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(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM,

AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

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Declarations under Rule 4.17:

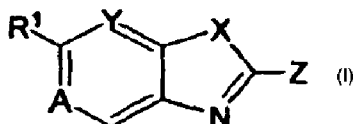
- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))

Published:

- with international search report (Art. 21(3))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

(88) Date of publication of the international search report:  
18 February 2010

(54) Title: NOVEL SUBSTITUTED AZABENZOXAZOLES



(57) Abstract: The present invention relates to novel amyloid binding compounds of formula (I) and methods for measuring effects of the compounds, by measuring changes of amyloid plaque level in living patients. More specifically, the present invention relates to a method of using the compounds of this invention as tracers in positron emission tomography (PET/) imaging to study amyloid deposits in brain in vivo to allow diagnosis of Alzheimer's disease. Thus, the present invention relates to use of the novel amyloid binding compounds as a diagnostic. The invention further relates to a method of measuring clinical efficacy of Alzheimer's disease therapeutic agents. Specifically, the present invention relates to novel aryl or heteroaryl substituted azabenzoxazole derivatives, compositions, and therapeutic uses and processes for making such compounds. or a pharmaceutically acceptable salt, solvate or in vivo hydrolysable ester thereof, wherein: X is O or S; A and Y independently are N, or CH;

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## INTERNATIONAL SEARCH REPORT

International application No

PCT/US2009/045376

<b>A. CLASSIFICATION OF SUBJECT MATTER</b>		
INV. C07D498/04	C07D519/00	A61P25/28 A61K31/4353
According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b>		
Minimum documentation searched (classification system followed by classification symbols) C07D A61P A61K		
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 practical, search terms used) EPO-Internal, BEILSTEIN Data, WPI Data		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2007/035405 A (UNIV PITTSBURGH [US]; KLUNK WILLIAM E [US]; MATHIS CHESTER A JR [US]) 29 March 2007 (2007-03-29) page 3, line 19 - line 24; compound I claims 1,20	1-35
X	ZHUANG ZHI-PING ET AL: "IBOX (2-(4'-dimethylaminophenyl)-6-iodobenzoxazole): a ligand for imaging amyloid plaques in the brain" NUCLEAR MEDICINE AND BIOLOGY, ELSEVIER, NY, US, vol. 28, no. 8, 1 November 2001 (2001-11-01), pages 887-894, XP002386398 ISSN: 0969-8051 page 889; compound 3	1-35
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<input checked="" type="checkbox"/>	Further documents are listed in the continuation of Box C.	<input checked="" type="checkbox"/> 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	"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	
"E" earlier document but published on or after the international filing date	"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	
"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)	"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.	
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family	
"P" document published prior to the international filing date but later than the priority date claimed		
Date of the actual completion of the international search	Date of mailing of the international search report	
12 October 2009	11/12/2009	
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  Lewis, Sara	

## INTERNATIONAL SEARCH REPORT

International application No

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2007/149030 A (ASTRAZENECA AB [SE]; MALMSTROEM JONAS [SE]; PYRING DAVID [SE]; SLIVO C) 27 December 2007 (2007-12-27) examples 1-3,5-9,15-18,24-27 page 66; example a	1-35
X	US 4 038 396 A (SHEN TSUNG-YING ET AL) 26 July 1977 (1977-07-26) column 21; table 3 example 117	1-28
X	CLARK, R.L. ET AL.: "2-(Substituted phenyl)oxazolo[4,5-b]pyridines and 2-(substituted phenyl)oxazolo[5,4-b]pyridines as nonacidic antiinflammatory agents" JOURNAL OF MEDICINAL CHEMISTRY, vol. 21, no. 11, 1978, pages 1158-1162, XP002543989 page 1159; examples 30,36; table II	1-28
X	ISOMURA, Y. ET AL: "Studies on the synthesis and anti-inflammatory activity of 2,6-di-tert-butylphenols with a heterocyclic group at the 4-position" CHEMICAL & PHARMACEUTICAL BULLETIN, vol. 31, no. 9, 1983, pages 3168-3178, XP002544095 page 3172; table II; compounds IIA, IIE, IIG	1-28
X	ALTENHOFF, G. ET AL: "A domino copper-catalysed C-N and C-O cross-coupling for the conversion of primary amides into benzoxazoles" ADVANCED SYNTHESIS & CATALYSIS, vol. 346, no. 13-15, 2004, pages 1661-1664, XP002544096 page 1663; table 2; compound 4L	1-28
X	WO 03/048137 A (MERCK & CO INC [US]; MUNOZ BENITO [US]; STEARNS BRIAN [US]; VERNIER JE) 12 June 2003 (2003-06-12) examples 1, 3, 5, 7-9, 12, 14-17, 21-25, 30, 33-48, 50-54, 56-57, 65-75, 78-80	1-28
X,P	US 2008/299041 A1 (JEONG JAE MIN [KR] ET AL) 4 December 2008 (2008-12-04) claims 1-12	1-35

# INTERNATIONAL SEARCH REPORT

International application No.  
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## Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1.  Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2.  Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
  
3.  Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1.  As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
  
2.  As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
  
3.  As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
  
4.  No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

see annex

### Remark on Protest

- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- No protest accompanied the payment of additional search fees.

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-7 (part), 8-16, 17-35 (part)

Compounds of formula (I) where X is oxygen, pharmaceutical salts thereof and their use

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2. claims: 1-7 (part) and 17-35 (part)

Compounds of formula (I) where X is sulfur, pharmaceutical salts thereof and their use

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## INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2009/045376

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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		EP 2035418 A1	18-03-2009
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