

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
19 July 2007 (19.07.2007)

PCT

(10) International Publication Number
WO 2007/080542 A1

(51) International Patent Classification:

A61K 31/381 (2006.01) A61K 31/4245 (2006.01)
C07D 333/22 (2006.01) A61P 37/06 (2006.01)
C07D 413/04 (2006.01)

(21) International Application Number:

PCT/IB2007/050070

(22) International Filing Date: 10 January 2007 (10.01.2007)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

PCT/IB2006/050103

11 January 2006 (11.01.2006) IB

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

(72) Inventors; and

(75) Inventors/Applicants (for US only): **BOLLI, Martin**
[CH/CH]; Bachgrabenweg 21, CH-4123 Allschwil (CH).
LEHMANN, David [CH/CH]; Turnerstrasse 9, CH-4058
Basel (CH). **MATHYS, Boris** [CH/CH]; Baumgarten-
strasse 3, CH-4622 Egerkingen (CH). **MUELLER, Claus**

[DE/DE]; Wittlinger Strasse 37, 79576 Weil Am Rhein
(DE). **NAYLER, Oliver** [CH/CH]; Hangstrasse 38,
CH-4144 Arlesheim (CH). **STEINER, Beat** [CH/CH]; Im
Eichacker 44, CH-4112 Bättwil (CH). **VELKER, Jörg**
[DE/FR]; 8, rue wilson, F-68330 Huningue (FR).

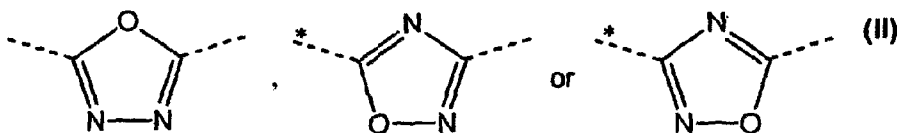
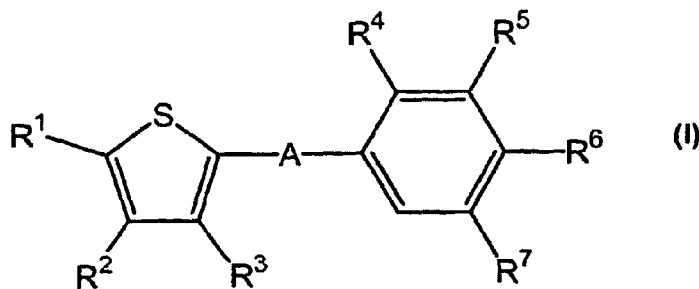
(74) Agent: **GSCHWEND, Thomas**; c/o Actelion Pharma-
ceuticals Ltd., Legal Department, Gewerbstrasse 16,
CH-4123 Allschwil (CH).

(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,
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, GT, HN, HR, HU, ID, IL, IN, IS,
JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS,
LT, LU, LV, LY, MA, MD, 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, SV, SY, TJ, TM, TN,
TR, TT, TZ, UA, UG, US, UZ, VC, VN, 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),

[Continued on next page]

(54) Title: NOVEL THIOPHENE DERIVATIVES AS S1P1/EDG1 RECEPTOR AGONISTS



(57) Abstract: The invention relates to thiophene derivatives of formula (I) / their preparation and their use as pharmaceutically active compounds. Said compounds particularly act as immunosuppressive agents wherein: A represents *-CO-CH=CH-, *-CO-CH₂CH₂-, *-CO-CH₂-NH-, wherein the sterisks indicate the bond that is linked to the thiophene group of Formula (I), and R¹-R³ are as defined in the claims.



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).

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.

Published:

— *with international search report*