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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
02 October 2025 (02.10.2025)

WIPO | PCT

(10) International Publication Number
WO 2025/207934 A1

(51) International Patent Classification:
A61K 47/54 (2017.01) *A61K 47/68* (2017.01)
A61K 47/64 (2017.01) *A61P 29/00* (2006.01)

(21) International Application Number:
PCT/US2025/021834

(22) International Filing Date:
27 March 2025 (27.03.2025)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
63/571,393 28 March 2024 (28.03.2024) US

(71) Applicant: **LYCIA THERAPEUTICS, INC.** [US/US]; 400 East Jamie Court, Suite 200, South San Francisco, California 94080 (US).

(72) Inventors: **LINDHOUT, Darrin Anthony**; c/o Lycia Therapeutics, Inc., 400 East Jamie Court, Suite 200, South San Francisco, California 94080 (US). **SHURTLEFF, Matthew**; c/o Lycia Therapeutics, Inc., 400 East Jamie Court, Suite 200, South San Francisco, California 94080 (US).

(74) Agent: **TANNER, Lorna** et al.; Sheppard Mullin Richter & Hampton LLP, 650 Town Center Drive, 10th Floor, Costa Mesa, California 92626 (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, UY, 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).

Declarations under Rule 4.17:
— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

Published:
— *with international search report (Art. 21(3))*
— *with sequence listing part of description (Rule 5.2(a))*

WO 2025/207934 A1

(54) Title: LYSOSOMAL TARGETING BIFUNCTIONAL MOLECULES FOR DEGRADATION OF THYROID STIMULATING HORMONE RECEPTOR AUTOANTIBODIES

(57) Abstract: The present disclosure provides lysosomal targeting bifunctional molecules that target disease causing anti-TSHR autoantibodies for degradation. The lysosomal targeting bifunctional molecules include a ligand moiety that specifically binds to an asialoglycoprotein receptor (ASGPR), and which is linked via a carrier protein to a thyroid stimulating hormone receptor (TSHR) polypeptide that specifically binds target anti-TSHR autoantibodies.