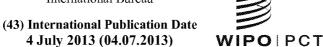
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(57) Abstract: Provided herein are methods for delivering a molecule in situ to a cell and for treating a cancer via the in situ delivery. The methods comprise contacting or administering to the cell, as two separate components, a morpholino oligonucleotide comprising a targeting moiety followed by a single wall nanotube construct comprising second morpholino oligonucleotides complementary to the first morpholino oligonucleotides and one or both of a therapeutic or diagnostic payload molecule linked to the single wall nanotube construct. Upon self-assembly of a single wall nanotube complex via hybridization of the first morpholino and second complementary morpholino oligonucleotides at the cell, the payload molecule is delivered. Also provided is the two component self-assembly single wall nanotube system and the single wall nanotube construct comprising the second component.

International application No. INTERNATIONAL SEARCH REPORT PCT/US 2012/071915 CLASSIFICATION OF SUBJECT MATTER A61K 31/713 (2006.01) C12N 15/113 (2006.01) **B82Y 5/00** (2011.01) A61P 35/00 (2006.01) G01N 33/574 (2006.01) B82Y 30/00 (2011.01) According to International Patent Classification (IPC) or to both national classification and IPC FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) A61K 31/00, 31/713, 51/00, B82Y 5/00, 30/00, C12N 15/00, 15/113, A61P 35/00, G01N 33/00, 33/574 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) Esp@cenet, VINITI.RU, EAPO, PubMed, USPTO DB, PatSearch (RUPTO internal) DOCUMENTS CONSIDERED TO BE RELEVANT Category* Citation of document, with indication, where appropriate, of the relevant passages Relevant to claim No. Y WO 2007/089607 A2 (UNIVERSITY OF MASSACHUSETTS et al.) 09.08.2007, p. 1-37 27, line 15 - p. 28, line 7, p. 53, lines 17-20, p. 73, lines 14-26, claims 1, 6, 12-13, 22, 51-53, 70-73 Y US 2009/0304581 A1 (DAVID A. SCHEINBERG et al.) 10.12.2009, p. 1, par. 1-46 [0010], p. 2, par. [0015], p. 4, par. [0050], p. 15, par. [0161], p. 18, par. [0189] – [0191], claims 1, 14, 51-53, 57-69 Y LIU, Guozheng et al. An experimental and theoretical evaluation of the influence of 1-46 pretargeting antibody on the tumor accumulation of effector. Mol. Cancer. Ther., 2008, 7(5): 1025-1032, abstract, p. 4, par. 3, p. 5, par. 2 Further documents are listed in the continuation of Box C. See patent family annex. "T" later document published after the international filing date or priority Special categories of cited documents: date and not in conflict with the application but cited to understand document defining the general state of the art which is not considered the principle or theory underlying the invention to be of particular relevance "X" document of particular relevance; the claimed invention cannot be "E" earlier document but published on or after the international filing date considered novel or cannot be considered to involve an inventive "L" document which may throw doubts on priority claim(s) or which is step when the document is taken alone "Y" cited to establish the publication date of another citation or other document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is special reason (as specified) combined with one or more other such documents, such combination document referring to an oral disclosure, use, exhibition or other being obvious to a person skilled in the art document member of the same patent family "P" document published prior to the international filing date but later than "&" the priority date claimed Date of the actual completion of the international search Date of mailing of the international search report 14 February 2013 (14.02.2013) 30 May 2013 (30.05.2013) Authorized officer Name and mailing address of the ISA/ FIPS Russia, 123995, Moscow, G-59, GSP-5, M. Prokusheva Berezhkovskaya nab., 30-1 Facsimile No. +7 (499) 243-33-37 Telephone No. (495)531-64-81