

## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

|                                                    |                                                                                                  |                                                                               |
|----------------------------------------------------|--------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| Applicant's or agent's file reference<br>25225     | <b>FOR FURTHER ACTION</b><br>see Form PCT/ISA/220<br>as well as, where applicable, item 5 below. |                                                                               |
| International application No.<br>PCT/US2022/027763 | International filing date ( <i>day/month/year</i> )<br>5 May 2022 (05-05-2022)                   | (Earliest) Priority Date ( <i>day/month/year</i> )<br>7 May 2021 (07-05-2021) |
| Applicant<br><br>MERCK SHARP & DOHME LLC           |                                                                                                  |                                                                               |

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 43.6bis(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. \_\_\_\_\_  
☐ 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/US2022/027763**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                             |                                                                                                                    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| <b>A. CLASSIFICATION OF SUBJECT MATTER</b><br><b>INV. C07D241/08 C07D401/12 C07D405/12 C07D417/12 A61K31/496</b><br><b>A61P29/00</b><br><b>ADD.</b><br>According to International Patent Classification (IPC) or to both national classification and IPC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                             |                                                                                                                    |
| <b>B. FIELDS SEARCHED</b><br>Minimum documentation searched (classification system followed by classification symbols)<br><b>C07D A61P</b><br><br>Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched<br><br>Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)<br><b>EPO-Internal, WPI Data</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                             |                                                                                                                    |
| <b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                             |                                                                                                                    |
| Category*                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Citation of document, with indication, where appropriate, of the relevant passages                                                                                                                                                          | Relevant to claim No.                                                                                              |
| <b>A</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>WO 2011/026240 A1 (ZALICUS PHARMACEUTICALS LTD [CA]; PAJOUHESH HASSAN [CA] ET AL.)</b><br><b>10 March 2011 (2011-03-10)</b><br><b>cited in the application</b><br><b>claims 1 and 33</b><br><div style="text-align: center;">-----</div> | <b>1-39</b>                                                                                                        |
| <b>A</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>WO 2020/092667 A1 (MERCK SHARP &amp; DOHME [US]; ARASAPPAN ASHOK [US] ET AL.)</b><br><b>7 May 2020 (2020-05-07)</b><br><b>cited in the application</b><br><b>claims 1 and 26</b><br><div style="text-align: center;">-----</div>         | <b>1-39</b>                                                                                                        |
| <b>A</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>WO 2020/092187 A1 (MERCK SHARP &amp; DOHME [US]; BRESLIN MICHAEL J [US] ET AL.)</b><br><b>7 May 2020 (2020-05-07)</b><br><b>claims 1 and 18</b><br><div style="text-align: center;">-----</div>                                          | <b>1-39</b>                                                                                                        |
| -----<br>-/-                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                             |                                                                                                                    |
| <div style="display: flex; justify-content: space-between;"> <div> <input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C.         </div> <div> <input checked="" type="checkbox"/> See patent family annex.         </div> </div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                             |                                                                                                                    |
| <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>* Special categories of cited documents :</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent but published on or after the international filing date</p> <p>"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)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> </div> <div style="width: 45%;"> <p>"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</p> <p>"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</p> <p>"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</p> <p>"&amp;" document member of the same patent family</p> </div> </div> |                                                                                                                                                                                                                                             |                                                                                                                    |
| Date of the actual completion of the international search<br><br><div style="text-align: center;"><b>8 August 2022</b></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                             | Date of mailing of the international search report<br><br><div style="text-align: center;"><b>19/08/2022</b></div> |
| Name and mailing address of the ISA/<br>European Patent Office, P.B. 5818 Patentlaan 2<br>NL - 2280 HV Rijswijk<br>Tel. (+31-70) 340-2040,<br>Fax: (+31-70) 340-3016                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                             | Authorized officer<br><br><div style="text-align: center;"><b>Sahagún Krause, H</b></div>                          |

## INTERNATIONAL SEARCH REPORT

International application No

PCT/US2022/027763

| C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT |                                                                                                                                           |                       |
|------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| Category*                                            | Citation of document, with indication, where appropriate, of the relevant passages                                                        | Relevant to claim No. |
| Y,P                                                  | WO 2021/257420 A1 (MERCK SHARP & DOHME<br>[US]; ARASAPPAN ASHOK [US] ET AL.)<br>23 December 2021 (2021-12-23)<br>claims 1 and 21<br>----- | 1-39                  |
| Y,P                                                  | WO 2021/257490 A1 (MERCK SHARP & DOHME<br>[US]; ARASAPPAN ASHOK [US] ET AL.)<br>23 December 2021 (2021-12-23)<br>claims 1 and 22<br>----- | 1-39                  |

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2022/027763

| Patent document<br>cited in search report | Publication<br>date | Patent family<br>member(s)                                                                                                                                                                                                                                                                                                                                                                                                               | Publication<br>date                                                                                                                                                                                                                                                                                                            |
|-------------------------------------------|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| WO 2011026240 A1                          | 10-03-2011          | CA 2771472 A1<br>US 2012220605 A1<br>WO 2011026240 A1                                                                                                                                                                                                                                                                                                                                                                                    | 10-03-2011<br>30-08-2012<br>10-03-2011                                                                                                                                                                                                                                                                                         |
| WO 2020092667 A1                          | 07-05-2020          | AR 116939 A1<br>AU 2019372057 A1<br>BR 112021008524 A2<br>CA 3117927 A1<br>CL 2021001078 A1<br>CN 113272293 A<br>CO 2021005553 A2<br>CR 20210209 A<br>DO P2021000082 A<br>EA 202191177 A1<br>EC SP21030066 A<br>EP 3873893 A1<br>IL 282468 A<br>JP 2022506146 A<br>KR 20210086687 A<br>MA 54076 A<br>NI 202100029 A<br>PE 20211693 A1<br>SG 11202104326T A<br>TW 202031643 A<br>US 2020140411 A1<br>US 2021387966 A1<br>WO 2020092667 A1 | 30-06-2021<br>27-05-2021<br>03-08-2021<br>07-05-2020<br>29-10-2021<br>17-08-2021<br>30-07-2021<br>20-05-2021<br>22-07-2021<br>28-07-2021<br>31-05-2021<br>08-09-2021<br>31-05-2021<br>17-01-2022<br>08-07-2021<br>09-02-2022<br>13-08-2021<br>01-09-2021<br>28-05-2021<br>01-09-2020<br>07-05-2020<br>16-12-2021<br>07-05-2020 |
| WO 2020092187 A1                          | 07-05-2020          | EP 3873468 A1<br>US 2022119363 A1<br>WO 2020092187 A1                                                                                                                                                                                                                                                                                                                                                                                    | 08-09-2021<br>21-04-2022<br>07-05-2020                                                                                                                                                                                                                                                                                         |
| WO 2021257420 A1                          | 23-12-2021          | NONE                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                |
| WO 2021257490 A1                          | 23-12-2021          | TW 202214573 A<br>US 2021403457 A1<br>WO 2021257490 A1                                                                                                                                                                                                                                                                                                                                                                                   | 16-04-2022<br>30-12-2021<br>23-12-2021                                                                                                                                                                                                                                                                                         |