

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
07 September 2023 (07.09.2023)



(10) International Publication Number
WO 2023/167852 A2

(51) International Patent Classification:

<i>C07K 16/28</i> (2006.01)	<i>C12M 1/06</i> (2006.01)
<i>C07K 1/16</i> (2006.01)	<i>C12M 1/04</i> (2006.01)
<i>C07K 1/18</i> (2006.01)	<i>C12M 1/34</i> (2006.01)
<i>C07K 1/22</i> (2006.01)	<i>C12M 1/36</i> (2006.01)
<i>C07K 1/34</i> (2006.01)	<i>C12N 5/00</i> (2006.01)
<i>C12M 1/00</i> (2006.01)	<i>C12P 21/02</i> (2006.01)

(21) International Application Number:

PCT/US2023/014102

(22) International Filing Date:

28 February 2023 (28.02.2023)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

63/315,897	02 March 2022 (02.03.2022)	US
63/411,899	30 September 2022 (30.09.2022)	US
63/417,873	20 October 2022 (20.10.2022)	US
63/436,854	03 January 2023 (03.01.2023)	US
63/448,655	27 February 2023 (27.02.2023)	US

(71) Applicant: **REGENERON PHARMACEUTICALS, INC.** [US/US]; 777 Old Saw Mill River Road, Tarrytown, New York 10591 (US).

(72) Inventors: **MATTILA, John**; c/o Regeneron Pharmaceuticals, Inc., 777 Old Saw Mill River Road, Tarrytown, New York 10591 (US). **TANG, Xiaolin**; c/o Regeneron Pharmaceuticals, Inc., 777 Old Saw Mill River Road, Tarrytown, New York 10591 (US). **BAK, Hanne**; c/o Regeneron Pharmaceuticals, Inc., 777 Old Saw Mill River Road, Tarrytown, New York 10591 (US). **LAWRENCE, Shawn M.**; c/o Regeneron Pharmaceuticals, Inc., 777 Old Saw Mill River Road, Tarrytown, New York 10591 (US). **JOHNSON, Amy S.**; c/o Regeneron Pharmaceuticals, Inc., 777 Old Saw Mill River Road, Tarrytown, New York 10591 (US). **CASEY, Meghan**; c/o Regeneron Pharmaceuticals, Inc., 777 Old Saw Mill River Road, Tarrytown, New York 10591 (US). **LAFOND, Michelle**; c/o Regeneron Pharmaceuticals, Inc., 777 Old Saw Mill River Road, Tarrytown, New York 10591 (US). **TUSTIAN, Andrew**; c/o Regeneron Pharmaceuticals, Inc., 777 Old Saw Mill River Road, Tarrytown, New York 10591 (US). **MEL-LORS, Philip**; c/o Regeneron Pharmaceuticals, Inc., 777 Old Saw Mill River Road, Tarrytown, New York 10591 (US). **HOURIHAN, John**; c/o Regeneron Pharmaceuticals, Inc., 777 Old Saw Mill River Road, Tarrytown, New York 10591 (US). **CROWLEY, John**; c/o Regeneron Pharma-

ceuticals, Inc., 777 Old Saw Mill River Road, Tarrytown, New York 10591 (US). **CALLINAN, Laura**; c/o Regeneron Pharmaceuticals, Inc., 777 Old Saw Mill River Road, Tarrytown, New York, Tarrytown, New York 10591 (US). **OSHODI, Shadia Abike**; c/o Regeneron Pharmaceuticals, Inc., 777 Old Saw Mill River Road, Tarrytown, New York 10591 (US). **WITMER, Ashley**; c/o Regeneron Pharmaceuticals, Inc., 777 Old Saw Mill River Road, Tarrytown, New York 10591 (US). **CORBETT, Daniel**; c/o Regeneron Pharmaceuticals, Inc., 777 Old Saw Mill River Road, Tarrytown, New York 10591 (US). **REILLY, James**; c/o Regeneron Pharmaceuticals, Inc., 777 Old Saw Mill River Road, Tarrytown, New York, 10591, New York 10591 (US). **VARTAK, Ankit**; c/o Regeneron Pharmaceuticals, Inc., 777 Old Saw Mill River Road, Tarrytown, New York 10591 (US). **CHIBOROSKI, Mark**; c/o Regeneron Pharmaceuticals, Inc., 777 Old Saw Mill River Road, Tarrytown, New York 10591 (US). **STARLING, Alessandra**; c/o Regeneron Pharmaceuticals, Inc., 777 Old Saw Mill River Road, Tarrytown, New York 10591 (US). **STAIRS, Robert**; 1105 11 Ave, Wellborn, Florida 32094 (US). **GOH, Hai-yuan**; c/o Regeneron Pharmaceuticals, Inc., 777 Old Saw Mill River Road, Tarrytown, New York 10591 (US). **NICHOLL, Liam**; c/o Regeneron Pharmaceuticals, Inc., 777 Old Saw Mill River Road, Tarrytown, New York 10591 (US). **CON-LON, Aishling**; c/o Regeneron Pharmaceuticals, Inc., 777 Old Saw Mill River Road, Tarrytown, New York 10591 (US).

(74) Agent: **CAPLAN, Jonathan S.**; Kramer Levin Naftalis & Frankel LLP, 1177 6th Ave, New York, New York 10036 (US).

(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, SC, 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,

(54) Title: CELL CULTURE METHODS FOR ANTIBODY PRODUCTION

(57) Abstract: The present invention pertains to methods for manufacturing high titer antibody products. In particular, the invention pertains, in part, to improved serum-free animal cell culture medium, which can be used for the production of a protein of interest. Additionally, the present invention further pertains to chromatographic procedures employed to successfully isolate the antibody product subject of the present disclosure.

[Continued on next page]

WO 2023/167852 A2

DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT,
LU, 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).

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))*