

(51) International Patent Classification:
A61K 39/04 (2006.01) A61K 39/39 (2006.01)ment of Biomedical Molecular Biology, Ghent University,
Technologiepark 927, Zwijnaarde, B-9052 Ghent (BE).(21) International Application Number:
PCT/GB2009/050410(74) Agent: DELANEY, Jennifer; Appleyard Lees, 15 Clare
Road, Halifax Yorkshire HX1 2HY (GB).(22) International Filing Date:
22 April 2009 (22.04.2009)(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.

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
0807306.6 22 April 2008 (22.04.2008) GB(71) Applicants (for all designated States except US): BAN-
GOR UNIVERSITY [GB/GB]; Bangor, Gwynedd LL57
2DG (GB). Ghent University [BE/BE]; Sint-Pieter-
snieuwstraat 25, B-9000 Ghent (BE).

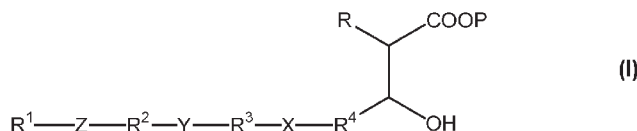
(72) Inventors; and

(75) Inventors/Applicants (for US only): BAIRD, Mark
Stephen [GB/GB]; School of Chemistry, Bangor Univer-
sity, Bangor Gwynedd LL57 2DG (GB). AL-DULAYY-
MI, Juma' a Raheem Najeem [GB/GB]; School of
Chemistry, Bangor University, Bangor Gwynedd LL57
2DG (GB). THEUNISSEN, Cornelias [GB/GB]; School
of Chemistry, Bangor University, Bangor Gwynedd LL57
2DG (GB). KOZA, Gani [TR/GB]; School of Chemistry,
Bangor University, Bangor, Gwynedd LL57 2DG (GB).
VANDER BEKEN, Seppe [BE/BE]; Department of
Biomedical Molecular Biology, Ghent University, Tech-
nologiepark 927, Zwijnaarde, B-9052 Ghent (BE).
GROOTEN, Johan Adriaan Marc [BE/BE]; Depart-(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, HR, HU, IE, IS, IT, LT, LU, LV,
MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR),
OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML,
MR, NE, SN, TD, TG).

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))

(54) Title: ADJUVANTS FOR USE IN VACCINATION



(57) Abstract: A compound of formula (I) for use as an adjuvant in vaccination; wherein R is an optionally-substituted alkyl, alkenyl, alkynyl, aryl, arylalkyl or alkylaryl moiety having from 1 to 50 carbon atoms; R¹ is an optionally-substituted alkyl, alkenyl, alkynyl, aryl, arylalkyl or alkylaryl moiety having from 1 to 40 carbon atoms; each of R², R³ and R⁴ is independently selected from an optionally-substituted alkylene, alkenylene, alkynylene, arylene, arylalkylene or alkylarylene moiety having from 1 to 40 carbon atoms; each of X, Y and Z is independently selected from an optionally-substituted alkylene, alkenylene, alkynylene, arylene, alkylarylene or cycloalkylene, ketone, ester, amide, imide, imine, thioether, ether, thioester, thioketone; and P is selected from hydrogen, an alkyl group, a sugar residue, or a metal, phosphonium or ammonium species; wherein at least one of X, Y and Z includes a moiety selected from cyclopropyl, C=A, C-AH and C-OR⁵; wherein R⁵ is alkyl or haloalkyl, and A is S, O or NR⁶, wherein R⁶ maybe H or 20 alkyl.