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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
6 October 2011 (06.10.2011)

PCT

(10) International Publication Number
WO 2011/122011 A2

(51) International Patent Classification:
C07K 16/00 (2006.01)

(21) International Application Number:
PCT/JP2011/001888

(22) International Filing Date:
30 March 2011 (30.03.2011)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
2010-079667 30 March 2010 (30.03.2010) JP
2010-250830 9 November 2010 (09.11.2010) JP

(71) Applicant *(for all designated States except US)*: **CHUGAI SEIYAKU KABUSHIKI KAISHA** [JP/JP]; 5-1, Ukima 5-chome, Kita-ku, Tokyo, 1158543 (JP).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **IGAWA, Tomoyuki** [JP/JP]; c/o CHUGAI SEIYAKU KABUSHIKI KAISHA, 135, Komakado 1-chome, Gotemba-shi, Shizuoka, 4128513 (JP). **ISHII, Shinya** [JP/JP]; c/o CHUGAI SEIYAKU KABUSHIKI KAISHA, 135, Komakado 1-chome, Gotemba-shi, Shizuoka, 4128513 (JP). **MAEDA, Atsuhiko** [JP/JP]; c/o CHUGAI SEIYAKU KABUSHIKI KAISHA, 135, Komakado 1-chome, Gotemba-shi, Shizuoka, 4128513 (JP). **NAKAI, Takashi** [JP/JP]; c/o CHUGAI SEIYAKU KABUSHIKI KAISHA, 135, Komakado 1-chome, Gotemba-shi, Shizuoka, 4128513 (JP).

(74) Agents: **SHIMIZU, Hatsushi** et al.; Kantetsu Tsukuba Bldg. 6F, 1-1-1, Oroshi-machi, Tsuchiura-shi, Ibaraki, 3000847 (JP).

(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, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, 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, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, 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, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*

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))*

WO 2011/122011 A2

(54) Title: ANTIGEN-BINDING MOLECULES THAT PROMOTE ANTIGEN CLEARANCE

(57) Abstract: An objective of the present invention is to provide methods for facilitating antigen-binding molecule-mediated antigen uptake into cells, methods for facilitating the reduction of antigen concentration in plasma, methods for increasing the number of antigens to which a single antigen-binding molecule can bind, methods for improving pharmacokinetics of antigen-binding molecules, antigen-binding molecules improved for facilitated antigen uptake into cells, antigen-binding molecules capable of facilitating the reduction of antigen concentration in plasma, antigen-binding molecules capable of repeatedly binding to antigens, antigen-binding molecules with improved pharmacokinetics, pharmaceutical compositions comprising such an antigen-binding molecule, and methods for producing those described above. The present inventors discovered that antigen uptake into cells is facilitated by an antibody having human FcRn-binding activity at the plasma pH and a lower antigen-binding activity at the early endosomal pH than at the plasma pH; such antibodies can increase the number of antigens to which a single antibody molecule can bind; the reduction of antigen in plasma can be facilitated by administering such an antibody; and antibody pharmacokinetics can be improved by using such antibodies.