

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
24 November 2022 (24.11.2022)



(10) International Publication Number
WO 2022/245209 A3

(51) International Patent Classification:

C07K 14/435 (2006.01) G01N 33/487 (2006.01)
C12N 15/01 (2006.01) G01N 33/68 (2006.01)
C12Q 1/6869 (2018.01)

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).

(21) International Application Number:

PCT/NL2022/050266

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))

(22) International Filing Date:

18 May 2022 (18.05.2022)

(25) Filing Language:

English

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

29 December 2022 (29.12.2022)

(26) Publication Language:

English

(30) Priority Data:

21174437.0 18 May 2021 (18.05.2021) EP

(71) Applicant: RIJKSUNIVERSITEIT TE GRONINGEN
[NL/NL]; Broerstraat 5, 9712 CP Groningen (NL).

(72) Inventors: LUCAS, Florian Leonardus Rudolfus; University of Groningen, Faculty of Science and Engineering, Chemical Biology 1, Nijenborgh 7, 9747 AG Groningen (NL). VERSLOOT, Roderick Corstiaan Abraham; University of Groningen, Faculty of Science and Engineering, Chemical Biology 1, Nijenborgh 7, 9747 AG Groningen (NL). MAGLIA, Giovanni; University of Groningen, Faculty of Science and Engineering, Chemical Biology 1, Nijenborgh 7, 9747 AG Groningen (NL).

(74) Agent: WITMANS, H.A.; V.O., P.O. Box 87930, 2508 DH Den Haag (NL).

(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, IQ, IR, IS, IT, JM, 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, 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, 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,

(54) Title: NANOPORE PROTEOMICS

(57) Abstract: The invention relates to the field of genetically engineered nanopores and the use thereof in analyzing biopolymers and other (biological) compounds. Provided is a proteinaceous nanopore comprising a mutant pore-forming toxin, or a pore-forming fragment thereof, wherein the lumen-facing recognition region of the pore-forming protein or fragment thereof comprises one or more substitution(s) of lumen-facing amino acid(s) in the recognition region corresponding to amino acids 10-20 of Fragaceatoxin C (FraC), to a natural or non-natural aromatic amino acid residue.



WO 2022/245209 A3