

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

(19) World Intellectual Property  
Organization  
International Bureau

(43) International Publication Date  
18 April 2019 (18.04.2019)



(10) International Publication Number  
**WO 2019/074973 A3**

(51) International Patent Classification:

C07K 16/28 (2006.01) A61P 35/00 (2006.01)  
C07K 16/00 (2006.01)

(21) International Application Number:

PCT/US2018/055084

(22) International Filing Date:

09 October 2018 (09.10.2018)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

|            |                              |    |
|------------|------------------------------|----|
| 62/570,655 | 10 October 2017 (10.10.2017) | US |
| 62/570,660 | 11 October 2017 (11.10.2017) | US |
| 62/676,221 | 24 May 2018 (24.05.2018)     | US |
| 18187186.4 | 03 August 2018 (03.08.2018)  | EP |

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

(72) Inventor; and

(71) Applicant (for US only): **WU, Lan** [US/US]; c/o Sanofi, 55 Corporate Drive, Mail Code: 55A-505A, Bridgewater, New Jersey 08807 (US).

(72) Inventors: **XU, Ling**; c/o Sanofi, 55 Corporate Drive, Mail Code: 55A-505A, Bridgewater, New Jersey 08807 (US). **SEUNG, Edward**; c/o Sanofi, 55 Corporate Drive, Mail Code: 55A-505A, Bridgewater, New Jersey 08807 (US). **WEI, Ronnie**; c/o Sanofi, 55 Corporate Drive, Mail Code: 55A-505A, Bridgewater, New Jersey 08807 (US). **NABEL, Gary**; c/o Sanofi, 55 Corporate Drive, Mail Code: 55A-505A, Bridgewater, New Jersey 08807 (US). **YANG, Zhi-Yong**; c/o Sanofi, 55 Corporate Drive, Mail Code: 55A-505A, Bridgewater, New Jersey 08807 (US). **DABDOUBI, Tarik**; c/o Sanofi, 54, rue La Boétie, 75008 Paris (FR). **CAMERON, Béatrice**; c/o Sanofi, 54, rue La Boétie, 75008 Paris (FR). **LEMOINE, Cendrine**; c/o Sanofi, 54, rue La Boétie, 75008 Paris (FR). **PRADES, Catherine**; c/o Sanofi, 54, rue La Boétie, 75008 Paris (FR).

(74) Agent: **JONES, Kevin** et al.; Morrison & Foerster LLP, 425 Market Street, San Francisco, California 94105 (US).

(54) Title: ANTI-CD38 ANTIBODIES AND COMBINATIONS WITH ANTI-CD3 AND ANTI-CD28 ANTIBODIES

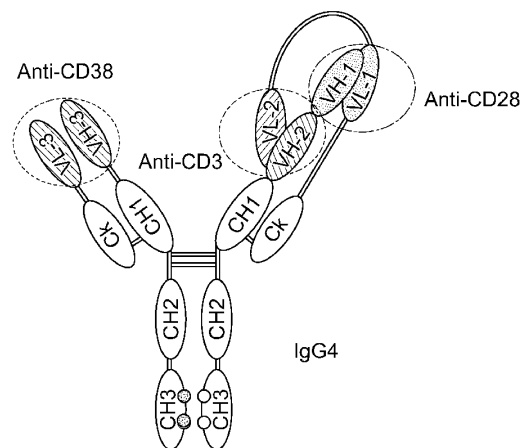


FIG. 3A

(57) Abstract: The disclosure provides binding proteins that bind CD38 polypeptides, e.g., human and cynomolgus monkey CD38 polypeptides. For example, the binding proteins can be monospecific, bispecific, or trispecific binding proteins with at least one antigen binding domain that binds a CD38 polypeptide. The disclosure also provides methods for making binding proteins that bind CD38 polypeptides and uses of such binding proteins.

[Continued on next page]

**(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, 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, 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).

**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))

**(88) Date of publication of the international search report:**

13 June 2019 (13.06.2019)