Supporting Information

Assembly of Non-cytotoxic PEG-Polyamine Nanomicelle for mRNA delivery via direct Intracerebroventricular Injection: a proof-of-concept study in Mouse Model

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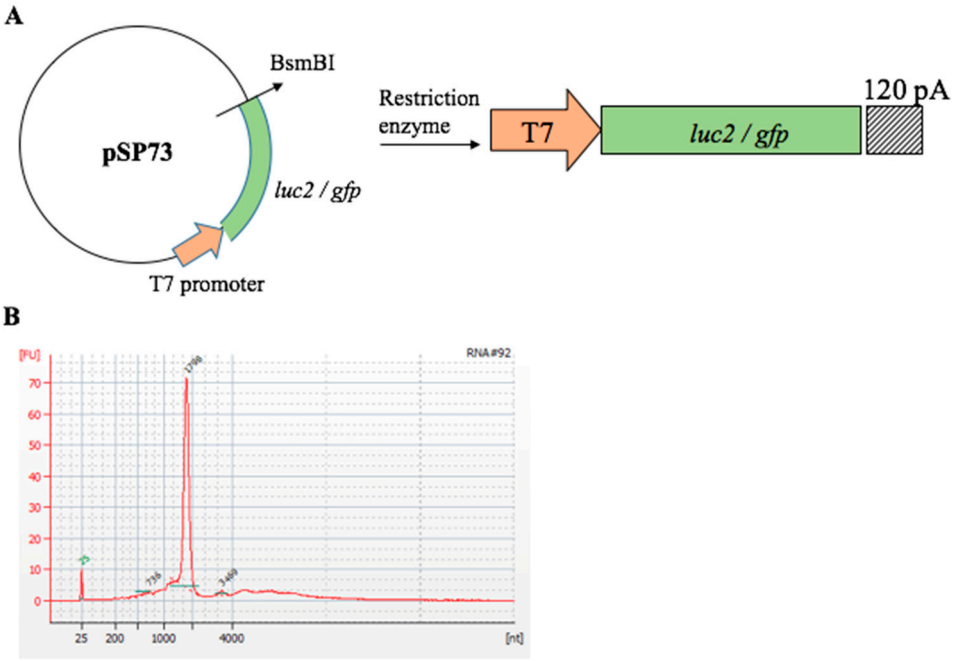

Figure S1. (A) *Luc2* or *GFP* mRNA were transcribed by linear plasmid DNA containing 120pA sequence digested by BsmBI. (B) *Luc2* mRNA was analyzed for size and purity with the Agilent RNA 6000 Nano Assay on a BioAnalyzer 2100.

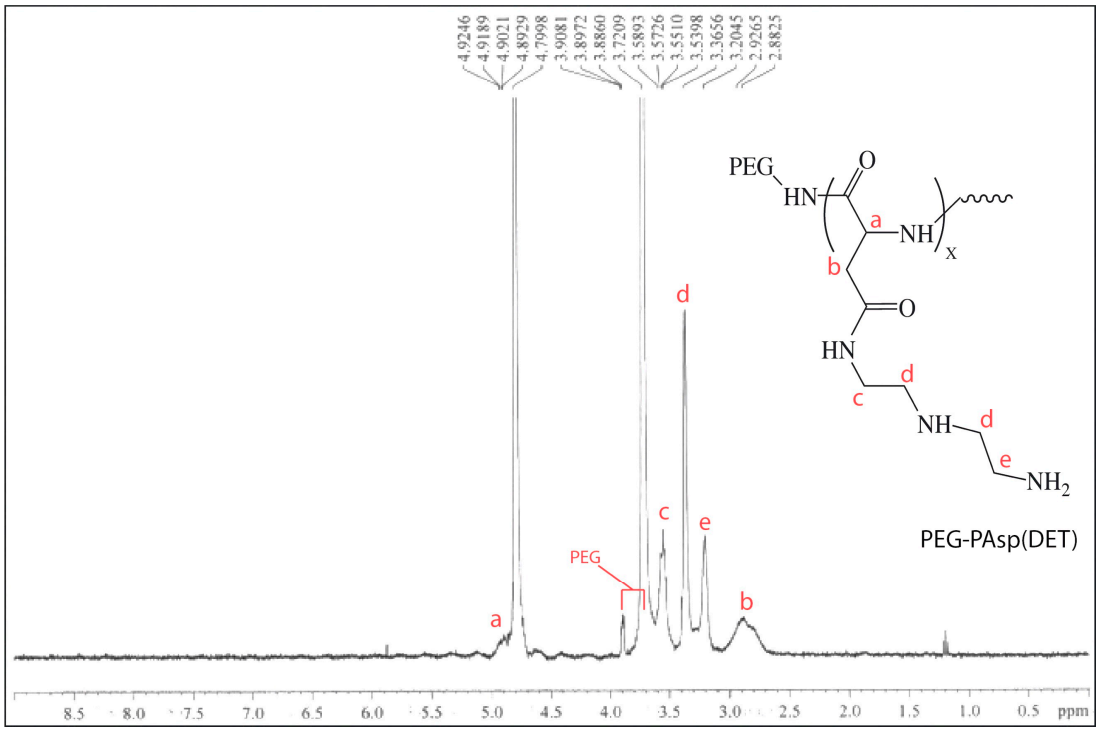

Figure S2. ^{1}H-NMR spectrum for PEG-PAsp(DET)

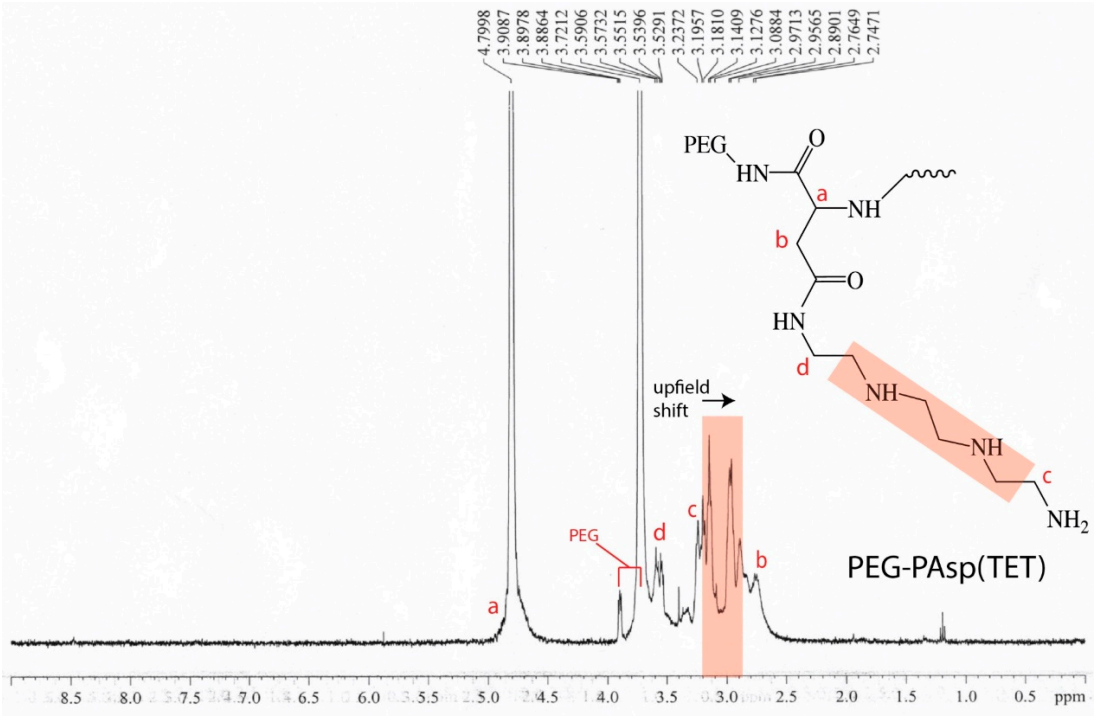

Figure S3. ^{1}H-NMR spectrum for PEG-PAsp(TET)

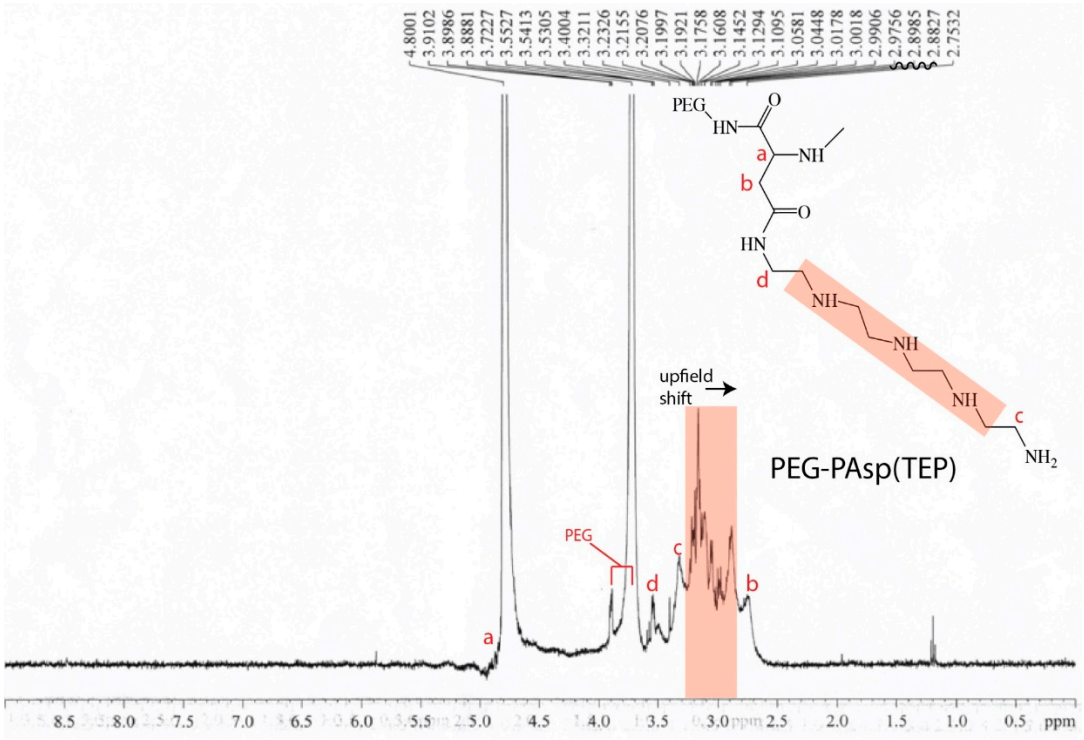

Figure S4. ^{1}H-NMR spectrum for PEG-PAsp(TEP)

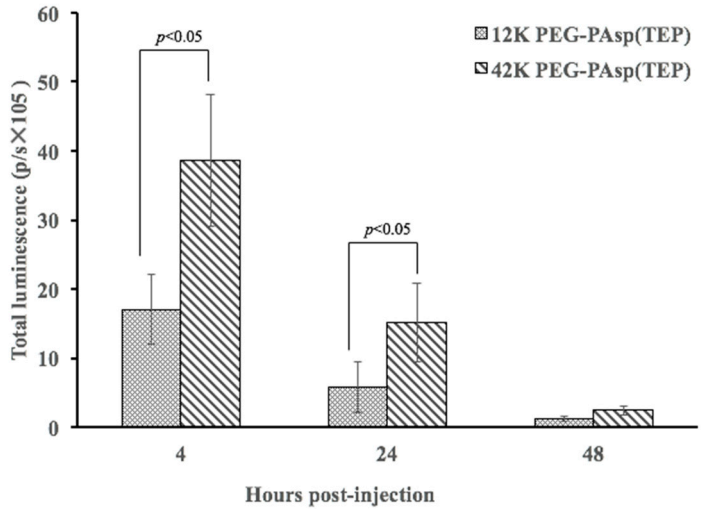

Figure. S5. ***Luc*2 mRNA was encapsulated by 12K PEG-PAsp(TEP) and 42K PEG-PAsp(TEP) for ICV-infusion in mouse, respectively. Luminescence was measured by IVIS from 4-48 h post-infusion.**

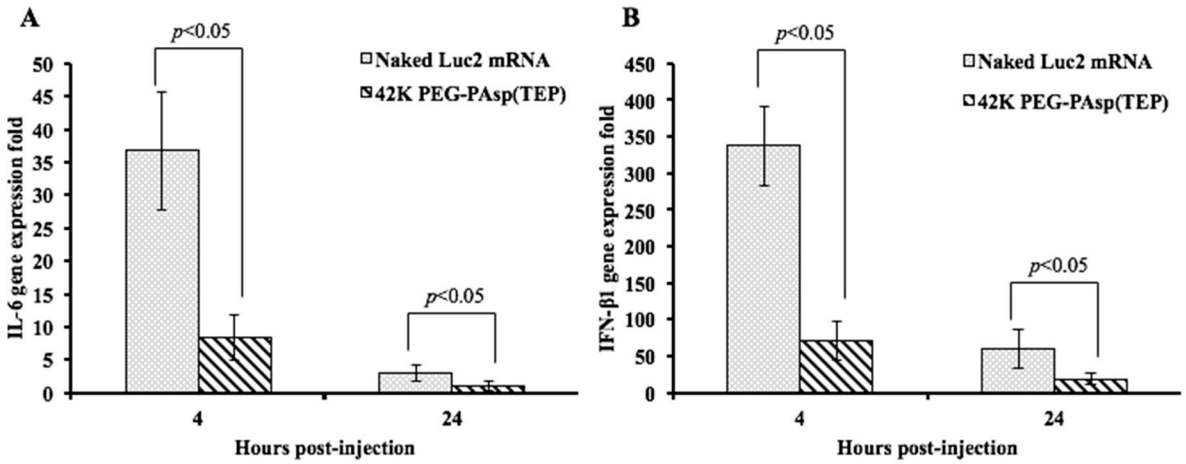

Figure. S6. No significant immune response elicited after ICV injection of self-assembly mRNA nano micelles. (A) IL-6. (B) IFN-b1.

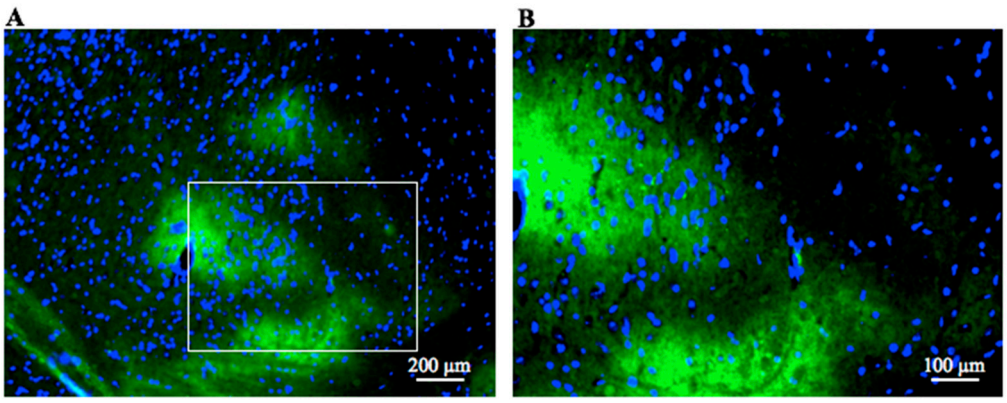

Figure. S7. GFP IHC from ICV injection of self-assembly *GFP* mRNA nano micelles. (A) larger area. (B) Magnified from the white-lined box inset in A.

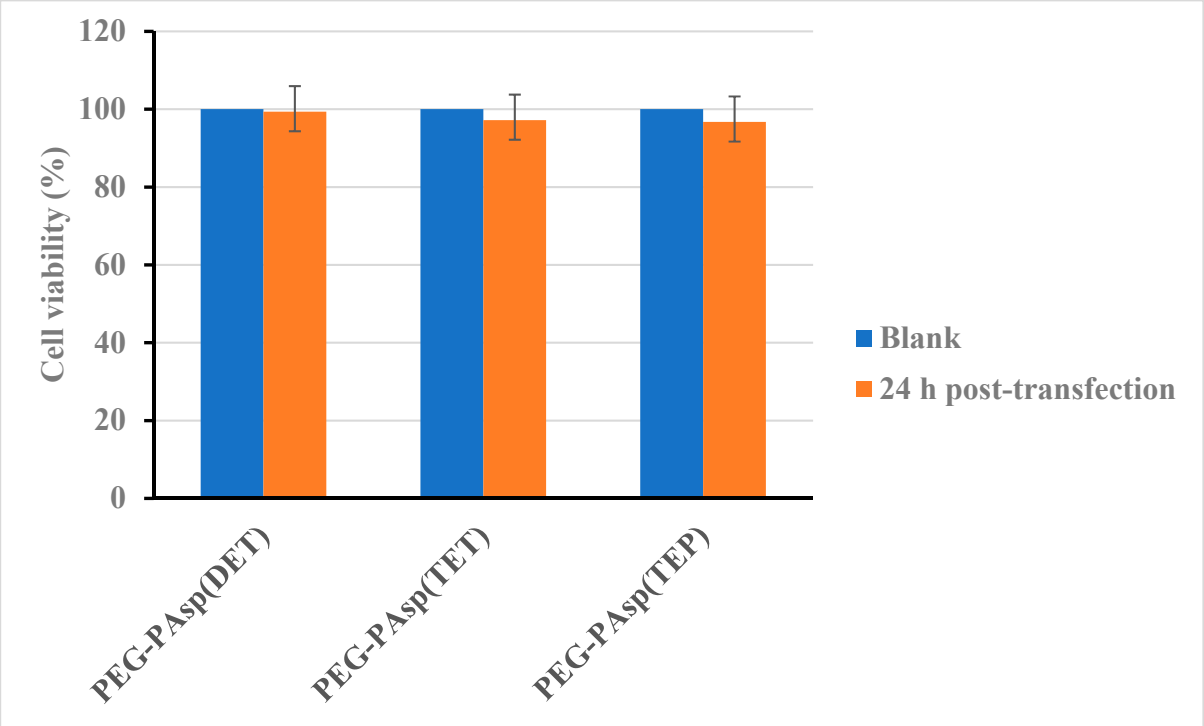

Figure. S8. HT-22 Mouse hippocampal neuronal cell line was transfected with nanomicelles encapsulated with Luc2 mRNA at a N/P ratio of 3, and the measured cytotoxicity with MTT assay after 24 hours post-transfection (hpt). All transfection groups exhibited cell viability > 90%. (N=4)