (EPIX DELAWARE INC [US]; BEN-ZEEV EFRAT [IL]; CHEN DONGLI [US]; FICHMAN) 18 June 2009 (2009-06-18) cited in the application abstract; claims 1-23 ----- | 1-19 |

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/IB2013/055095

| Patent document cited in search report | Publication date | Patent family member(s) | Publication date |
|--|------------------|-------------------------|------------------|
| WO 2008045564 | A2 | 17-04-2008 | |
| | | AR 063275 A1 | 14-01-2009 |
| | | CL 29582007 A1 | 09-05-2008 |
| | | TW 200831497 A | 01-08-2008 |
| | | US 2010210633 A1 | 19-08-2010 |
| | | WO 2008045564 A2 | 17-04-2008 |
| ----- | | | |
| WO 2009076404 | A1 | 18-06-2009 | |
| | | US 2010331298 A1 | 30-12-2010 |
| | | WO 2009076404 A1 | 18-06-2009 |
| ----- | | | |