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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
26 June 2014 (26.06.2014)

WIPO | PCT

(10) International Publication Number
WO 2014/098767 A1

(51) International Patent Classification:
C12N 15/70 (2006.01) *C12N 1/06* (2006.01)
C12N 15/74 (2006.01) *C12N 1/21* (2006.01)

(21) International Application Number:
PCT/SG2013/000534

(22) International Filing Date:
13 December 2013 (13.12.2013)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
61/740,976 21 December 2012 (21.12.2012) US

(71) Applicant: **NANYANG TECHNOLOGICAL UNIVERSITY** [SG/SG]; 50 Nanyang Avenue, Singapore 639798 (SG).

(72) Inventors: **CHANG, Matthew Wook**; c/o NANYANG TECHNOLOGICAL UNIVERSITY, 50 Nanyang Avenue, Singapore 639798 (SG). **LO, Tat Ming Samuel**; c/o NANYANG TECHNOLOGICAL UNIVERSITY, 50 Nanyang Avenue, Singapore 639798 (SG). **TAN, Mui Hua**; c/o NANYANG TECHNOLOGICAL UNIVERSITY, 50 Nanyang Avenue, Singapore 639798 (SG).

(74) Agent: **VIERING, JENTSCHURA & PARTNER LLP**; Rochor Road, Rochor Post Office, Singapore 911833 (SG).

(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, BN, BR, BW, BY, BZ, CA, CH, CL, 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, IR, IS, JP, KE, KG, 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, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, 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, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, 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, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

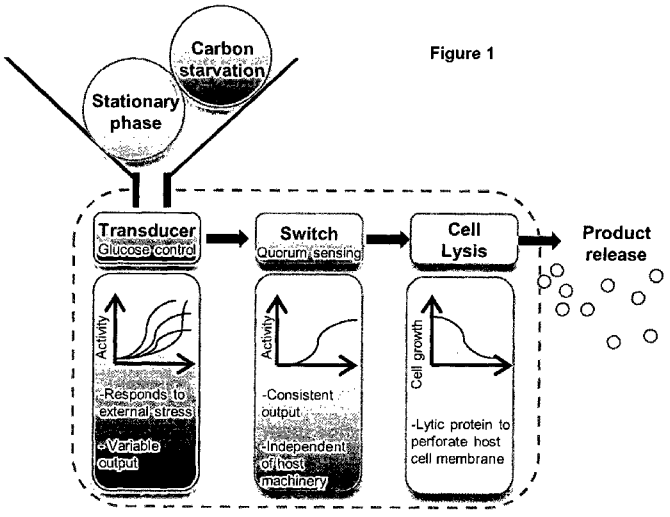
Published:

— *with international search report (Art. 21(3))*

— *with sequence listing part of description (Rule 5.2(a))*

(54) Title: PROGRAMMABLE SYNTHETIC LYSIS SYSTEM FOR CONTROLLED RELEASE OF MACROMOLECULES

Figure 1



(57) Abstract: The present invention relates to an expression system or a recombinant cell comprising one or more nucleic acid constructs, wherein the one or more nucleic acid constructs comprise: (i) a first gene encoding for one or more protein(s) that activate a quorum sensing system; and (ii) a second gene encoding for one or more lytic protein(s) capable of forming a lesion in a host cell's membrane; wherein the first gene is under control of a first promoter and the second gene is under control of a second promoter, wherein the first promoter controlling the first gene is a carbon starvation-induced promoter and the second promoter is a quorum sensing system promoter induced by the quorum sensing system activated by one or more protein(s) encoded by the first gene as well as recombinant cells hosting such an expression system. Further encompassed is the use of the expression systems and cells of the invention for the expression of gene products of interest and the respective methods of use.

WO 2014/098767 A1