

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
09 June 2022 (09.06.2022)



(10) International Publication Number
WO 2022/119505 A1

- (51) **International Patent Classification:**
C12N 15/62 (2006.01) C12N 9/12 (2006.01)
- (21) **International Application Number:**
PCT/SG2021/050744
- (22) **International Filing Date:**
01 December 2021 (01.12.2021)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
10202012000X 02 December 2020 (02.12.2020) SG
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- (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, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN,

HR, HU, ID, IL, IN, IR, IS, IT, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, 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, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, 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, ST, 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).

Declarations under Rule 4.17:

— of inventorship (Rule 4.17(iv))

Published:

- with international search report (Art. 21(3))
— with sequence listing part of description (Rule 5.2(a))

(54) **Title:** A HIGHLY SENSITIVE HEAT-REPRESSIBLE SPLIT-T7 POLYMERASE (THERMAL-T7RNAP) FOR APPLICATIONS IN BIOTECHNOLOGY

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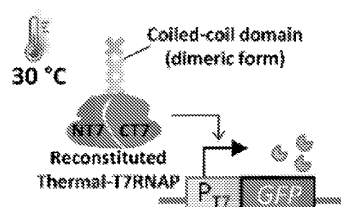
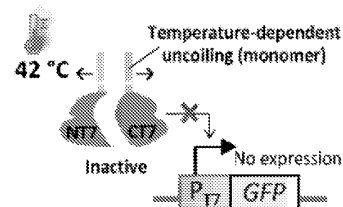


FIGURE 2



(57) **Abstract:** The present invention relates to heat-repressible split-T7 polymerases comprising temperature-sensitive domains of Tlpa protein fused with split T7 RNA polymerase (T7RNAP) to introduce thermal control into widely used T7 RNA polymerase, creating a heat-repressible Thermal-T7RNAP system. The invention further provides polynucleotides encoding the heat-repressible split-T7 polymerases, and methods of thermal control of bioproduction.

WO 2022/119505 A1