

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
27 April 2023 (27.04.2023)



(10) International Publication Number
WO 2023/070082 A3

(51) International Patent Classification:

C12N 15/113 (2010.01) A61K 45/06 (2006.01)
A61K 31/713 (2006.01) A61P 35/00 (2006.01)
A61K 38/00 (2006.01)

(21) International Application Number:

PCT/US2022/078498

(22) International Filing Date:

21 October 2022 (21.10.2022)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

63/270,849	22 October 2021 (22.10.2021)	US
63/308,289	09 February 2022 (09.02.2022)	US
63/345,654	25 May 2022 (25.05.2022)	US

(71) Applicant: **ARROWHEAD PHARMACEUTICALS, INC.** [US/US]; 177 East Colorado Boulevard, Suite 700, Pasadena, CA 91105 (US).

(72) Inventors: **NICHOLAS, Anthony**; 5247 W. Netherwood Road, Oregon, WI 53575 (US). **PEI, Tao**; Arrowhead Pharmaceuticals, Inc., 502 S. Rosa Road, Madison, WI 53719 (US). **BUSH, Erik W.**; Arrowhead Pharmaceuticals, Inc., 502 S. Rosa Road, Madison, WI 53719 (US). **YUAN, Tingting**; Arrowhead Pharmaceuticals, Inc., 502 S. Rosa Road, Madison, WI 53719 (US).

(74) Agent: **VANDERVELDE, Paul**; Patent Attorney & Senior Counsel, Arrowhead Pharmaceuticals, 11404 Sorrento Valley Road, San Diego, CA 92128 (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, 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 applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))

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:

06 July 2023 (06.07.2023)

(54) Title: RNAI AGENTS FOR INHIBITING EXPRESSION OF MATRIX METALLOPROTEINASE 7(MMP7), COMPOSITIONS THEREOF, AND METHODS OF USE

(57) Abstract: Described are RNAi agents, compositions that include RNAi agents, and methods for inhibition of a matrix metalloproteinase 7 (MMP7) gene. The MMP7 RNAi agents and RNAi agent conjugates disclosed herein inhibit the expression of an MMP7 gene. Pharmaceutical compositions that include one or more MMP7 RNAi agents, optionally with one or more additional therapeutics, are also described. Delivery of the described MMP7 RNAi agents to pulmonary cells, *in vivo*, provides for inhibition of MMP7 gene expression, which can provide a therapeutic benefit to subjects, including human subjects, for the treatment of various diseases including pulmonary inflammation diseases such as idiopathic pulmonary fibrosis (IPF).



WO 2023/070082 A3