

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

(19) World Intellectual Property  
Organization

International Bureau

(43) International Publication Date  
01 November 2018 (01.11.2018)(10) International Publication Number  
**WO 2018/197926 A1**

## (51) International Patent Classification:

C12N 15/113 (2010.01) A61K 47/62 (2017.01)  
A61K 48/00 (2006.01) A61P 31/04 (2006.01)

## (21) International Application Number:

PCT/IB2017/052402

## (22) International Filing Date:

26 April 2017 (26.04.2017)

## (25) Filing Language:

English

## (26) Publication Language:

English

## (72) Inventor; and

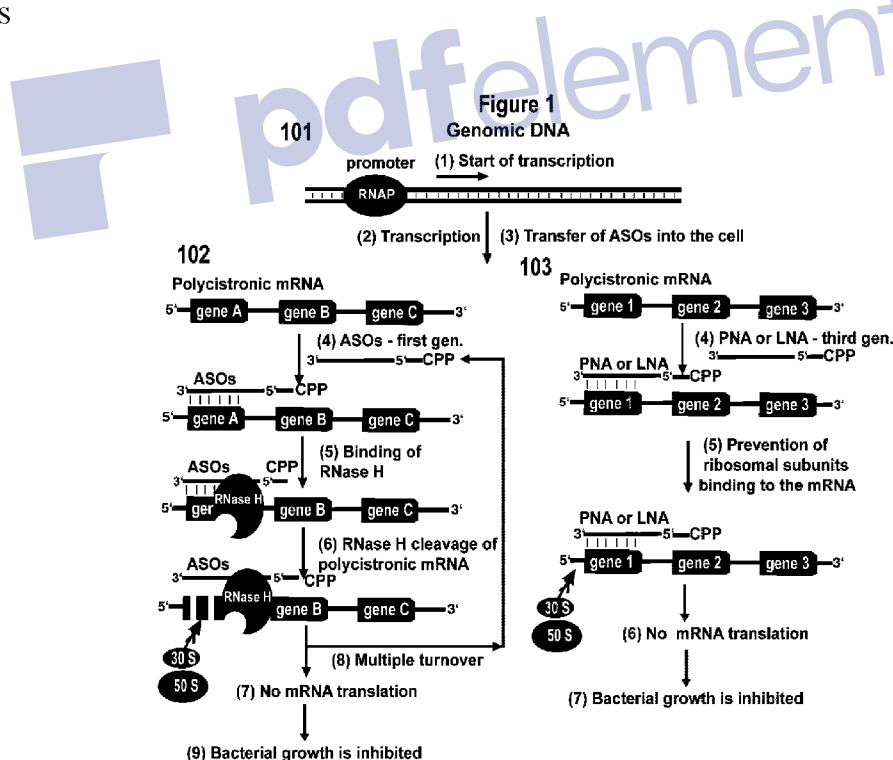
(71) Applicant: **PENCHOVSKY, Robert** [BG/BG]; b.f. Banishora, Belasitza str., bl. 57, ent. 4, et. 7, ap.20, 1233 Sofia (BG).

(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, 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, 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, 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).

(54) Title: METHODS FOR CREATING NOVEL ANTIBACTERIAL AGENTS USING CHIMERIC ANTISENSE OLIGONUCLEOTIDES



(57) Abstract: Herein we described the design, the engineering, and the applications of various antisense oligonucleotides attached to cell-penetrating peptides as antibacterial agents that target specific bacterial mRNAs and inhibit bacterial growth (Figure 1). In Figure 1 is presented the inhibition of specific mRNAs targeted by three different types and chimeric antisense oligonucleotides. All antisense oligonucleotides are coupled with cell penetrating peptides, which penetrate bacterial cells. After mRNA transcription (Figure 101), the inhibition of translation of specific protein expression can be achieved by mRNA decay via RNase H (Figure 102) or by prevention of mRNA translation (Figure 103). These approaches lead to growth inhibition of certain pathogenic bacteria as described in this patent application (Figures 102 and 103).

[Continued on next page]