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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
14 October 2010 (14.10.2010)

PCT

(10) International Publication Number
WO 2010/115998 A3

(51) International Patent Classification:
C07K 16/28 (2006.01)

(21) International Application Number:
PCT/EP2010/054764

(22) International Filing Date:
12 April 2010 (12.04.2010)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
61/168,410 10 April 2009 (10.04.2009) US

(71) Applicant *(for all designated States except US)*: **ABLYNX NV** [BE/BE]; Technologiepark 4, B-9052 Ghent-Zwijnaarde (BE).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **BEIRNAERT, Els, Anna Alice** [BE/BE]; Markettestraat 20-A, B-9881 Bellem (BE). **VERVERKEN, Cedric Jozef Néotère** [BE/BE]; Emiel Vanarenberghstraat 26/1, B-3000 Leuven (BE). **KOLKMAN, Joost Alexander** [NL/BE]; Voetweg 13, B-9830 Sint-Martens-Latem (BE). **VAN ROY, Maarten** [BE/BE]; Lembergsesteenweg 26, B-9820 Merelbeke (BE).

(74) Agents: **BACHELIN, Martin** et al.; Hoffmann . Eitle, Arabellastrasse 4, 81925 München (DE).

(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 (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, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

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

[Continued on next page]

(54) **Title**: IMPROVED AMINO ACID SEQUENCES DIRECTED AGAINST IL-6R AND POLYPEPTIDES COMPRISING THE SAME FOR THE TREATMENT OF IL-6R RELATED DISEASES AND DISORDERS

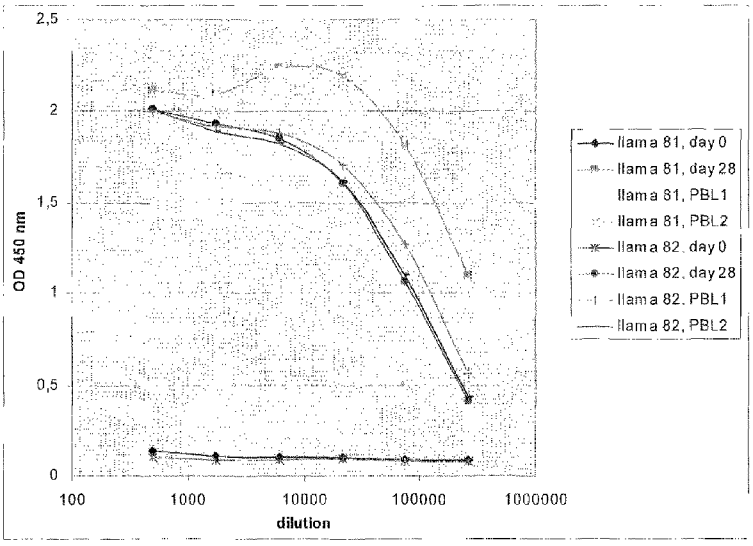


Figure 1

(57) **Abstract**: The present invention relates to amino acid sequences that are directed against/and or that can specifically bind Snterleukin-6 Receptor (IL-6R) with improved affinity and/or avidity, and/or that have an improved efficacy and/or potency, and which are capable of (partially, or preferably totally) blocking the IL-6/IL-6R interaction and/or inhibit signalization through IL-6, 1L-6R and/or the IL-6/IL-6R complex. The invention further relates to compounds or constructs, and in particular proteins and polypeptides, that comprise or essentially consist of one or more such amino acid sequences. The invention also relates to nucleic acids encoding such amino acid sequences and polypeptides, to methods for preparing such amino acid sequences and polypeptides, to host ceils expressing or capable of expressing such amino acid sequences or polypeptides, to compositions, and in particular to pharmaceutical compositions, that comprise such amino acid sequences, polypeptides, nucieic acids and/or host cells, and to uses of such amino acid sequences or polypeptides, nucleic acids, host cells and/or compositions, in particular for prophylactic, therapeutic or diagnostic purposes.

WO 2010/115998 A3

— *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))*

(88) Date of publication of the international search report:
6 January 2011