

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
11 May 2023 (11.05.2023)



(10) International Publication Number
WO 2023/079113 A1

(51) International Patent Classification:

A61K 39/12 (2006.01) A61K 39/00 (2006.01)
A61P 31/14 (2006.01)

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).

(21) International Application Number:

PCT/EP2022/080875

Published:

- with international search report (Art. 21(3))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))
- with sequence listing part of description (Rule 5.2(a))

(22) International Filing Date:

04 November 2022 (04.11.2022)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

63/276,247 05 November 2021 (05.11.2021) US

(71) Applicant: **SANOFI** [FR/FR]; 54, rue la Boétie, 75008
PARIS (FR).

(72) Inventors: **ALEFANTIS, Timothy**; c/o Sanofi Pasteur
Inc., IP Dept., 38 Sidney Street, Cambridge, MA 02139
(US). **BARRO, Mario**; c/o Sanofi Pasteur Inc., IP Dept.,
38 Sidney Street, Cambridge, MA 02139 (US). **SRID-
HAR, Saranya**; c/o Sanofi Pasteur Inc., IP Dept., 38 Sidney
Street, Cambridge, MA 02139 (US). **VOGEL, Thorsten**;
c/o Sanofi Pasteur Inc., IP Dept., 38 Sidney Street, Cam-
bridge, MA 02139 (US). **WARREN, William**; c/o Sanofi
Pasteur Inc., IP Dept., 38 Sidney Street, Cambridge, MA
02139 (US).

(74) Agent: **CABINET BEAU DE LOMENIE**; 158 Rue de
l'Université, 75340 PARIS CEDEX 07 (FR).

(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, 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, 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,

(54) Title: HYBRID MULTIVALENT INFLUENZA VACCINES COMPRISING HEMAGGLUTININ AND NEURAMINIDASE
AND METHODS OF USING THE SAME

(57) Abstract: Disclosed herein are hybrid multivalent vaccine or immunogenic compositions comprising (i) one or more influenza virus proteins selected from one or more influenza virus hemagglutinin (HA) proteins, one or more influenza virus neuraminidase (NA) proteins, or a combination thereof; and (ii) one or more ribonucleic acid molecules encoding one or more influenza virus proteins selected from one or more influenza virus HA proteins, one or more influenza virus NA proteins, or a combination thereof. Also disclosed are methods of using the vaccine or immunogenic compositions.

WO 2023/079113 A1