

(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 2022/117073 A1

(51) International Patent Classification:

C12N 7/01 (2006.01) A61K 48/00 (2006.01)
C12N 15/869 (2006.01) A61P 35/00 (2006.01)

(21) International Application Number:

PCT/CN2021/135336

(22) International Filing Date:

03 December 2021 (03.12.2021)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

PCT/CN2020/133943

04 December 2020 (04.12.2020) CN

(71) Applicant: **IMMVIRA CO., LIMITED** [CN/CN]; 1301, Guan-Guang Road Building 2, Floor 10 Silver Star Hi-tech Industrial Park, Longhua District, Shenzhen, Guangdong 518110 (CN).

(72) Inventors: **CHEN, Xiaoqing**; c/o Immvira Co., Limited, 1301 Guan-Guang Road Building 2, Floor 10 Silver Star, Hi-tech Industrial Park, Longhua District, Shenzhen, Guangdong 518110 (CN). **LIU, Yuanyuan**; c/o Immvira Co., Limited, 1301 Guan-Guang Road Building 2, Floor 10 Silver Star, Hi-tech Industrial Park, Longhua District, Shenzhen, Guangdong 518110 (CN). **ZHOU, Grace Guoying**; c/o Immvira Co., Limited, 1301 Guan-Guang Road Building 2, Floor 10 Silver Star, Hi-tech Industrial Park, Longhua District, Shenzhen, Guangdong 518110 (CN).

(74) Agent: **WINGUAN PATENT AND TRADEMARK ATTORNEYS**; Tower A 2317, China Shine Plaza, 9 Linhe Xi Road, Tianhe District, Guangzhou, Guangdong 510610 (CN).

(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).

Published:

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



WO 2022/117073 A1

(54) Title: ONCOLYTIC HERPES SIMPLEX TYPE 1 VIRUSES FOR TREATMENT OF BRAIN TUMORS

(57) Abstract: Disclosed herein is an oncolytic HSV-1 virus genetically engineered for treatment of brain tumors, which lacks both copies of gamma 34.5 gene and an internal inverted repeat region and is optionally incorporated with immunostimulatory and/or immunotherapeutic genes. The oncolytic HSV-1 virus exhibited superior anti-tumor activity specifically in brain tumors. A pharmaceutical composition comprising the oncolytic HSV-1 virus and a pharmaceutically acceptable carrier, and a method of treatment of a brain tumor using the same is also disclosed.