

Title (en)

MUTANT PROTEASE BIOSENSORS WITH ENHANCED DETECTION CHARACTERISTICS

Title (de)

MUTANTE PROTEASE-BIOSENSOREN MIT VERBESSERTEN ERKENNUNGSEIGENSCHAFTEN

Title (fr)

BIOCAPTEURS À PROTÉASE MUTANTE DOTÉS DE CARACTÉRISTIQUES DE DÉTECTION AMÉLIORÉES

Publication

**EP 2776573 A1 20140917 (EN)**

Application

**EP 12791055 A 20121112**

Priority

- US 201161558796 P 20111111
- US 2012064675 W 20121112

Abstract (en)

[origin: WO2013071237A1] A polynucleotide encoding a biosensor polypeptide comprising a modified circularly- permuted thermostable luciferase and a linker linking the C-terminal portion of the thermostable luciferase to the N-terminal portion of the thermostable luciferase. The modified circularly- permuted thermostable luciferase is modified relative to a parental circularly-permuted thermostable luciferase. The linker contains a sensor region capable of interacting with a target molecule in a cell. The modified circularly-permuted thermostable luciferase has an enhanced response after interaction of the biosensor with the target molecule relative to the parental circularly-permuted thermostable luciferase in the presence of the target molecule. Alternatively, the modified circularly-permuted thermostable luciferase has an enhanced response after interaction of the biosensor with the target molecule relative to the modified circularly-permuted thermostable luciferase in the absence of the target molecule.

IPC 8 full level

**C12Q 1/37** (2006.01); **C12Q 1/66** (2006.01)

CPC (source: EP)

**C12Q 1/37** (2013.01); **C12Q 1/66** (2013.01)

Citation (search report)

See references of WO 2013071237A1

Citation (examination)

- WO 0024878 A2 20000504 - SECR DEFENCE [GB], et al
- EP 2154159 A1 20100217 - UNIV TOKYO [JP], et al & KANNO A ET AL: "Cyclic luciferase for real-time sensing for caspase-3 activities in living mammals", ANGEWANDTE CHEMIE INTERNATIONAL EDITION, WILEY - V C H VERLAG GMBH & CO. KGAA, DE, vol. 46, no. 40, 8 October 2007 (2007-10-08), pages 7595 - 7599, XP008123060, ISSN: 1433-7851, [retrieved on 20070827], DOI: 10.1002/ANIE.200700538
- WO 2011143339 A1 20111117 - PROMEGA CORP [US], et al
- WO 2004059294 A2 20040715 - PROMEGA CORP [US], et al
- WO 0120002 A1 20010322 - PROMEGA CORP [US]
- WO 2007120522 A2 20071025 - PROMEGA CORP [US], et al
- US 2007184493 A1 20070809 - PACKARD BEVERLY [US], et al
- CHERAGHI ROYA ET AL: "Structural and functional effects of circular permutation on firefly luciferase: In vitro assay of caspase 3/7", INTERNATIONAL JOURNAL OF BIOLOGICAL MACROMOLECULES, ELSEVIER BV, NL, vol. 58, 15 April 2013 (2013-04-15), pages 336 - 342, XP028555860, ISSN: 0141-8130, DOI: 10.1016/J.IJBIOMAC.2013.04.015
- G P MCSTAY ET AL: "Overlapping cleavage motif selectivity of caspases: implications for analysis of apoptotic pathways", CELL DEATH AND DIFFERENTIATION., vol. 15, no. 2, 1 February 2008 (2008-02-01), GB, pages 322 - 331, XP055239881, ISSN: 1350-9047, DOI: 10.1038/sj.cdd.4402260
- LAXMAN B ET AL: "Noninvasive real-time imaging of apoptosis", PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES, NATIONAL ACADEMY OF SCIENCES, US, vol. 99, no. 26, 24 December 2002 (2002-12-24), pages 16551 - 16555, XP002333223, ISSN: 0027-8424, DOI: 10.1073/PNAS.252644499
- BINKOWSKI B ET AL: "Engineered luciferases for molecular sensing in living cells", CURRENT OPINION IN BIOTECHNOLOGY, LONDON, GB, vol. 20, no. 1, 1 February 2009 (2009-02-01), pages 14 - 18, XP026095186, ISSN: 0958-1669, [retrieved on 20090318], DOI: 10.1016/J.COPBIO.2009.02.013
- KANNO AKIRA ET AL: "Detection of apoptosis using cyclic luciferase in living mammals.", METHODS IN MOLECULAR BIOLOGY (CLIFTON, N.J.) 2009, vol. 574, 2009, pages 105 - 114, XP009188244, ISSN: 1940-6029
- FAN FRANK ET AL: "Novel genetically encoded biosensors using firefly luciferase", ACS CHEMICAL BIOLOGY, AMERICAN CHEMICAL SOCIETY, WASHINGTON, DC, US, vol. 3, no. 6, 20 June 2008 (2008-06-20), pages 346 - 351, XP002553151, ISSN: 1554-8929, [retrieved on 20080620], DOI: 10.1021/CB8000414
- SUSAN S. WIGDAL ET AL: "A Novel Bioluminescent Protease Assay Using Engineered Firefly Luciferase", CURRENT CHEMICAL GENOMICS, vol. 2, no. 1, 30 October 2008 (2008-10-30), pages 16 - 28, XP055003020, ISSN: 1875-3973, DOI: 10.2174/1875397300802010016
- B. Z. PACKARD ET AL: "Granzyme B Activity in Target Cells Detects Attack by Cytotoxic Lymphocytes", THE JOURNAL OF IMMUNOLOGY, vol. 179, no. 6, 4 September 2007 (2007-09-04), US, pages 3812 - 3820, XP055375698, ISSN: 0022-1767, DOI: 10.4049/jimmunol.179.6.3812

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DOCDB simple family (publication)

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DOCDB simple family (application)

**US 2012064675 W 20121112**; EP 12791055 A 20121112; EP 18205893 A 20121112; JP 2014541370 A 20121112