

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To:

KING & WOOD MALLESONS

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PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing
(day/month/year)

21 April 2015

Applicant's or agent's file reference

CIE150004PCT

FOR FURTHER ACTION

See paragraph 2 below

International application No.

PCT/CN2015/000055

International filing date (day/month/year)

28 January 2015

Priority date (day/month/year)

29 January 2014

International Patent Classification (IPC) or both national classification and IPC

C07D 487/04(2006.01)i; A61K 31/519(2006.01)i; A61P 25/16(2006.01)i

Applicant

**GLAXOSMITHKLINE INTELLECTUAL PROPERTY DEVELOPMENT
LIMITED et al**

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☒ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

Name and mailing address of the ISA/

**STATE INTELLECTUAL
PROPERTY OFFICE OF THE
P.R.CHINA(ISA/CN)
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Date of completion of this opinion

14 April 2015

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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/CN2015/000055

Box No. I

Basis of the opinion

1. With regard to the **language**, this opinion has been established 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)).
2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43bis.1(a))
3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing filed or furnished:
 - a. (means)
☐ on paper
☐ in electronic form
 - b. (time)
☐ in the international application as filed
☐ together with the international application in electronic form
☐ subsequently to this Authority for the purposes of search
4. ☐ In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
5. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/CN2015/000055

Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:

- ☐ the entire international application
☒ claims Nos. See claims listed below

because:

- ☒ the said international application, or the said claims Nos. 16,18-20 relate to the following subject matter which does not require an international search (*specify*):

[1] methods for treatment of the human/animal body by therapy.

- ☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. _____ are so unclear that no meaningful opinion could be formed (*specify*):

- ☐ the claims, or said claims Nos. _____ are so inadequately supported by the description that no meaningful opinion could be formed (*specify*):

- ☒ no international search report has been established for said claims Nos. 16,18-20,

- ☐ a meaningful opinion could not be formed without the sequence listing; the applicant did not, within the prescribed time limit:

☐ furnish a sequence listing on paper complying with the standard provided for in Annex C of the Administrative Instructions, and such listing was not available to the International Searching Authority in a form and manner acceptable to it.

☐ furnish a sequence listing in electronic form complying with the standard provided for in Annex C of the Administrative Instructions, and such listing was not available to the International Searching Authority in a form and manner acceptable to it.

☐ pay the required late furnishing fee for the furnishing of a sequence listing in response to an invitation under Rule 13ter.1(a) or (b).

- ☐ See Supplemental Box for further details.

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/CN2015/000055

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-15, 17	YES
	Claims	none	NO
Inventive step (IS)	Claims	1-15, 17	YES
	Claims	none	NO
Industrial applicability (IA)	Claims	1-15, 17	YES
	Claims	none	NO

2. Citations and explanations :

[1] Reference is made to the following documents:

[2] D1: WO 2012062783A1 18 May .2012(18.05.2012)

[3] **1. Novelty**

[4] Claim 1 relates to a compound of formula (I) or a pharmaceutically acceptable salt. D1 is regarded as being the closest prior art to the subject-matter of claim 1, and has disclosed pyrazole aminopyrimidine derivatives as LRRK2 modulators, represented by the formula I (see documents pages 1 and 2, examples, claims 1-25). There is a difference in evidence between the structures of claim 1 and the disclosure compounds of D1, that is, the pyrimidine is fused with another heterocycle in claim 1. So the subject-matter of claim 1 is novel and can be considered to fulfill the requirements of Article 33(2) PCT.

[5] Claims 2-14 are dependent claims of claim 1. Claim 15 relates to a composition comprising the compound or a pharmaceutically acceptable salt of any of claims 1 to 14. Claim 17 relates to an use of the compound or a pharmaceutically acceptable salt of any of claims 1 to 14. As described above, the compound of Claim 1 is new. So the subject-matter of claims 2-15, 17 is novel and can be considered to fulfill the requirements of Article 33(2) PCT.

[6] **2. Inventive step**

[7] Claim 1 relates to a compound of formula (I) or a pharmaceutically acceptable salt. D1 is regarded as being the closest prior art to the subject-matter of claim 1, and has disclosed pyrazole aminopyrimidine derivatives as LRRK2 modulators, represented by the formula I (see documents pages 1 and 2, examples, claims 1-25). There is a difference in evidence between the structures of claim 1 and the disclosure compounds of D1, that is, the pyrimidine is fused with another heterocycle in claim 1. According to the said distinguishing feature, the technical problem actually solved by the invention is providing new compounds used for treating Parkinson's Disease. But it is not obvious for the person skilled in the art to change the substituent R2 of D1 to form heterocycle fused with the pyrimidine.

[8] so claim 1 involves the inventive step in the sense of Article 33(3) PCT.

[9] Claims 2-14 are dependent claims of claim 1. Claim 15 relates to a composition comprising the compound or a pharmaceutically acceptable salt of any of claims 1 to 14. Claim 17 relates to an use of the compound or a pharmaceutically acceptable salt of any of claims 1 to 14. As described above, the compounds of Claim 1 involve the inventive step. So the subject-matter of claims 2-15, 17 involves the inventive step and can be considered to fulfill the requirements of Article 33(3) PCT.

[10] **3. Industrial applicability**

[11] The technical solutions of the present claims 1-15, 17 are industrially applicable, and they therefore fulfill the requirements of Art 33(4) PCT.