

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
22 August 2024 (22.08.2024)



(10) International Publication Number
WO 2024/173621 A2

- (51) **International Patent Classification:**
A61K 39/12 (2006.01) *C12N 15/86* (2006.01)
- (21) **International Application Number:**
PCT/US2024/015894
- (22) **International Filing Date:**
15 February 2024 (15.02.2024)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
63/485,090 15 February 2023 (15.02.2023) US
- (71) **Applicant (for all designated States except CN):** **ACADEMIA SINICA**; No. 128, Sec. 2, Academia Road, Nankang Dist., Taipei City, 115 (TW).
- (71) **Applicant (for CN only):** **CHOU, Mei-Yin** [US/US]; 6 Bohler Mews NW, Atlanta, Georgia 30327 (US).
- (72) **Inventors:** **WU, Han-Chung**; No. 128, Sec. 2, Academia Road, Nankang Dist., Taipei City, 115 (TW). **SU, Shih-Chieh**; 17F., No. 15, Ln. 31, Huqian St., Xizhi Dist., New Taipei City (TW). **LIN, Hsiu-Ting**; 7F., No. 305-10, Jinmen St., Bangqiao Dist., New Taipei City, 220 (TW).

(74) **Agent:** **MCROBBIE, Craig**; 8110 Gatehouse Road, Suite 100 East, Falls Church, Virginia 22042 (US).

(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, CV, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IQ, IR, IS, IT, JM, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, MG, MK, MN, MU, 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, CV, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SC, 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, ME, 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:** DENGUE VIRUS MRNA VACCINE AND METHOD AGAINST DENGUE VIRUS INFECTION USING THE SAME

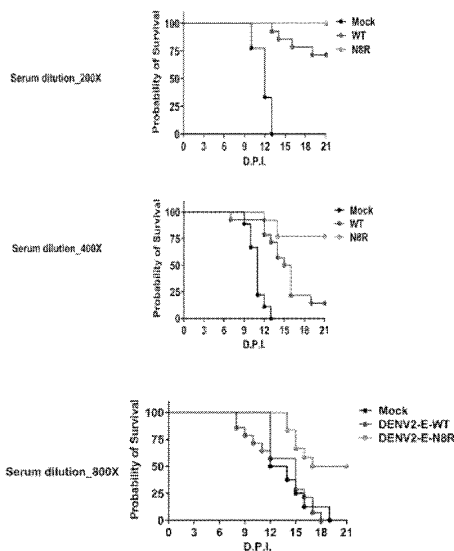


Fig. 6

(57) **Abstract:** The present invention relates to a dengue virus messenger ribonucleic acid (mRNA) vaccine. In particular, the vaccine includes an mRNA encoding a mutant envelop (E) protein of dengue virus at position 8 and/or 101 formulated in lipid nanoparticles. The mRNA vaccine of the present invention is safe and effective, which causes enhanced production of neutralizing antibodies against multiple serotypes of dengue virus and reduced antibody dependent enhancement (ADE) response.

WO 2024/173621 A2

[Continued on next page]

Published:

- *without international search report and to be republished
upon receipt of that report (Rule 48.2(g))*
- *with sequence listing part of description (Rule 5.2(a))*