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Supplementary information

Comparative evaluation and optimization of off-the-shelf cationic polymers for gene delivery purposes

C. Malloggi,[a,b] D. Pezzoli,[b] L. Magagnin,[a] L. De Nardo,[a,b] D. Mantovani,[c] E. Tallarita,[a] and G. Candiani[a,b,d,*]

[a] *Department of Chemistry, Materials and Chemical Engineering "Giulio Natta", Politecnico di Milano, Via Mancinelli 7, 20131 Milan, Italy.*

[b] *Unità Politecnico di Milano, Consorzio Interuniversitario Nazionale per la Scienza e Tecnologia dei Materiali - INSTM, Via Mancinelli 7, 20131 Milan, Italy.*

[c] *Laboratory for Biomaterials and Bioengineering, CRC-I, Department of Mining, Metallurgical and Materials Engineering & CHU de Quebec Research Centre, Laval University, Quebec City, Canada*

[d] *Centro Interuniversitario di Ricerca in Biotecnologie Proteiche "The Protein Factory", Politecnico di Milano, CNR - ICRM Milano, and Università degli Studi dell'Insubria, Via Mancinelli 7, 20131 Milan, Italy.*

* Corresponding Author: Tel: +39 02 2399 3181. Fax: +39 02 2399 3180.

E-mail address: gabriele.candiani@polimi.it

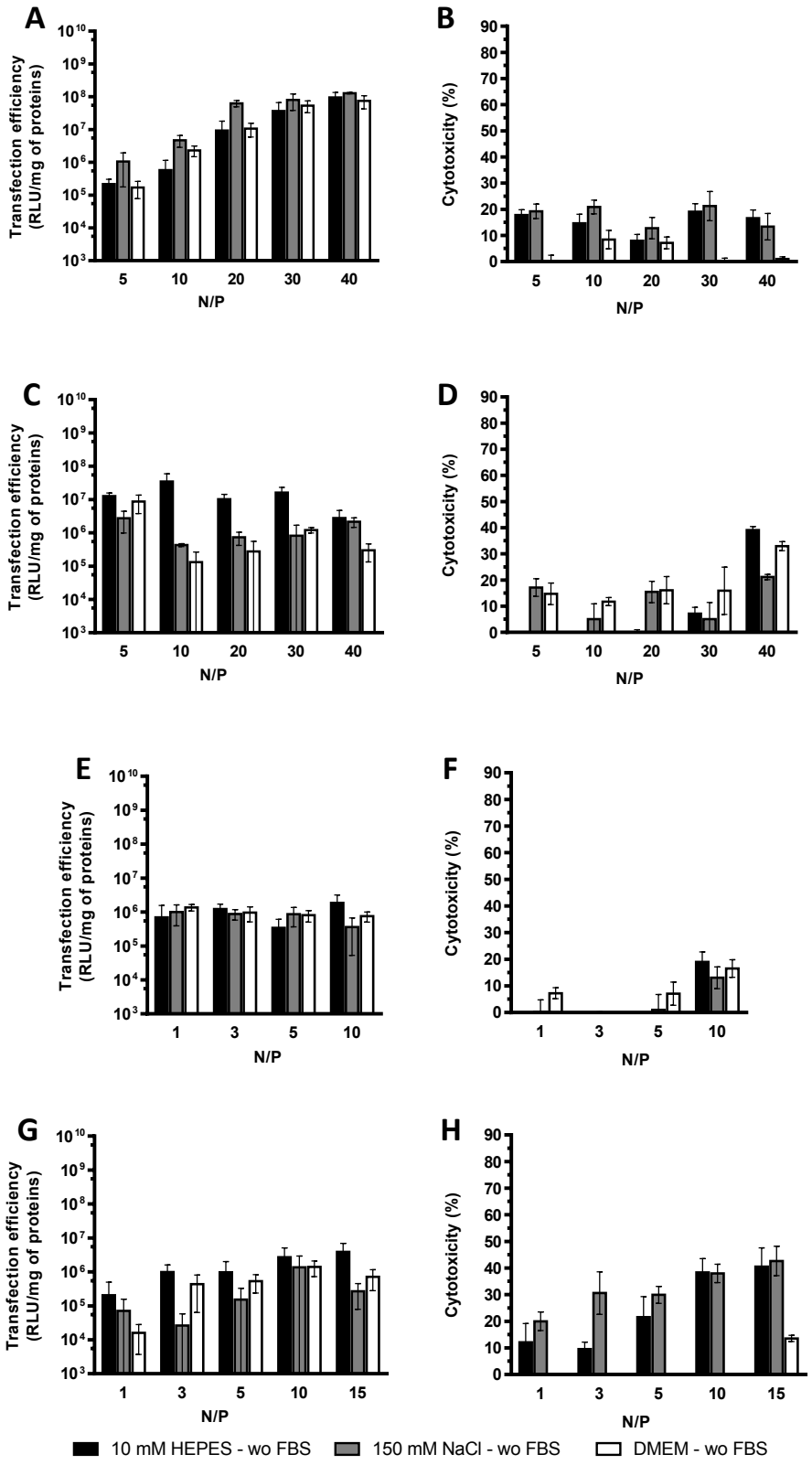

Fig. S1 Transfection efficiency and cytotoxicity in serum-free medium of cationic polymer-based polyplexes complexed in different buffers. (A, C, E, G) Transfection efficiencies and (B, D, F, H) cytotoxicities of (A, B) 25 kDa *l*PEI, (C, D) 50-100 kDa *b*PEI, (E, F) 15-30 kDa *l*PLL, and (G, H) 14 kDa *d*PAMAM, complexed in 10 mM HEPES buffer, 150 mM NaCl and serum-free DMEM, prepared with pGL3 at different N/Ps and evaluated after incubation for 4 hrs without FBS, followed by a 20 hr-incubation in 10% FBS. Results are expressed as mean ± standard deviation (n≥4).

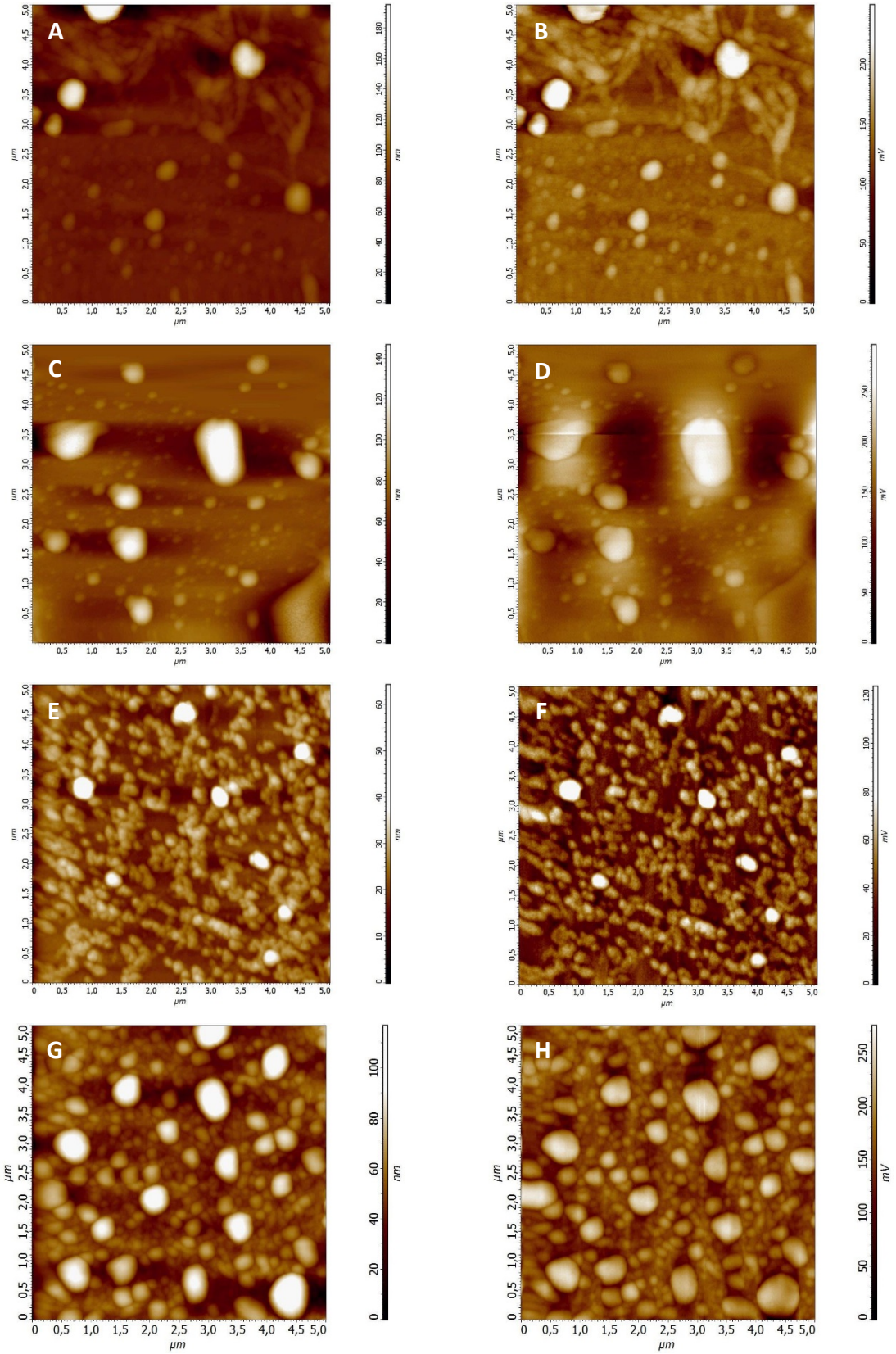

Fig. S2 Morphology and surface analysis of cationic polymer-based polyplexes. (A, C, E, G) Atomic force microscopy (AFM) and (B, D, F, H) Kelvin probe force microscopy (KPFM) images of (A, B) 25 kDa *l*PEI, (C, D) 50-100 kDa *b*PEI, (E, F) 15-30 kDa *l*PLL, and (G, H) 14 kDa *d*PAMAM polyplexes prepared each in its own optimum transfection conditions.

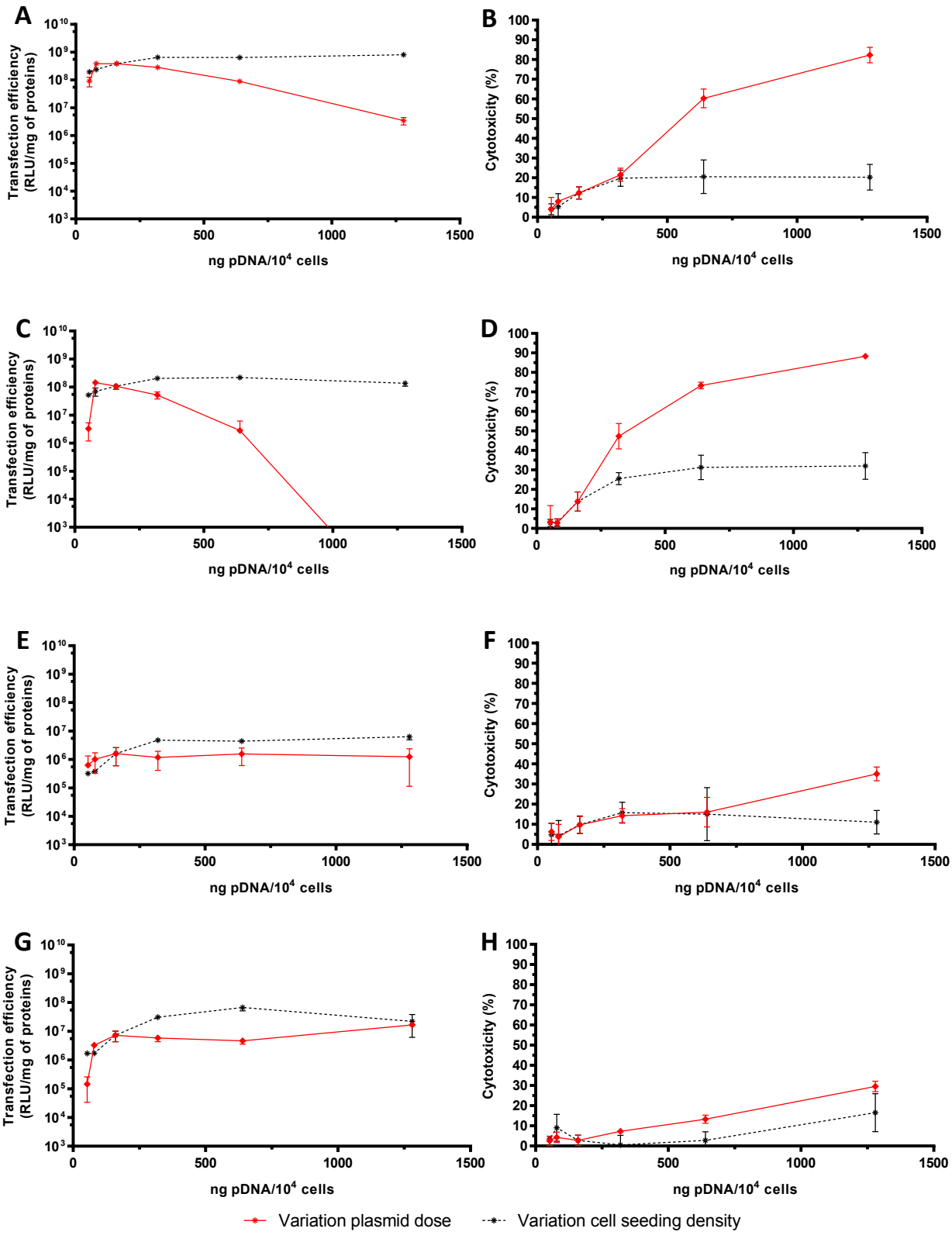

Fig. S3 Plots of transfection efficiency and cytotoxicity of cationic polymer-based polyplexes obtained varying either the pDNA dose or the cell seeding density. (A, C, E, G) Transfection efficiencies and (B, D, F, H) cytotoxicities of (A, B) 25 kDa *l*PEI, (C, D) 50-100 kDa *b*PEI, (E, F) 15-30 kDa *l*PLL, and (G, H) 14 kDa *d*PAMAM polyplexes prepared with pGL3, each at its own optimum transfection conditions, in function of the ratio of the pDNAsmid dose per seeded cell, modified by varying either the pDNA dose or the cell seeding density. Results are expressed as mean ± standard deviation (n≥4).

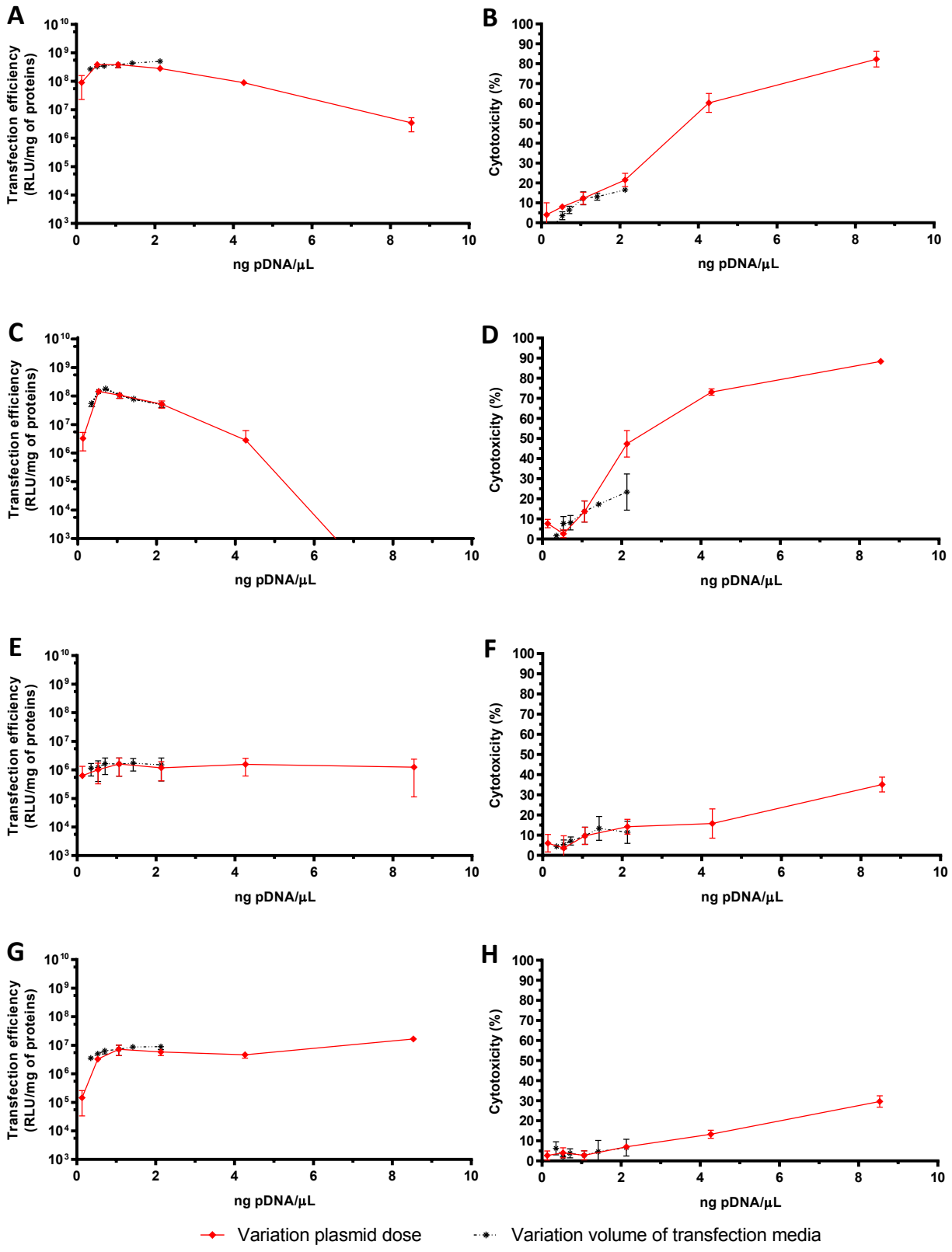

Fig. S4 Plots of transfection efficiency and cytotoxicity of cationic polymer-based polyplexes obtained varying either the pDNA dose or the volume of transfection medium. (A, C, E, G) Transfection efficiencies and (B, D, F, H) cytotoxicities of (A, B) 25 kDa *l*PEI, (C, D) 50-100 kDa *b*PEI, (E, F) 15-30 kDa *l*PLL, and (G, H) 14 kDa *d*PAMAM polyplexes prepared with pGL3, each at its own optimum transfection conditions, in function of the plasmid concentration in the culture medium, modified by varying either the pDNA dose or the volume of transfection medium. Results are expressed as mean ± standard deviation (n≥4).

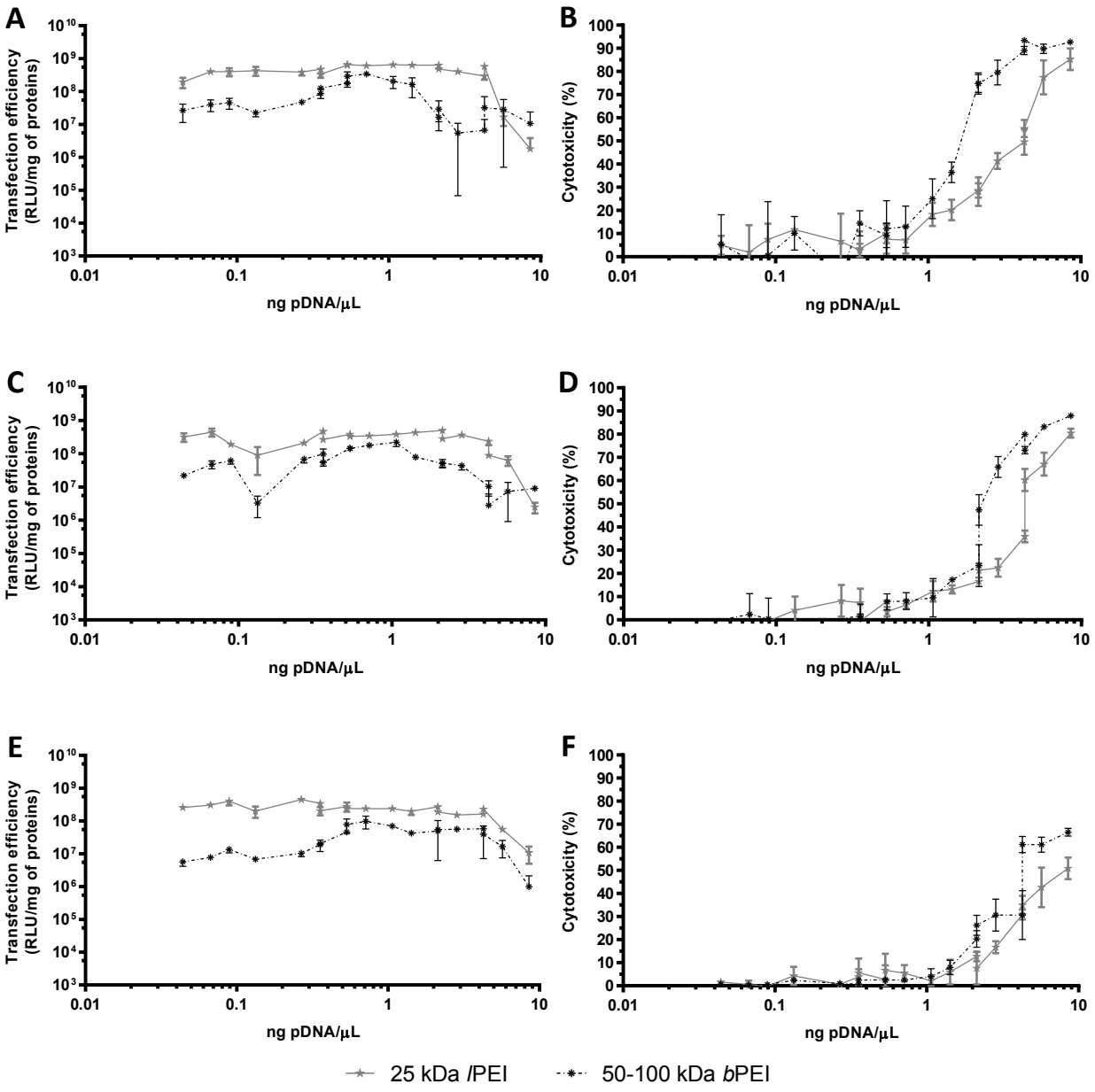

Fig. S5 Plots of transfection efficiency and cytotoxicity of cationic polymer-based polyplexes obtained varying the pDNA dose and the volume of transfection medium at once. (A, C, E) Transfection efficiency and (B, D, F) cytotoxicity of 25 kDa *l*PEI and 50-100 kDa *b*PEI polyplexes prepared with pGL3, each at its own optimum transfection conditions, in function of the plasmid concentration in the culture medium, with cell seeding densities of (A, B) 1.0 x 10^4 cells/cm^2, (C, D) 2.0 x 10^4 cells/cm^2, and (E, F) 4.0 x 10^4 cells/cm^2. Results are expressed as mean ± standard deviation (n≥4).