

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

(19) World Intellectual Property
Organization

International Bureau

(43) International Publication Date
19 March 2020 (19.03.2020)



(10) International Publication Number
WO 2020/053300 A1

(51) International Patent Classification:
C07K 16/28 (2006.01) *A61P 35/02* (2006.01)

(21) International Application Number:
PCT/EP2019/074268

(22) International Filing Date:
11 September 2019 (11.09.2019)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
18193889.5 11 September 2018 (11.09.2018) EP
19189566.3 01 August 2019 (01.08.2019) EP

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(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))

WO 2020/053300 A1

(54) Title: IMPROVED ANTI-FLT3 ANTIGEN BINDING PROTEINS

(57) Abstract: The present invention provides novel human fms related tyrosine kinase 3 (FLT₃) antigen binding proteins, such as antibodies, having improved FLT₃ binding affinity, and/or anti-tumor activity. The FLT₃ antibodies of the invention were generated by mutation of a parent FLT₃ antibody and tested in *in vitro* in binding assays as well as *in vivo* in a mouse tumor model and in human patient tumor samples. The antibodies of the invention are provided as monospecific constructs or in a bispecific FLT₃xCD₃ antibody format and show excellent target affinity and/or tumor cell killing. The present invention also relates methods for producing the antigen binding proteins of the invention as well as nucleic acids encoding them, vectors for and host cells for their expression. The invention further relates to methods of treating or diagnosing a disease such as leukemia using an FLT₃ antigen binding protein (ABP) of the invention.