

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
29 November 2018 (29.11.2018)



(10) International Publication Number
WO 2018/215516 A1

- (51) **International Patent Classification:**
A61M 5/20 (2006.01) *A61M 5/315* (2006.01)
- (21) **International Application Number:**
PCT/EP2018/063460
- (22) **International Filing Date:**
23 May 2018 (23.05.2018)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
17172456.0 23 May 2017 (23.05.2017) EP
- (71) **Applicant:** ASCENDIS PHARMA A/S [DK/DK]; Tuborg Boulevard 5, 2900 Hellerup (DK).
- (72) **Inventors:** EGESBORG, Henrik; Ewaldsbakken 11, 2900 Hellerup (DK). JENSEN, Steen; Sophus Falcks Alle 34, 2791 Dragør (DK). LARSEN, Martin Nørgaard; Fredensgade 18, 8800 Viborg (DK). ELKJÆR, Johnny; Kirketoft 16, 7600 Struer (DK). ANDERSEN, Bjørn Knud; Danmarksgade 42, 7600 Struer (DK).
- (74) **Agent:** ZACCO DENMARK A/S; Arne Jacobsens Allé 15, 2300 Copenhagen S (DK).
- (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))

(54) **Title:** AUTO INJECTOR WITH VARIABLE PLUNGER FORCE

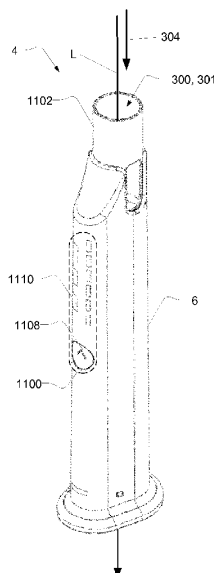


Fig. 1

(57) **Abstract:** Disclosed is a method and an auto-injector for administering a medicament. The auto injector comprising: a housing; a cartridge receiver configured to receive a cartridge comprising a first stopper; a drive module coupled to move a plunger rod between a retracted plunger rod position and an extended plunger rod position, the plunger rod being configured to move the first stopper; a resistance sensor configured to provide a resistance signal indicative of resistance against movement of the plunger rod; and a processing unit coupled to the drive module and to the resistance sensor. The processing unit being configured to: control the drive module to move the plunger rod towards the extended plunger rod position with a plunger rod speed; determine plunger rod position; receive the resistance signal; and control the drive module to adjust movement of the plunger rod if the resistance signal is indicative of resistance against movement of the plunger rod above a high resistance threshold, wherein the high resistance threshold is based on the plunger rod position.



WO 2018/215516 A1