

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference BHC133084-WO	FOR FURTHER ACTION see Form PCT/ISA/220 as well as, where applicable, item 5 below.	
International application No. PCT/EP2015/069739	International filing date (<i>day/month/year</i>) 28 August 2015 (28-08-2015)	(Earliest) Priority Date (<i>day/month/year</i>) 1 September 2014 (01-09-2014)
Applicant BAYER PHARMA AKTIENGESELLSCHAFT		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 6 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the **language**, the international search was carried out on the basis of:

- ☒ the international application in the language in which it was filed
☐ a translation of the international application into _____, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b))

b. ☐ This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6**bis**(a)).

c. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. ☐ **Certain claims were found unsearchable** (See Box No. II)

3. ☒ **Unity of invention is lacking** (see Box No III)

4. With regard to the **title**,

- ☐ the text is approved as submitted by the applicant
☒ the text has been established by this Authority to read as follows:

A PROCESS FOR THE PREPARATION OF
3-PHENYL/HETEROARYL-6-PHENOXY-8-ALKYLAMINO-IMIDAZO[1,2-B]PYRIDAZINE DERIVATIVES

5. With regard to the **abstract**,

- ☐ the text is approved as submitted by the applicant
☒ the text has been established, according to Rule 38.2, by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority

6. With regard to the **drawings**,

- a. the figure of the **drawings** to be published with the abstract is Figure No. _____
☐ as suggested by the applicant
☐ as selected by this Authority, because the applicant failed to suggest a figure
☐ as selected by this Authority, because this figure better characterizes the invention
- b. ☐ none of the figures is to be published with the abstract

Box No. IV Text of the abstract (Continuation of item 5 of the first sheet)

A process for the preparation of 3-phenyl/heteroaryl-6-phenoxy-8-alkylamino-imidazo[1,2-b]pyridazine derivatives and intermediates of this process.

A crystalline form of N-cyclopropyl-4-{6-(2,3-difluor-4-methoxyphenoxy)-8-[(3,3,3-trifluoropropyl)amino]imidazo[1,2-b]pyridazin-3-yl}-2-methylbenzamide.

The compounds are inhibitors of the Mps-1 kinase (Monopolar Spindle 1 kinase; also known as Tyrosine Threonine Kinase, TTK).

INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP2015/069739

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. ☐ 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 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. ☒ 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 fees, this Authority did not invite payment of additional fees.
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 and, where applicable, the payment of a protest fee.
- ☐ 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.
- ☒ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International application No

PCT/EP2015/069739

A. CLASSIFICATION OF SUBJECT MATTER

INV. C07D487/04 A61K31/5025 A61P35/00
ADD.

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

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, WPI Data, CHEM ABS Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2014/020041 A1 (BAYER PHARMA AG [DE]) 6 February 2014 (2014-02-06)	15,16
A	page 138 to page 141; example 31; intermediate examples 31a-31c -----	1-14, 17-21
X,P	WO 2014/131739 A2 (BAYER PHARMA AG [DE]) 4 September 2014 (2014-09-04) cited in the application	15,16
A,P	page 36, line 12 page 42 to page 45; example 2; intermediate examples 2a to 2c claims 1,6-10 -----	1-14, 17-21
X,P	WO 2014/198776 A1 (BAYER PHARMA AG [DE]) 18 December 2014 (2014-12-18)	15,16
A,P	page 80 to page 83; compound A27; intermediate examples 27a to 27c page 24, line 5 -----	1-14, 17-21



Further documents are listed in the continuation of Box C.



See patent family 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 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

Date of the actual completion of the international search

15 December 2015

Date of mailing of the international search report

29/01/2016

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

Cortés, José

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2015/069739

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2014020041	A1	06-02-2014	NONE
WO 2014131739	A2	04-09-2014	AU 2014222806 A1 03-09-2015
			CA 2902978 A1 04-09-2014
			CN 105008364 A 28-10-2015
			EP 2961752 A2 06-01-2016
			IL 240348 A 24-09-2015
			KR 20150125654 A 09-11-2015
			TW 201437211 A 01-10-2014
			UY 35360 A 30-09-2014
			WO 2014131739 A2 04-09-2014
WO 2014198776	A1	18-12-2014	NONE

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-15, 17-21

A process for the preparation of a compound of formula (I) and the new intermediates of formula (IV) and (VI) of this process

2. claim: 16

A crystalline form of
N-cyclopropyl-4-{6-(2,3-difluor-4-methoxyphenoxy)-8-[(3,3,3-trifluoropropyl)amino]imidazo[1,2-b]pyridazin-3-yl}-2-methylbenzamide
