

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 01-3379-WO-1	FOR FURTHER ACTION see Form PCT/ISA/220 as well as, where applicable, item 5 below.	
International application No. PCT/EP2020/070547	International filing date (<i>day/month/year</i>) 21 July 2020 (21-07-2020)	(Earliest) Priority Date (<i>day/month/year</i>) 22 July 2019 (22-07-2019)
Applicant BOEHRINGER INGELHEIM INTERNATIONAL GMBH		

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 4 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:

N-METHYL, N-(6-(METHOXY)PYRIDAZIN-3-YL) AMINE DERIVATIVES AS AUTOTAXIN (ATX)
MODULATORS FOR THE TREATMENT OF INFLAMMATORY AIRWAY OR FIBROTIC DISEASES

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)

The present invention relates to N-methyl, N-(6-(methoxy)pyridazin-3-yl) amine derivatives as autotaxin (ATX) modulators for the treatment of inflammatory airway or fibrotic diseases such as e.g. idiopathic lung disease (IPF) or systemic sclerosis (SSc).

The present description discloses the preparation of exemplary compounds (e.g. pages 57 to 75; examples 1.1 to 5) as well as relevant biological data thereof (e.g. pages 15 to 21, tables 1 to 9).

An exemplary compound is e.g. 1-(6-(4-(((6-((6-(trifluoromethyl)pyridin-3-yl)methoxy)pyridazin-3-yl)amino)methyl)phenyl)-2,6-diazaspiro[3.3]heptan-2-yl)ethan-1-one (example 1.1).

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International application No
PCT/EP2020/070547

A. CLASSIFICATION OF SUBJECT MATTER		
INV. C07D487/10	C07D487/08	C07D487/04
C07D401/14	C07D401/12	A61K31/497
A61K31/407	A61P11/00	A61P29/00
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 A61P		
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.
A	WO 2013/061297 A1 (PFIZER LTD [GB]) 2 May 2013 (2013-05-02) page 1, line 9 page 35 - page 39; examples 1-15; table 1 claims 1, 9-11 -----	1-10
☐ 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		Date of mailing of the international search report
17 August 2020		26/08/2020
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 Suárez, José

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Information on patent family members

International application No

PCT/EP2020/070547

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2013061297 A1	02-05-2013	CA 2853231 A1	02-05-2013
		CN 103958481 A	30-07-2014
		CN 106220572 A	14-12-2016
		EP 2771325 A1	03-09-2014
		EP 3243815 A1	15-11-2017
		ES 2648901 T3	08-01-2018
		ES 2748656 T3	17-03-2020
		HK 1200455 A1	07-08-2015
		HK 1246783 A1	14-09-2018
		JP 6158817 B2	05-07-2017
		JP 2014530902 A	20-11-2014
		US 2014275100 A1	18-09-2014
		US 2016287584 A1	06-10-2016
		WO 2013061297 A1	02-05-2013
