

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference P 115623	FOR FURTHER ACTION see Form PCT/ISA/220 as well as, where applicable, item 5 below.	
International application No. PCT/EP2023/064899	International filing date (<i>day/month/year</i>) 3 June 2023 (03-06-2023)	(Earliest) Priority Date (<i>day/month/year</i>) 3 June 2022 (03-06-2022)
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 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 43.6bis(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:

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. 8
☒ 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

INTERNATIONAL SEARCH REPORT

International application No.

PCT/EP2023/064899

Box No. I Nucleotide and/or amino acid sequence(s) (Continuation of item 1.c of the first sheet)

1. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of a sequence listing:
 - a. ☒ forming part of the international application as filed.
 - b. ☐ furnished subsequent to the international filing date for the purposes of international search (Rule 13*ter*.1(a)).

☐ accompanied by a statement to the effect that the sequence listing does not go beyond the disclosure in the international application as filed.
2. ☐ With regard to any nucleotide and/or amino acid sequence disclosed in the international application, this report has been established to the extent that a meaningful search could be carried out without a WIPO Standard ST.26 compliant sequence listing.
3. Additional comments:

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2023/064899**A. CLASSIFICATION OF SUBJECT MATTER****INV. C07K14/435 A61K38/18**
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)

C07K A61K C12R

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, BIOSIS**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2021/148411 A1 (BOEHRINGER INGELHEIM INT [DE]; MEDIZINISCHE HOCHSCHULE HANNOVER [DE]) 29 July 2021 (2021-07-29) cited in the application abstract claims sequence 1 ----- -/--	24-50



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

7 September 2023

Date of mailing of the international search report

15/09/2023

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

Sonnerat, Isabelle

INTERNATIONAL SEARCH REPORT

International application No

PCT/EP2023/064899

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	ZHAO LONGWEI ET AL: "Production of bioactive recombinant human myeloid-derived growth factor in Escherichia coli and its mechanism on vascular endothelial cell proliferation", JOURNAL OF CELLULAR AND MOLECULAR MEDICINE, vol. 24, no. 2, 22 November 2019 (2019-11-22), pages 1189-1199, XP055884404, RO ISSN: 1582-1838, DOI: 10.1111/jcmm.14602 Retrieved from the Internet: URL:https://onlinelibrary.wiley.com/doi/full/10.1111/jcmm.14602> cited in the application abstract paragraphs [02.1], [02.2], [03.1] -& ZHAO LONGWEI ET AL: "Supporting Information- Production of bioactive recombinant human myeloid-derived growth factor in Escherichia coli and its mechanism on vascular endothelial cell proliferation", JOURNAL OF CELLULAR AND MOLECULAR MEDICINE, vol. 24, no. 2, 1 January 2020 (2020-01-01), pages 1189-1199, XP93079835, RO ISSN: 1582-1838, DOI: 10.1111/jcmm.14602 figure S2 c -----	1-23
A	FELIX POLTEN ET AL: "Plasma Concentrations of Myeloid-Derived Growth Factor in Healthy Individuals and Patients with Acute Myocardial Infarction as Assessed by Multiple Reaction Monitoring-Mass Spectrometry", ANALYTICAL CHEMISTRY, vol. 91, no. 2, 15 January 2019 (2019-01-15), pages 1302-1308, XP055686424, US ISSN: 0003-2700, DOI: 10.1021/acs.analchem.8b03041 cited in the application abstract page 1303, left-hand column, paragraph 2 -/--	1-23

INTERNATIONAL SEARCH REPORT

International application No

PCT/EP2023/064899

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
	-& Polten Felix: "Supporting Information", Analytical Chemistry, 15 January 2019 (2019-01-15), pages 1302-1308, XP93079750, Retrieved from the Internet: URL: https://pubs.acs.org/doi/abs/10.1021/acs.analchem.8b03041 [retrieved on 2023-09-07] figures S-1 A -----	

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2023/064899

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2021148411 A1	29-07-2021	AU 2021211874 A1	25-08-2022
		BR 112022014272 A2	20-09-2022
		CA 3164500 A1	29-07-2021
		CN 115698048 A	03-02-2023
		EP 4093750 A1	30-11-2022
		JP 2023511358 A	17-03-2023
		KR 20220131262 A	27-09-2022
		TW 202142254 A	16-11-2021
		US 2023059560 A1	23-02-2023
		WO 2021148411 A1	29-07-2021
