(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
25 October 2007 (25.10.2007)

PCT

(10) International Publication Number
WO 2007/120522 A3

(51) International Patent Classification:
C12N 9/02 (2006.01) *C12N 5/10* (2006.01)
C12N 15/53 (2006.01) *C12N 1/15* (2006.01)
C12Q 1/26 (2006.01) *C12N 1/21* (2006.01)
G01N 33/573 (2006.01)

(21) International Application Number:
PCT/US2007/008176

(22) International Filing Date: 2 April 2007 (02.04.2007)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

60/788,608	3 April 2006 (03.04.2006)	US
60/879,771	10 January 2007 (10.01.2007)	US
60/901,133	14 February 2007 (14.02.2007)	US

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(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BH, 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, 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), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, 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).

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*
— *with sequence listing part of description published separately in electronic form and available upon request from the International Bureau*

(88) Date of publication of the international search report:
28 February 2008

(54) Title: PERMUTED AND NONPERMUTED LUCIFERASE BIOSENSORS

(57) Abstract: A modified luciferase protein which is a sensor for molecules including cAMP, cGMP, calcium, chelators thereof, kinases, or phosphatases is provided. Also provided is a circularly permuted anthozoan luciferase protein and a decapod crustacean luciferase protein, optionally containing one or more heterologous amino acid sequences, at least one of which directly or indirectly interacts with a molecule of interest. Further provided is a modified anthozoan luciferase protein and a decapod crustacean luciferase protein containing an insertion of one or more heterologous amino acid sequences, at least one of which directly or indirectly interacts with a molecule of interest.

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