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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
12 March 2009 (12.03.2009)

PCT

(10) International Publication Number
WO 2009/030481 A1

(51) International Patent Classification:
C12N 15/87 (2006.01) *A61K 47/34* (2006.01)
A61K 48/00 (2006.01) *A61K 47/48* (2006.01)

(21) International Application Number:
PCT/EP2008/007244

(22) International Filing Date:
4 September 2008 (04.09.2008)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
PCT/EP2007/007702
4 September 2007 (04.09.2007) EP

(71) Applicant *(for all designated States except US)*: **CUREVAC GMBH** [DE/DE]; Paul-Ehrlich-Str. 15, 72076 Tübingen (DE).

(72) Inventors; and
(75) Inventors/Applicants *(for US only)*: **FOTIN-MLECZEK, Mariola** [DE/DE]; Chemnitzer Weg 10, 71065 Sindelfingen (DE). **BAUMHOF, Patrick** [DE/DE]; Enzstrasse 15, 76199 Karlsruhe (DE).

(74) Agents: **GRAF VON STOSCH, Andreas** et al.; Graf von Stosch Patentanwaltsgesellschaft mbH, Prinzregentenstrasse 22, 80538 München (DE).

(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, BR, BW, BY, BZ, CA, CH, 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, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, 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, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— *with international search report*
— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*
— *with sequence listing part of description published separately in electronic form and available upon request from the International Bureau*

WO 2009/030481 A1

(54) **Title:** COMPLEXES OF RNA AND CATIONIC PEPTIDES FOR TRANSFECTION AND FOR IMMUNOSTIMULATION

(57) **Abstract:** The present invention relates to a complexed RNA, comprising at least one RNA complexed with one or more oligopeptides, wherein the oligopeptide, which has the function of cell-penetrating peptide (CPP), has a length of 8 to 15 amino acids and has the empirical formula $(Arg)_l;(;Lys)_m;(His)_n;(Om)_o;(Xaa)_x$ with the majority of residues being selected from Arg, Lys, His, Om. The invention further relates to a method for transfecting a cell or an organism, thereby applying the inventive complexed RNA. Additionally, pharmaceutical compositions and kits comprising the inventive complexed RNA, as well as the use of the inventive complexed RNA for transfecting a cell, tissue or an organism and/or for modulating, preferably inducing or enhancing, an immune response are disclosed herein.