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(71) Applicant *(for all designated States except US)*: THE REGENTS OF THE UNIVERSITY OF CALIFORNIA [US/US]; 22nd floor, 300 Lakeside Drive, Oakland, CA 94612 (US).

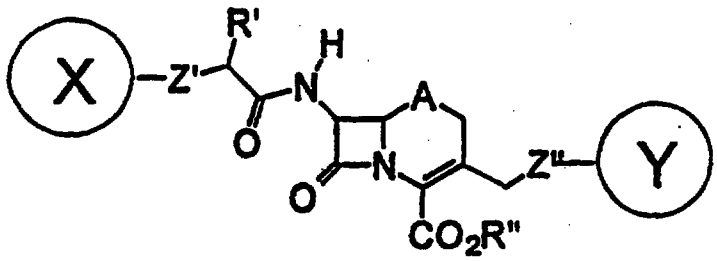
(72) Inventors; and
(75) Inventors/Applicants *(for US only)*: TSIEN, Roger, Y. [US/US]; 8535 Nottingham Place, La Jolla, CA 92037 (US). ZLOKARNIK, Gregor [DE/US]; 3329 Jemez Drive, San Diego, CA 92117 (US).

(74) Agent: STORELLA, John, R.; Townsend and Townsend and Crew, Steuart Street Tower, 20th floor, One Market Plaza, San Francisco, CA 94105 (US).

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(54) Title: SUBSTRATES FOR BETA-LACTAMASE AND USES THEREOF



(I)

(57) Abstract

Substrates for β-lactamase of general formula (I) in which one of X and Y is a fluorescent donor moiety and the other is a quencher (which may or may not re-emit); R' is selected from the group consisting of H, lower (i.e., alkyl of 1 to about 5 carbon atoms) and $(CH_2)_nOH$, in which n is 0 or an integer from 1 to 5; R" is selected from the group consisting of H, physiologically acceptable metal and ammonium cations, $-CHR^2OCO(CH_2)_nCH_3$, $-CHR^2OCOC(CH_3)_3$, acylthiomethyl, acyloxy-alpha-benzyl, delta-butyrolactonyl, methoxycarbonyloxymethyl, phenyl, methylsulphinylmethyl, beta-morpholinoethyl, dialkylaminoethyl, acyloxyalkyl, dialkylaminocarbonyloxymethyl and aliphatic, in which R^2 is selected from the group consisting of H and lower alkyl; A is selected from the group consisting of S, O, SO, SO_2 and CH_2; and Z' and Z" are linkers for the fluorescent donor and quencher moieties. Methods of assaying β-lactamase activity and monitoring expression in systems using β-lactamase as a reporter gene also are disclosed.