



(51) International Patent Classification:

C12N 1/08 (2006.01) C12N 15/10 (2006.01)
C07H 21/00 (2006.01)

(21) International Application Number:

PCT/US2015/027563

(22) International Filing Date:

24 April 2015 (24.04.2015)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

61/984,503 25 April 2014 (25.04.2014) US

(71) Applicant: SHIRE HUMAN GENETIC THERAPIES, INC. [US/US]; 300 Shire Way, Lexington, Massachusetts 02421 (US).

(72) Inventors: DEROSA, Frank; 300 Shire Way, Lexington, Massachusetts 02421 (US). DIAS, Anusha; 300 Shire Way, Lexington, Massachusetts 02421 (US). KARVE, Shrirang; 300 Shire Way, Lexington, Massachusetts 02421 (US). HEARTLEIN, Michael; 300 Shire Way, Lexington, Massachusetts 02421 (US).

(74) Agents: CHEN, Fangli et al.; Choate, Hall & Stewart LLP, Two International Place, Boston, Massachusetts 02110 (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, DK, DM,

DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR, 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).

Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- 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))
- 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))

(54) Title: METHODS FOR PURIFICATION OF MESSENGER RNA

(57) Abstract: The present invention provides, among other things, methods of purifying messenger RNA (mRNA) including the steps of (a) precipitating mRNA from an impure preparation; (b) subjecting the impure preparation comprising precipitated mRNA to a purification process involving membrane filtration such that the precipitated mRNA is captured by a membrane; and (c) eluting the captured precipitated mRNA from the membrane by re-solubilizing the mRNA, thereby resulting in a purified mRNA solution. In some embodiments, a purification process involving membrane filtration suitable for the present invention is tangential flow filtration.

