

Hybrid inorganic-organic capsules for efficient intracellular delivery of novel siRNAs against influenza A (H1N1) virus infection

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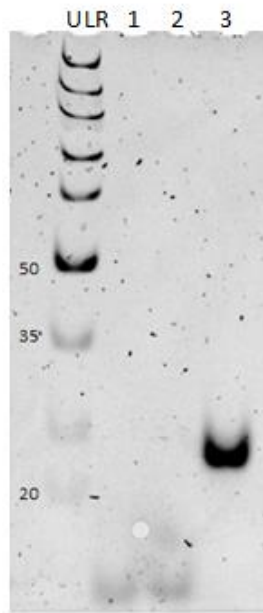
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15% PAAG electrophoresis: ULR-ultra low range DNA ladder (Fermentas);
1-NP_717-1 (5' single strand RNA UUAUgAgAgAAUgUgCAACAU);
2-siRNA_NP717-2 (3' single strand RNA gUUgCACAUUCUCUCAUAAgC);
3-dubblestrand siRNA_NP-717 after hybridization.

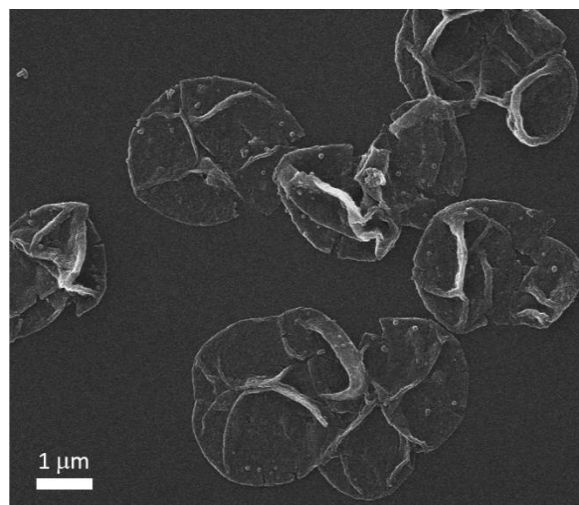


Figure S1. SEM image of PARG/DEXS microcapsules.

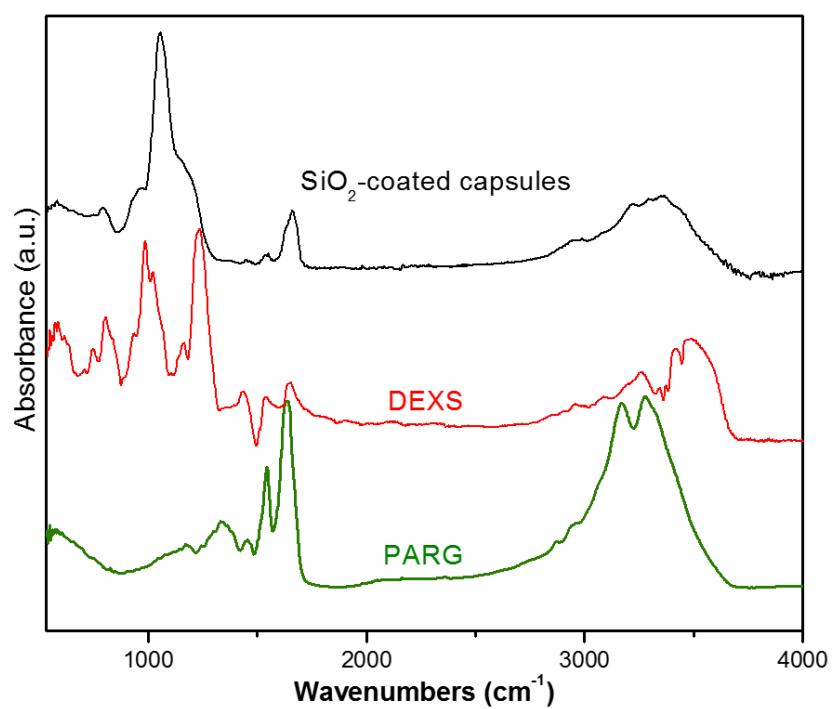


Figure S2. FTIR spectra of SiO₂ -coated capsules, DEXS and PARG.

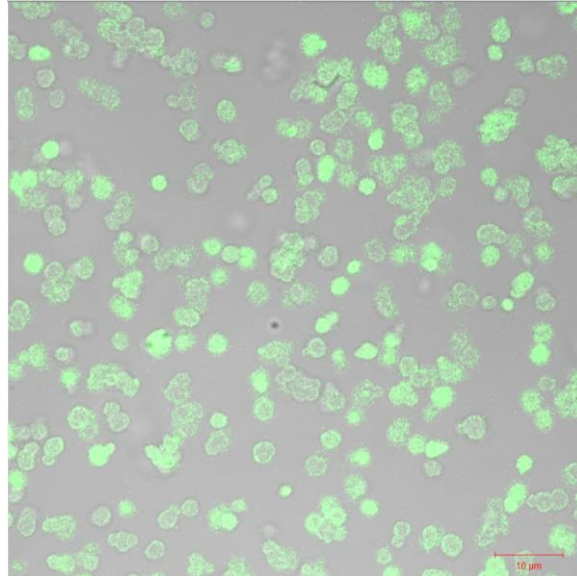


Figure S3. CLSM image of SiO₂-coated capsules with PA-1630-FAM after dissolution of CaCO₃

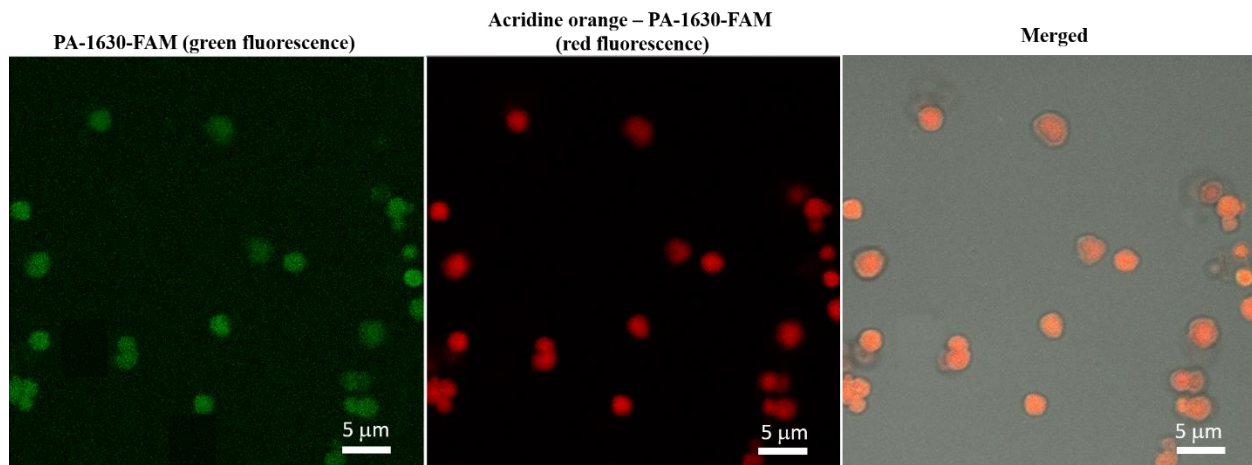


Figure S4. CLSM images of SiO₂-coated capsules with PA-1630-FAM, interacting with acridine orange.

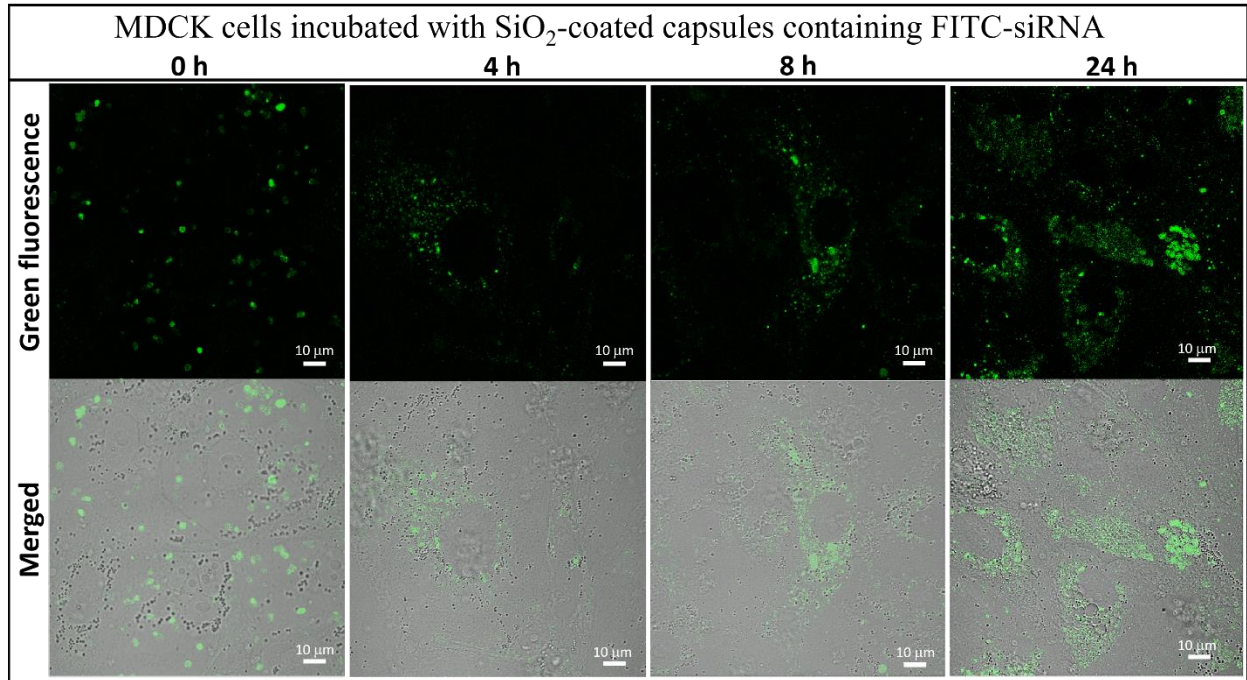


Figure S5. CLSM images demonstrating the intracellular release of PA-1630-FAM from SiO₂-coated capsules and further PA-1630-FAM distribution in MDCK cells at different incubation period.

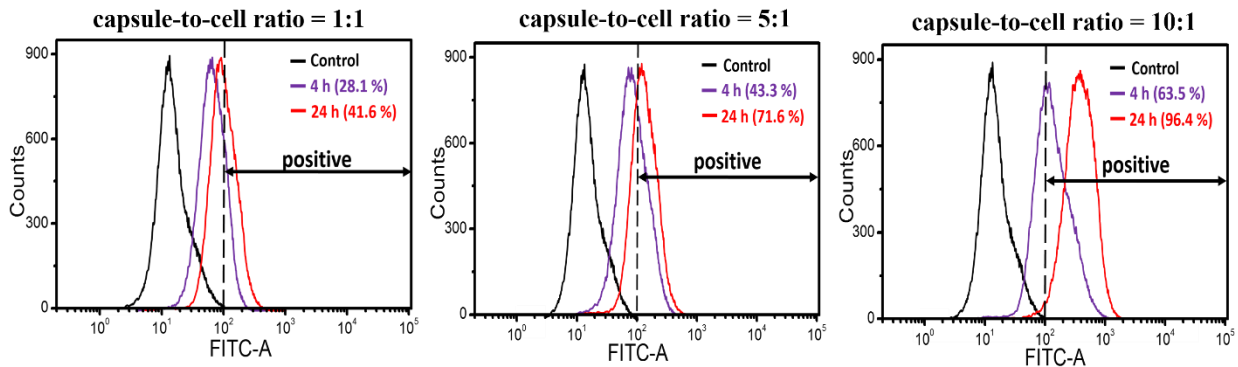


Figure S6. Flow cytometry analysis of SiO₂-coated capsules uptake in MDCK cells at different capsules-to-cell ratio and incubation time.

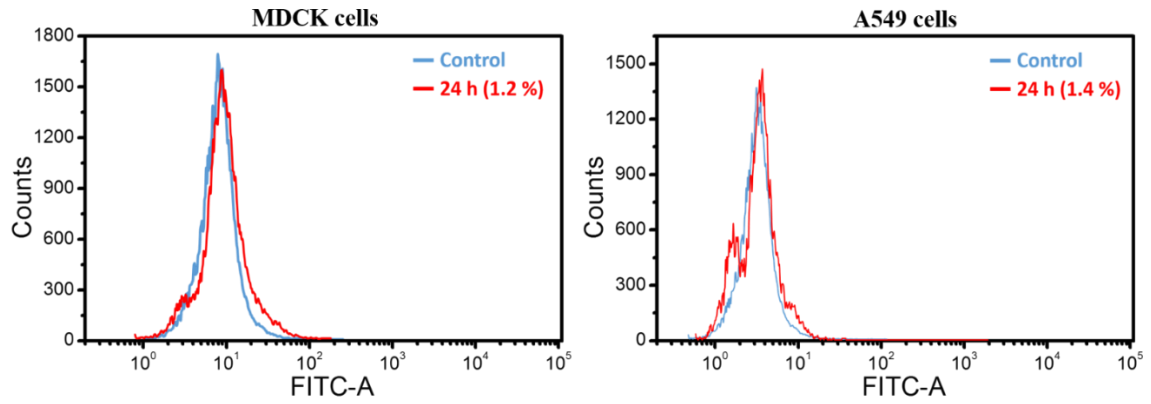


Figure S7. Flow cytometry analysis of free siRNA uptake in MDCK and A549 cells.

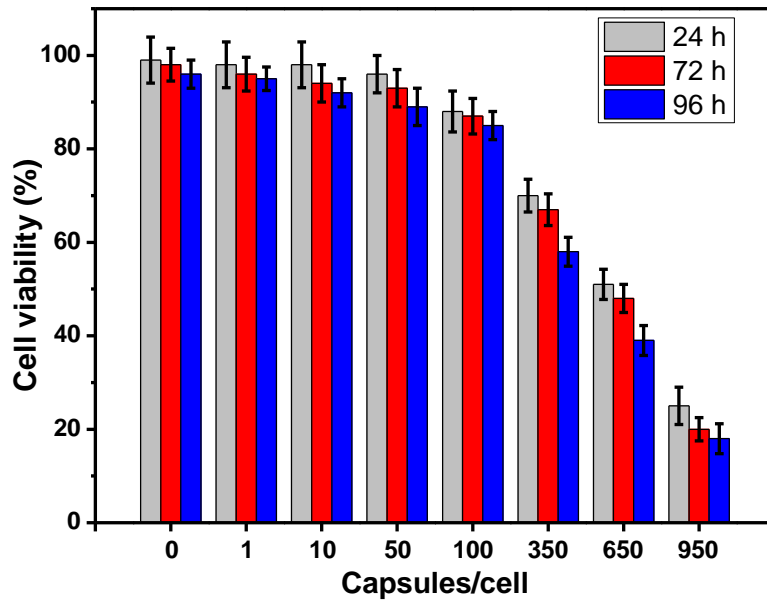
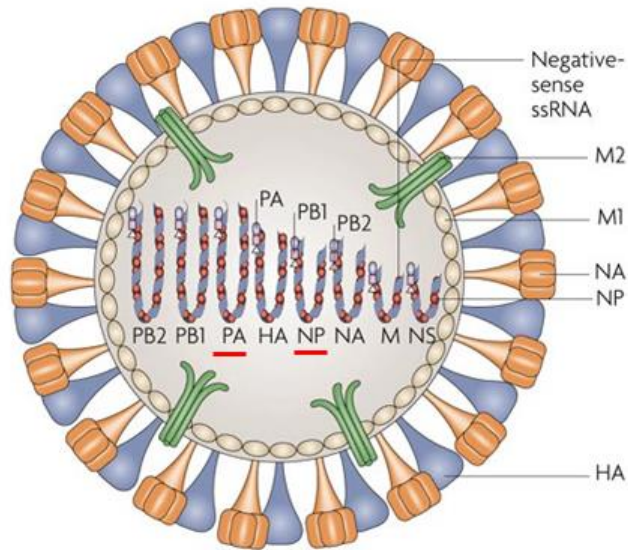


Figure S8. Cell viability of MDCK cells incubated with SiO₂-coated capsules at different capsules-to-cell ratios for various time intervals (24, 48, or 72 hours).



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Figure S9. Simplified schematic structure of influenza virus target genes are red underlined. Nature Reviews Immunology 7, 267-278 (April 2007)

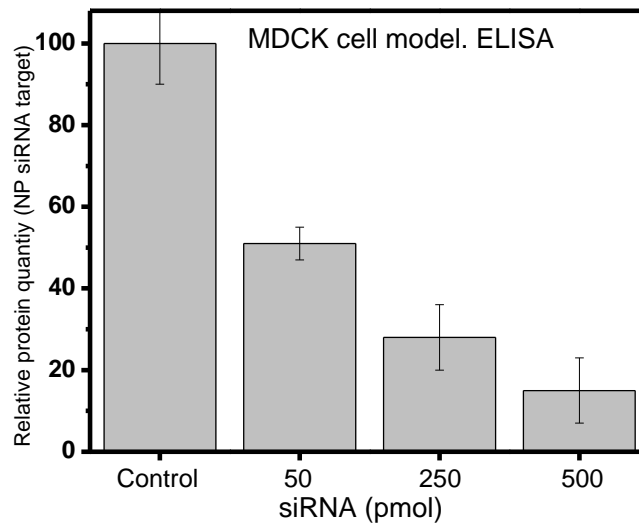


Figure S10. ELISA analysis showing the reduction of viral NP level in infected MDCK cells treated with different anti-viral NP-1496 siRNA in encapsulated form.

Table 1. Effects of siRNAs in encapsulated form on influenza virus production in MDCK and A549 cells

| Virus production (titer in HA units) | | | |
|--------------------------------------|----------------------------|------------|------------|
| Exp. | siRNA in encapsulated form | A549 cells | MDCK cells |
| 1 | Virus control | 64 | 256 |
| | NP-1496, 250 pmol | 32 | 32 |
| | NP-1496, 500 pmol | 32 | 32 |
| 2 | Virus control | 64 | - |
| | NP-717, 250 pmol | 16 | - |
| | NP-717, 500 pmol | 8 | - |
| 3 | Virus control | 64 | - |
| | NP-1155, 250 pmol | 32 | - |
| | NP-1155, 500 pmol | 16 | - |
| | NP-1496, PEI | 32 | 64 |

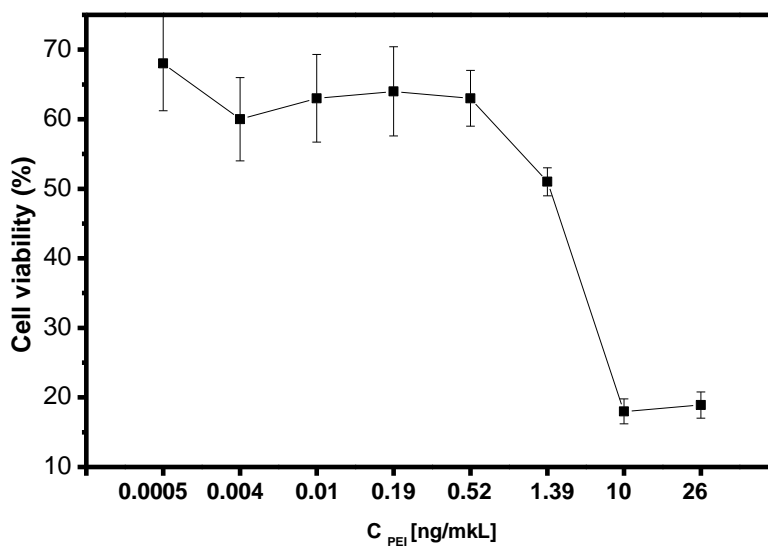


Figure S11. Reduction in the viability of MDCK cells caused by using PEI.