

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference 101333-1 WO	FOR FURTHER ACTION		See item 4 below
International application No. PCT/SE2004/001942	International filing date (<i>day/month/year</i>) 20 December 2004 (20.12.2004)	Priority date (<i>day/month/year</i>) 22 December 2003 (22.12.2003)	
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237			
Applicant ASTRAZENECA AB			

<p>1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 bis.1(a).</p> <p>2. This REPORT consists of a total of 9 sheets, including this cover sheet.</p> <p>In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.</p>																								
<p>3. This report contains indications relating to the following items:</p> <table border="0"> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. I</td> <td>Basis of the report</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table> <p>4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2).</p>	<input checked="" type="checkbox"/>	Box No. I	Basis of the report	<input checked="" type="checkbox"/>	Box No. II	Priority	<input checked="" type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input type="checkbox"/>	Box No. IV	Lack of unity of invention	<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	<input checked="" type="checkbox"/>	Box No. VI	Certain documents cited	<input type="checkbox"/>	Box No. VII	Certain defects in the international application	<input checked="" type="checkbox"/>	Box No. VIII	Certain observations on the international application
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	Date of issuance of this report 26 June 2006 (26.06.2006)
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PATENT COOPERATION TREATY

REC'D 22 APR 2005

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From the
INTERNATIONAL SEARCHING AUTHORITY

To:
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Global Intellectual Property
151 85 Södertälje
Sweden

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing
(day/month/year) 18 -04- 2005

Applicant's or agent's file reference
101333-1 WO

FOR FURTHER ACTION
See paragraph 2 below

International application No. PCT/SE 2004/001942	International filing date (day/month/year) 20.12.2004	Priority date (day/month/year) 22.12.2003
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International Patent Classification (IPC) or both national classification and IPC
C07D 487/08, A61K 31/4995, A61P 25/00

Applicant
AstraZeneca AB 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 or 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 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 opinions, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

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WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/SE 2004/001942

Box No. I Basis of this 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, unless otherwise indicated under this item.
 This opinion has been established on the basis of a translation from the original language into the following language, _____, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).

2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material
 a sequence listing
 table(s) related to the sequence listing

 - b. format of material
 in written format
 in computer readable form

 - c. time of filing/furnishing
 contained in the international application as filed.
 filed together with the international application in computer readable form.
 furnished subsequently to this Authority for the purposes of search.

3. In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto 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.

4. Additional comments:

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

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Box No. II Priority

1. The following document has not yet been furnished:

copy of the earlier application whose priority has been claimed (Rules 43*bis*.1 and 66.7(a)).

translation of the earlier application whose priority has been claimed (Rules 43*bis*.1 and 66.7(b)).

Consequently it has not been possible to consider the validity of the priority claim. This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.

2. This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43*bis*.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.

3. Additional observations, if necessary:

The priority is considered valid.

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

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

The question 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. 5-9 and 11-15

because:

the said international application, or the said claims Nos. 5-9 and 11-15
relate to the following subject matter which does not require an international preliminary examination (*specify*):

See PCT Rule 67.1.(iv).: Methods for treatment of the human or animal body by surgery or therapy, as well as diagnostic methods.

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.

no international search report has been established for said claims Nos. _____

the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of
the Administrative Instructions in that:

the written form has not been furnished

does not comply with the standard

the computer readable form has not been furnished

does not comply with the standard

the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not
comply with the technical requirements provided for in the Annex C-bis of the Administrative Instructions.

See Supplemental Box for further details.

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

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

1. Statement

Novelty (N)	Claims	1-4, 10, 16-17	YES
	Claims		NO
Inventive step (IS)	Claims		YES
	Claims	1-4, 10, 16-17	NO
Industrial applicability (IA)	Claims	1-4, 10, 16-17	YES
	Claims		NO

2. Citations and explanations:

Cited documents:

- D1) WO 0058311 A1
- D2) EP 1231212 A1
- D3) US 5679673 A
- D4) WO 2004016616 A1
- D5) WO 2004016617 A1

The present invention relates to novel bridged 1,4-diazacyclo[3.2.1]octane derivatives substituted in position 4 with aryylethylcarbonyl, arylethenylcarbonyl, arylethynylcarbonyl or aryloxymethylcarbonyl (where aryl includes aryl and heteroaryl) for treatment of diseases related to alpha7 nicotinic receptors

The document D1 is regarded as being the closest prior art to the subject-matter of claim 1, and discloses a bridged 1,4-diazacyclo[3.2.2]nonane substituted in position 4 with an phenyl(alkyl)oxycarbonyl or an phenyl(alkyl)aminocarbonyl, used for treatment of diseases and conditions related to alpha7 nicotinic receptors, such as diseases related to the nervous system.

The subject-matter of claim 1 therefore differs from this known D1 in that: the bridged cycloalkyl contains 2 carbons in the bridge instead of 1 carbon and in that there are an oxygen or an nitrogen next to the carbonyl-group.

The problem to be solved by the present in the light of document D1 is the provision of alternative derivates of

.../...

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of: BOX V

1,4-diazacyclo[3.2.1]octane for treatment of diseases related to alpha7 nicotinic receptors

The applicant has not shown that the structural differences render the claimed compounds' unexpected effects in comparison with the known compounds'.

It is considered obvious to a person skilled in the art to modify structurally similar compounds to obtain the claimed compounds and come to the conclusion that they will have the same activity.

Thus, claims 1-4, 10 and 16-17 are considered to fulfil the requirement of novelty and industrial applicability, but not that of inventive step.

The same arguments are valid for the documents D2 and D3 except for that the chain between the bridged cycloalkyl and the aryl are slightly different. In D2 and D3 1,4-diazacyclo[3.2.1]octane are also included in claim 1.

D4 and D5 are relevant for the opinion on inventive step of claims 1-6, 12 and 18-19 if the priority shows to be invalid.

WRITTEN OPINION OF THE
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International application No.

PCT/SE 2004/001942

Box No. VI Certain documents cited

1. Certain published documents (Rules 43bis.1 and 70.10)

Application No. Patent No.	Publication date (day/month/year)	Filing date (day/month/year)	Priority date (valid claim) (day/month/year)
WO 2004016616 A1	26-0-2004	13-08-2003	14-08-2002
WO 2004016617 A1	26-02-2004	13-08-2003	14-08-2002

2. Non-written disclosures (Rules 43bis.1 and 70.9)

Kind of non-written disclosure	Date of non-written disclosure (day/month/year)	Date of written disclosure referring to non-written disclosure (day/month/year)
_____	_____	_____

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No. .

PCT/SE 2004/001942

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawing or on the question whether the claim are fully supported by the description, are made:

The possibility, in formula I in claim 1, of D being $N(R^1)_2$ does not seem to be correct as this leads to a nitrogen with four bonds.