

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
30 March 2006 (30.03.2006)

PCT

(10) International Publication Number
WO 2006/032466 A3

(51) International Patent Classification:
C07D 413/14 (2006.01) **C07D 413/12** (2006.01)

(21) International Application Number:
PCT/EP2005/010154

(22) International Filing Date:
20 September 2005 (20.09.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
PCT/EP2004/010762
24 September 2004 (24.09.2004) EP
PCT/EP2005/007731 15 July 2005 (15.07.2005) EP

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

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(71) Applicant (for all designated States except US):
ACTELION PHARMACEUTICALS LTD [CH/CH];
Gewerbstrasse 16, CH-4123 Allschwil (CH).

Declaration under Rule 4.17:

— as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))

(72) Inventors; and

(75) Inventors/Applicants (for US only): **HUBSCHW-ERLEN, Christian** [FR/FR]; 15, rue de la Gendarmerie, F-68480 Durmenach (FR). **SURIVET, Jean-Philippe** [FR/FR]; 19, rue Théo Bachmann, F-68300 Saint-Louis (FR). **ZUMBRUNN ACKLIN, Cornelia** [CH/CH]; Alemannengasse 57, CH-4058 Basel (CH).

Published:

— with international search report
— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(74) Agent: **RUHLMANN, Eric**; Actelion Pharmaceuticals Ltd, Gewerbstrasse 16, CH-4123 Allschwil (CH).

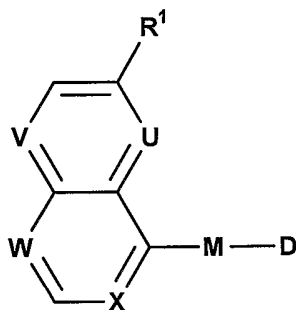
(88) Date of publication of the international search report:

14 December 2006

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

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: NEW BICYCLIC ANTIBIOTICS



(I)

(57) Abstract: The invention relates to novel antibiotics of formula (I) wherein R¹ represents alkyl, alkoxy, haloalkoxy, halogen or cyano; one or two of U, V, W and X represent(s) N, the remaining represent CH, or, in case of U, V and/or W, may also represent CR^a and, in the case of X, may also represent CR^b; R^a represents halogen; R^b represents halogen or alkoxy; M is a linking chain containing a non-aromatic cyclic or heterocyclic group, and D represents alkyl, aryl or heteroaryl.

INTERNATIONAL SEARCH REPORT

International application No

PCT/EP2005/010154

A. CLASSIFICATION OF SUBJECT MATTER

INV. C07D413/14 C07D413/12

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

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

C07D

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, CHEM ABS Data, BEILSTEIN Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2004/035569 A (MORPHOCHEM AKTIENGESELLSCHAFT FUER KOMBINATORISCHE; SURIVET, JEAN-PHIL) 29 April 2004 (2004-04-29) claim 1	1-19
X	DE 102 56 405 A1 (MORPHOCHEM AKTIENGESELLSCHAFT FUER KOMBINATORISCHE CHEMIE) 17 June 2004 (2004-06-17) claim 1	1-19
X	WO 2004/002490 A (GLAXO GROUP LIMITED; AXTEN, JEFFREY, MICHAEL; DAINES, ROBERT, A; DAVIE) 8 January 2004 (2004-01-08) claim 1	1-19
	----- -/-	



Further documents are listed in the continuation of Box C.



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

E earlier document but published on or after the international filing date

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)

O document referring to an oral disclosure, use, exhibition or other means

P document published prior to the international filing date but later than the priority date claimed

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

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

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.

& document member of the same patent family

Date of the actual completion of the international search

27 September 2006

Date of mailing of the international search report

09/10/2006

Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Wolf, Claudia

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2005/010154

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 03/064421 A (GLAXO GROUP LIMITED; DAINES, ROBERT, A; MILLER, WILLIAM, HENRY; PEARSO) 7 August 2003 (2003-08-07) claim 1 -----	1-19
P,X	WO 2004/089947 A (MORPHOCHEM AG; HUBSCHWERLEN, CHRISTIAN; SURIVET, JEAN PHILLIPPE; ZUMBR) 21 October 2004 (2004-10-21) claim 1 -----	1-19

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2005/010154

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2004035569 A	29-04-2004	AU 2003301414 A1 BR 0315221 A CA 2500320 A1 EP 1551829 A2 JP 2006505622 T US 2006040949 A1	04-05-2004 23-08-2005 29-04-2004 13-07-2005 16-02-2006 23-02-2006
DE 10256405 A1	17-06-2004	NONE	
WO 2004002490 A	08-01-2004	AU 2003238054 A1 EP 1583537 A2 JP 2006505505 T US 2006058287 A1	19-01-2004 12-10-2005 16-02-2006 16-03-2006
WO 03064421 A	07-08-2003	EP 1470125 A1 JP 2005525324 T US 2005159411 A1	27-10-2004 25-08-2005 21-07-2005
WO 2004089947 A	21-10-2004	AU 2004228147 A1 CA 2534891 A1 DE 10316081 A1 EP 1613624 A2 US 2006205719 A1	21-10-2004 21-10-2004 21-10-2004 11-01-2006 14-09-2006