

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

(19) World Intellectual Property
Organization

International Bureau

(43) International Publication Date
16 November 2023 (16.11.2023)



(10) International Publication Number
WO 2023/220587 A3

(51) International Patent Classification:

C07K 14/47 (2006.01) A61Q 19/00 (2006.01)
A61Q 7/00 (2006.01) A61P 17/14 (2006.01)
A61K 8/64 (2006.01)

(21) International Application Number:

PCT/US2023/066770

(22) International Filing Date:

09 May 2023 (09.05.2023)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

63/364,389 09 May 2022 (09.05.2022) US

(71) Applicant: **THE REGENTS OF THE UNIVERSITY OF CALIFORNIA** [US/US]; 1111 FRANKLIN STREET, TWELFTH FLOOR, OAKLAND, California 94607-5200 (US).

(72) Inventors: **PLIKUS, Maksim**; c/o UCI Beall Applied Innovation, 5270 California Avenue, Suite 100, IRVINE, California 92697 (US). **LIU, Yingzi**; c/o UCI Beall Applied Innovation, 5270 California Avenue, Suite 100, IRVINE, California 92697 (US). **GUERRERO-JUAREZ, Christian Fernando**; c/o UCI Beall Applied Innovation, 5270 California Avenue, Suite 100, IRVINE, California 92697 (US).

(74) Agent: **CANADY, Karen S.** et al.; CANADY + LORTZ LLP, 3435 WILSHIRE BLVD, SUITE 1400, LOS ANGELES, California 90010 (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, MU, 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, 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).

(54) Title: COMPOSITIONS AND METHODS FOR STIMULATION OF HAIR GROWTH

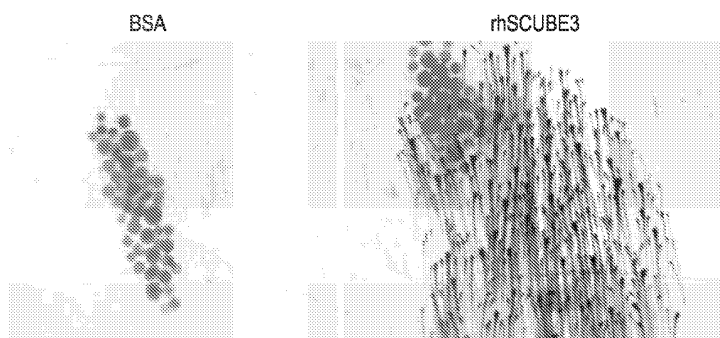


FIG. 2E

(57) Abstract: Proteins, peptides, nucleic acid molecules, compositions, and methods are provided for stimulating hair growth. Described herein is a composition comprising a Signal Peptide, CUB Domain and EGF Like Domain Containing (SCUBE) protein; a C-terminus peptide thereof (SCUBE-C); a synthetic SCUBE peptide (SCUBE-PP); or a nucleic acid sequence encoding SCUBE, SCUBE-C, or SCUBE-PP; and, optionally, a pharmaceutically acceptable excipient. In some embodiments, the SCUBE protein is a SCUBE3 protein; a C-terminus peptide thereof (SCUBE3-C); a synthetic SCUBE3 peptide (SCUBE3-PP). These materials and methods can be used to treat alopecia, to stimulate and accelerate hair regrowth after transplant, and to induce human hair growth.

[Continued on next page]

WO 2023/220587 A3

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))*

(88) Date of publication of the international search report:

28 December 2023 (28.12.2023)