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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
28 March 2019 (28.03.2019)

WIPO | PCT

(10) International Publication Number
WO 2019/060062 A1

(51) International Patent Classification:
A61K 47/26 (2006.01) *A61K 9/00* (2006.01)
A61K 39/00 (2006.01)

(21) International Application Number:
PCT/US2018/046183

(22) International Filing Date:
10 August 2018 (10.08.2018)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
62/560,365 19 September 2017 (19.09.2017) US

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

(72) Inventors: **PATEL, Mayank**; c/o Regeneron Pharmaceuticals Inc., 777 Old Saw Mill River Road, Tarrytown, NY 10591 (US). **WASINGER, Stacy**; c/o Regeneron Pharmaceuticals Inc., 777 Old Saw Mill River Road, Tarrytown, NY 10591 (US). **SPRITZER, Danya**; c/o Regeneron Pharmaceuticals Inc., 777 Old Saw Mill River Road, Tarrytown, NY 10591 (US). **TANG, Xiaolin**; c/o Regeneron Pharmaceuticals Inc., 777 Old Saw Mill River Road, Tarrytown, NJ 10591 (US).

(74) Agent: **RUSSELL, Thara**; Bookoff McAndrews, PLLC, 2020 K. Street, NW, Suite 400, Washington, DC 20006 (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, 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))*
— *with sequence listing part of description (Rule 5.2(a))*

WO 2019/060062 A1

(54) Title: METHODS OF REDUCING PARTICLE FORMATION AND COMPOSITIONS FORMED THEREBY

(57) Abstract: Biopharmaceutical compositions and drug products disclosed herein exhibit reduced amounts of subvisible particle formation. Compositions and drug products disclosed herein comprise a protein and a surfactant or stabilizer including high percentage amounts (e.g., at least 97%) of a long-chain fatty acid ester. Also disclosed herein are methods of preparing and storing such compositions and drug products.