

**PCT REQUEST**

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| <b>0</b>   | <b>For receiving Office use only</b>  |   |
| 0-1        | International Application No.   | <b>PCT/IB2017/057588</b>  |
| 0-2        | International Filing Date   | <b>01 December 2017 (01.12.2017)</b>  |
| 0-3        | Name of receiving Office and "PCT International Application"  | <b>RO/IB</b>  |
| <b>0-4</b> | <b>Form PCT/RO/101 PCT Request</b>  |   |
| 0-4-1      | Prepared Using  | <b>ePCT-Filing<br/>Version 4.2.000 MT/FOP 20171201/1.1</b>                            |
| 0-5        | <b>Petition</b><br>The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty  |   |
| 0-6        | <b>Receiving Office (specified by the applicant)</b>  | <b>International Bureau of the World Intellectual Property Organization (RO/IB)</b>   |
| 0-7        | <b>Applicant's or agent's file reference</b>  | <b>3817-040PC03</b>   |
| <b>I</b>   | <b>Title of Invention</b>   | <b>CYCLIC DINUCLEOTIDE</b>  |
| <b>II</b>  | <b>Applicant</b>  |   |
| II-1       | This person is  | <b>Applicant only</b>   |
| II-2       | Applicant for   | <b>All designated States</b>  |
| II-4       | Name  | <b>TAKEDA PHARMACEUTICAL COMPANY LIMITED</b>  |
| II-5       | Address   | <b>1-1, Doshomachi 4-chome, Chuo-ku, Osaka-shi,<br/>Osaka,<br/>541-0045<br/>Japan</b> |
| II-6       | State of nationality  | <b>JP</b>   |
| II-7       | State of residence  | <b>JP</b>   |
| II-10      | e-mail  | <b>foreignfiling@skgf.com</b>   |
| II-10(a)   | E-mail authorization<br>The receiving Office, the International Searching Authority, the International Bureau and the International Preliminary Examining Authority are authorized to use this e-mail address, if the Office or Authority so wishes, to send notifications issued in respect of this international application: | <b>as advance copies followed by paper notifications</b>                              |

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| <b>III-1</b> | <b>Applicant and/or inventor</b> |   |
| III-1-1      | This person is                   | <b>Inventor only</b>  |
| III-1-3      | Inventor for                     | <b>All designated States</b>  |
| III-1-4      | Name (LAST, First)               | <b>YOSHIKAWA, Masato</b>  |
| III-1-5      | Address                          | <b>c/o Takeda Pharmaceutical Company Limited, 26-1,<br/>Muraoka-Higashi 2-chome, Fujisawa, Kanagawa,<br/>251-0012<br/>Japan</b> |
| <b>III-2</b> | <b>Applicant and/or inventor</b> |   |
| III-2-1      | This person is                   | <b>Inventor only</b>  |
| III-2-3      | Inventor for                     | <b>All designated States</b>  |
| III-2-4      | Name (LAST, First)               | <b>SAITOH, Morihisa</b>   |
| III-2-5      | Address                          | <b>c/o Takeda Pharmaceutical Company Limited, 26-1,<br/>Muraoka-Higashi 2-chome, Fujisawa, Kanagawa,<br/>251-0012<br/>Japan</b> |
| <b>III-3</b> | <b>Applicant and/or inventor</b> |   |
| III-3-1      | This person is                   | <b>Inventor only</b>  |
| III-3-3      | Inventor for                     | <b>All designated States</b>  |
| III-3-4      | Name (LAST, First)               | <b>KATO, Taisuke</b>  |
| III-3-5      | Address                          | <b>c/o Takeda Pharmaceutical Company Limited, 26-1,<br/>Muraoka-Higashi 2-chome, Fujisawa, Kanagawa,<br/>251-0012<br/>Japan</b> |
| <b>III-4</b> | <b>Applicant and/or inventor</b> |   |
| III-4-1      | This person is                   | <b>Inventor only</b>  |
| III-4-3      | Inventor for                     | <b>All designated States</b>  |
| III-4-4      | Name (LAST, First)               | <b>YOSHITOMI, Yayoi</b>   |
| III-4-5      | Address                          | <b>c/o Takeda Pharmaceutical Company Limited, 26-1,<br/>Muraoka-Higashi 2-chome, Fujisawa, Kanagawa,<br/>251-0012<br/>Japan</b> |

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| <b>III-5</b> | <b>Applicant and/or inventor</b> |   |
| III-5-1      | This person is                   | <b>Inventor only</b>  |
| III-5-3      | Inventor for                     | <b>All designated States</b>  |
| III-5-4      | Name (LAST, First)               | <b>SEKI, Tomohiro</b>   |
| III-5-5      | Address                          | <b>c/o Takeda Pharmaceutical Company Limited, 26-1,<br/>Muraoka-Higashi 2-chome, Fujisawa, Kanagawa,<br/>251-0012<br/>Japan</b> |
| <b>III-6</b> | <b>Applicant and/or inventor</b> |   |
| III-6-1      | This person is                   | <b>Inventor only</b>  |
| III-6-3      | Inventor for                     | <b>All designated States</b>  |
| III-6-4      | Name (LAST, First)               | <b>NAKAGAWA, Yasuo</b>  |
| III-6-5      | Address                          | <b>c/o Takeda Pharmaceutical Company Limited, 26-1,<br/>Muraoka-Higashi 2-chome, Fujisawa, Kanagawa,<br/>251-0012<br/>Japan</b> |
| <b>III-7</b> | <b>Applicant and/or inventor</b> |   |
| III-7-1      | This person is                   | <b>Inventor only</b>  |
| III-7-3      | Inventor for                     | <b>All designated States</b>  |
| III-7-4      | Name (LAST, First)               | <b>TOMINARI, Yusuke</b>   |
| III-7-5      | Address                          | <b>c/o Takeda Pharmaceutical Company Limited, 26-1,<br/>Muraoka-Higashi 2-chome, Fujisawa, Kanagawa,<br/>251-0012<br/>Japan</b> |
| <b>III-8</b> | <b>Applicant and/or inventor</b> |   |
| III-8-1      | This person is                   | <b>Inventor only</b>  |
| III-8-3      | Inventor for                     | <b>All designated States</b>  |
| III-8-4      | Name (LAST, First)               | <b>SETO, Masaki</b>   |
| III-8-5      | Address                          | <b>c/o Takeda Pharmaceutical Company Limited, 26-1,<br/>Muraoka-Higashi 2-chome, Fujisawa, Kanagawa,<br/>251-0012<br/>Japan</b> |

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| <b>III-9</b>  | <b>Applicant and/or inventor</b> |   |
| III-9-1       | This person is                   | <b>Inventor only</b>  |
| III-9-3       | Inventor for                     | <b>All designated States</b>  |
| III-9-4       | Name (LAST, First)               | <b>SASAKI, Yusuke</b>   |
| III-9-5       | Address                          | <b>c/o Takeda Pharmaceutical Company Limited, 26-1,<br/>Muraoka-Higashi 2-chome, Fujisawa, Kanagawa,<br/>251-0012<br/>Japan</b> |
| <b>III-10</b> | <b>Applicant and/or inventor</b> |   |
| III-10-1      | This person is                   | <b>Inventor only</b>  |
| III-10-3      | Inventor for                     | <b>All designated States</b>  |
| III-10-4      | Name (LAST, First)               | <b>OKANIWA, Masanori</b>  |
| III-10-5      | Address                          | <b>c/o Takeda Pharmaceutical Company Limited, 26-1,<br/>Muraoka-Higashi 2-chome, Fujisawa, Kanagawa,<br/>251-0012<br/>Japan</b> |
| <b>III-11</b> | <b>Applicant and/or inventor</b> |   |
| III-11-1      | This person is                   | <b>Inventor only</b>  |
| III-11-3      | Inventor for                     | <b>All designated States</b>  |
| III-11-4      | Name (LAST, First)               | <b>ODA, Tsuneo</b>  |
| III-11-5      | Address                          | <b>c/o Takeda Pharmaceutical Company Limited, 26-1,<br/>Muraoka-Higashi 2-chome, Fujisawa, Kanagawa,<br/>251-0012<br/>Japan</b> |
| <b>III-12</b> | <b>Applicant and/or inventor</b> |   |
| III-12-1      | This person is                   | <b>Inventor only</b>  |
| III-12-3      | Inventor for                     | <b>All designated States</b>  |
| III-12-4      | Name (LAST, First)               | <b>SHIBUYA, Akito</b>   |
| III-12-5      | Address                          | <b>c/o Takeda Pharmaceutical Company Limited, 26-1,<br/>Muraoka-Higashi 2-chome, Fujisawa, Kanagawa,<br/>251-0012<br/>Japan</b> |

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| <b>III-13</b> | <b>Applicant and/or inventor</b> |   |
| III-13-1      | This person is                   | <b>Inventor only</b>  |
| III-13-3      | Inventor for                     | <b>All designated States</b>  |
| III-13-4      | Name (LAST, First)               | <b>HIDAKA, Kosuke</b>   |
| III-13-5      | Address                          | <b>c/o Takeda Pharmaceutical Company Limited, 26-1,<br/>Muraoka-Higashi 2-chome, Fujisawa, Kanagawa,<br/>251-0012<br/>Japan</b> |
| <b>III-14</b> | <b>Applicant and/or inventor</b> |   |
| III-14-1      | This person is                   | <b>Inventor only</b>  |
| III-14-3      | Inventor for                     | <b>All designated States</b>  |
| III-14-4      | Name (LAST, First)               | <b>SHIOKAWA, Zenyu</b>  |
| III-14-5      | Address                          | <b>c/o Takeda Pharmaceutical Company Limited, 26-1,<br/>Muraoka-Higashi 2-chome, Fujisawa, Kanagawa,<br/>251-0012<br/>Japan</b> |
| <b>III-15</b> | <b>Applicant and/or inventor</b> |   |
| III-15-1      | This person is                   | <b>Inventor only</b>  |
| III-15-3      | Inventor for                     | <b>All designated States</b>  |
| III-15-4      | Name (LAST, First)               | <b>MURATA, Shumpei</b>  |
| III-15-5      | Address                          | <b>c/o Takeda Pharmaceutical Company Limited, 26-1,<br/>Muraoka-Higashi 2-chome, Fujisawa, Kanagawa,<br/>251-0012<br/>Japan</b> |
| <b>III-16</b> | <b>Applicant and/or inventor</b> |   |
| III-16-1      | This person is                   | <b>Inventor only</b>  |
| III-16-3      | Inventor for                     | <b>All designated States</b>  |
| III-16-4      | Name (LAST, First)               | <b>OKABE, Atsutoshi</b>   |
| III-16-5      | Address                          | <b>c/o Takeda Pharmaceutical Company Limited, 26-1,<br/>Muraoka-Higashi 2-chome, Fujisawa, Kanagawa,<br/>251-0012<br/>Japan</b> |

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| <b>III-17</b> | <b>Applicant and/or inventor</b> |   |
| III-17-1      | This person is                   | <b>Inventor only</b>  |
| III-17-3      | Inventor for                     | <b>All designated States</b>  |
| III-17-4      | Name (LAST, First)               | <b>NAKADA, Yoshihisa</b>  |
| III-17-5      | Address                          | <b>c/o Takeda Pharmaceutical Company Limited, 26-1,<br/>Muraoka-Higashi 2-chome, Fujisawa, Kanagawa,<br/>251-0012<br/>Japan</b> |
| <b>III-18</b> | <b>Applicant and/or inventor</b> |   |
| III-18-1      | This person is                   | <b>Inventor only</b>  |
| III-18-3      | Inventor for                     | <b>All designated States</b>  |
| III-18-4      | Name (LAST, First)               | <b>MOCHIZUKI, Michiyo</b>   |
| III-18-5      | Address                          | <b>c/o Takeda Pharmaceutical Company Limited, 26-1,<br/>Muraoka-Higashi 2-chome, Fujisawa, Kanagawa,<br/>251-0012<br/>Japan</b> |
| <b>III-19</b> | <b>Applicant and/or inventor</b> |   |
| III-19-1      | This person is                   | <b>Inventor only</b>  |
| III-19-3      | Inventor for                     | <b>All designated States</b>  |
| III-19-4      | Name (LAST, First)               | <b>FREEZE, Brian Scott</b>  |
| III-19-5      | Address                          | <b>67 Gates St, Unit 1<br/>Boston, Massachusetts 02127<br/>United States of America</b>   |
| <b>III-20</b> | <b>Applicant and/or inventor</b> |   |
| III-20-1      | This person is                   | <b>Inventor only</b>  |
| III-20-3      | Inventor for                     | <b>All designated States</b>  |
| III-20-4      | Name (LAST, First)               | <b>TAWARAISHI, Taisuke</b>  |
| III-20-5      | Address                          | <b>c/o Takeda Pharmaceutical Company Limited, 26-1,<br/>Muraoka-Higashi 2-chome, Fujisawa, Kanagawa,<br/>251-0012<br/>Japan</b> |

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| <b>III-21</b><br>III-21-1<br>III-21-3<br>III-21-4<br>III-21-5              | <b>Applicant and/or inventor</b><br>This person is<br>Inventor for<br>Name (LAST, First)<br>Address  | <b>Inventor only</b><br><b>All designated States</b><br><b>WADA, Yasufumi</b><br><b>c/o Takeda Pharmaceutical Company Limited, 26-1,</b><br><b>Muraoka-Higashi 2-chome, Fujisawa, Kanagawa,</b><br><b>251-0012</b><br><b>Japan</b>  |
| <b>III-22</b><br>III-22-1<br>III-22-3<br>III-22-4<br>III-22-5              | <b>Applicant and/or inventor</b><br>This person is<br>Inventor for<br>Name (LAST, First)<br>Address  | <b>Inventor only</b><br><b>All designated States</b><br><b>GREENSPAN, Paul D.</b><br><b>8 Overlook Drive</b><br><b>Acton, Massachusetts 01720</b><br><b>United States of America</b>  |
| <b>IV-1</b><br>IV-1-1<br>IV-1-2<br>IV-1-3<br>IV-1-4<br>IV-1-5<br>IV-1-5(a) | <b>Agent or common representative; or address for correspondence</b><br>No agent or common representative is/ has been appointed; the following special address should be used as:<br>Name<br>Address<br>Telephone No.<br>Facsimile No.<br>e-mail<br>E-mail authorization<br>The receiving Office, the International Searching Authority, the International Bureau and the International Preliminary Examining Authority are authorized to use this e-mail address, if the Office or Authority so wishes, to send notifications issued in respect of this international application: | <b>Address for correspondence</b><br><b>COVERT, JOHN M.</b><br><b>STERNE, KESSLER, GOLDSTEIN &amp; FOX P.L.L.C.</b><br><b>1100 New York Avenue, NW</b><br><b>Washington, District of Columbia 20005</b><br><b>United States of America</b><br><b>202-371-2600</b><br><b>202-371-2540</b><br><b>foreignfiling@skgf.com</b><br><b>as advance copies followed by paper notifications</b> |
| <b>V</b>   | <b>DESIGNATIONS</b>  |   |
| <b>V-1</b>   | <b>The filing of this request constitutes under Rule 4.9(a), the designation of all Contracting States bound by the PCT on the international filing date, for the grant of every kind of protection available and, where applicable, for the grant of both regional and national patents.</b>  |   |

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| <b>VI-1</b>  | <b>Priority claim of earlier national application</b>   |  |
| VI-1-1       | Filing date   | <b>01 December 2016 (01.12.2016)</b>                           |
| VI-1-2       | Number  | <b>2016-234553</b>   |
| VI-1-3       | Country or Member of WTO  | <b>JP</b>  |
| <b>VI-2</b>  | <b>Priority claim of earlier national application</b>   |  |
| VI-2-1       | Filing date   | <b>30 May 2017 (30.05.2017)</b>                                |
| VI-2-2       | Number  | <b>2017-107216</b>   |
| VI-2-3       | Country or Member of WTO  | <b>JP</b>  |
| <b>VI-3</b>  | <b>Priority claim of earlier national application</b>   |  |
| VI-3-1       | Filing date   | <b>21 November 2017 (21.11.2017)</b>                           |
| VI-3-2       | Number  | <b>62/589,300</b>  |
| VI-3-3       | Country or Member of WTO  | <b>US</b>  |
| <b>VI-4</b>  | <b>Priority document request</b>  |  |
|              | The International Bureau is requested to obtain from a digital library a certified copy of the earlier application(s) identified above as item(s), using, where applicable, the access code(s) indicated:   | <b>VI-1 Access code: 5B92</b><br><b>VI-2 Access code: C973</b> |
| <b>VI-5</b>  | <b>Incorporation by reference :</b>   |  |
|              | where an element of the international application referred to in Article 11(1)(iii)(d) or (e) or a part of the description, claims or drawings referred to in Rule 20.5(a) is not otherwise contained in this international application but is completely contained in an earlier application whose priority is claimed on the date on which one or more elements referred to in Article 11(1)(iii) were first received by the receiving Office, that element or part is, subject to confirmation under Rule 20.6, incorporated by reference in this international application for the purposes of Rule 20.6. |  |
| <b>VII-1</b> | <b>International Searching Authority Chosen</b>   | <b>European Patent Office (EPO) (ISA/EP)</b>                   |



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| <b>VIII</b> | <b>Declarations</b>  | Number of declarations     |                             |
|-------------|--|----------------------------|-----------------------------|
| VIII-1      | Declaration as to the identity of the inventor   | -                          |                             |
| VIII-2      | Declaration as to the applicant's entitlement, as at the international filing date, to apply for and be granted a patent   | -                          |                             |
| VIII-3      | Declaration as to the applicant's entitlement, as at the international filing date, to claim the priority of the earlier application   | -                          |                             |
| VIII-4      | Declaration of inventorship (only for the purposes of the designation of the United States of America)   | -                          |                             |
| VIII-5      | Declaration as to non-prejudicial disclosures or exceptions to lack of novelty   | -                          |                             |
| <b>IX</b>   | <b>Check list</b>  | Number of sheets           | Electronic file(s) attached |
| IX-1        | Request (including declaration sheets)   | <b>10</b>                  | ✓                           |
| IX-2        | Description  | <b>334</b>                 | ✓                           |
| IX-3        | Claims   | <b>76</b>                  | ✓                           |
| IX-4        | Abstract   | <b>1</b>                   | ✓                           |
| IX-5        | Drawings   | <b>11</b>                  | ✓                           |
| IX-6a       | Sequence listing part of the description (also to be used for the purposes of international search)  | -                          | ✓                           |
| IX-7        | TOTAL  | <b>432</b>                 |                             |
|             | <b>Accompanying Items</b>  | Paper document(s) attached | Electronic file(s) attached |
| IX-8        | Fee calculation sheet  | -                          | ✓                           |
| IX-20       | <b>Figure of the drawings which should accompany the abstract</b>  | <b>0</b>                   |                             |
| IX-21       | <b>Language of filing of the international application</b>   | <b>English</b>             |                             |
| IX-22       | <b>The receiving Office is requested to make this international application available to the Priority Document Access Service (DAS) (provided that an international application number and international filing date is accorded to this purported international application.)</b> | <b>Yes</b>                 |                             |
| X-1         | <b>Signature of applicant, agent or common representative</b>  |                            |                             |
| X-1-1       | Name (LAST, First)   |                            |                             |
| X-1-3       | Capacity (if such capacity is not obvious from reading the request)  |                            |                             |

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| 10-1   | Date of actual receipt of the purported international application   | <b>01 December 2017 (01.12.2017)</b> |
| 10-2   | Drawings:   |                                      |
| 10-2-1 | Received  |                                      |
| 10-2-2 | Not received  |                                      |
| 10-3   | Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application |                                      |
| 10-4   | Date of timely receipt of the required corrections under PCT Article 11(2)  |                                      |
| 10-5   | International Searching Authority   | <b>ISA/EP</b>                        |
| 10-6   | Transmittal of search copy delayed until search fee is paid   |                                      |

**FOR INTERNATIONAL BUREAU USE ONLY**

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| 11-1 | Date of receipt of the record copy by the International Bureau |  |
|------|--|--|