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(54) Title: DIBLOCK COPOLYMERS AND POLYNUCLEOTIDE COMPLEXES THEREOF FOR DELIVERY INTO CELLS

FIG. 1A

Polymer	Structure [D] _{MW1} -[B _x -P _y -D _z] _{MW2}	Mn Kda	Block Ratio MW ₂ /MW ₁
P7v1	[D] _{9.1K} -[B ₄₈ -P ₂₉ -D ₂₃] _{11.37K}	19	1.2
P7v2	[D] _{10K} -[B ₄₆ -P ₁₈ -D ₃₇] _{8.9K}	19	0.9
P7v3	[D] _{6.5K} -[B ₄₁ -P ₃₉ -D ₂₀] _{9.5K}	16	1.5
P7v6	[D] _{9.1K} -[B ₅₂ -P ₂₆ -D ₂₂] _{21.9K}	31	2.4

x, y, z ARE MOLE %. MOLECULAR WEIGHTS WERE DETERMINED BY GEL PERMEATION CHROMATOGRAPHY USING PMMA STANDARDS. COMPOSITIONS WERE DETERMINED BY NMR SPECTROSCOPY.

FIG. 1B

Polymer	Structure [D] _{MW1} -[B-P-D _{mole%}] _{MW2}	Block Ratio MW ₂ /MW ₁	Particle Size (nm)
PRX-1	[D] _{11.3K} -[B ₅₀ -P ₃₀ -D ₂₀] _{20.7K}	1.83	41
PRX-2	[D] _{14.5K} -[B ₅₇ -P ₂₃ -D ₂₀] _{26.4K}	1.82	49
PRX-3	[D] _{11.5K} -[B ₃₅ -P ₂₇ -D ₃₈] _{33.4K}	2.92	60
PRX-4	[D] _{10.7K} -[B ₅₀ -P ₂₇ -D ₂₃] _{33.8K}	3.16	50
PRX-5	[D] _{10.7K} -[B ₄₀ -P ₃₁ -D ₂₉] _{32.2K}	3.00	59
PRX-6	[D] _{14.5K} -[B ₅₃ -P ₃₁ -D ₁₆] _{67.0K}	4.62	115

(57) Abstract: Described herein are copolymers, and methods of making and utilizing such copolymers. Such copolymers have at least two blocks: a first block that has at least one unit that is hydrophilic at physiologic pH, and a second block that has hydrophobic groups. This second block further has at least one unit with a group that is anionic at about physiologic pH. The described copolymers are disruptive of a cellular membrane, including an extracellular membrane, an intracellular membrane, a vesicle, an organelle, an endosome, a liposome, or a red blood cell. Preferably, in certain instances, the copolymer disrupts the membrane and enters the intracellular environment. In specific examples, the copolymer is endosomolytic.



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