Electronic supplementary information

Efficient intracellular delivery of biomacromolecules employing clusters of zinc oxide nanowires†

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Fig. S1 – S3.

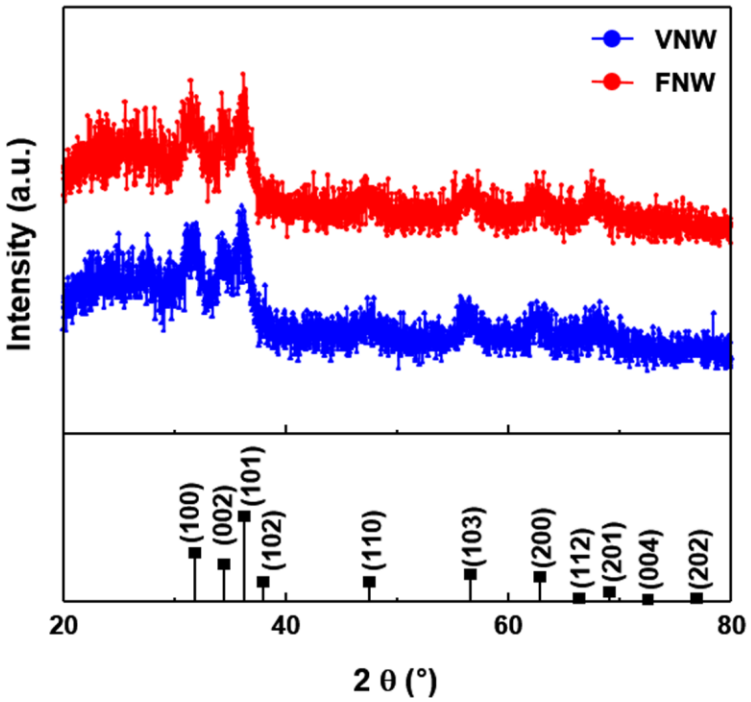

Fig. S1. XRD patterns of vertical ZnO nanowire (VNW) and fan-shaped ZnO nanowire (FNW) arrays. The characteristic peaks of wurtzite ZnO (JCPDS No. 36-1451) are denoted in the bottom part of the graph.

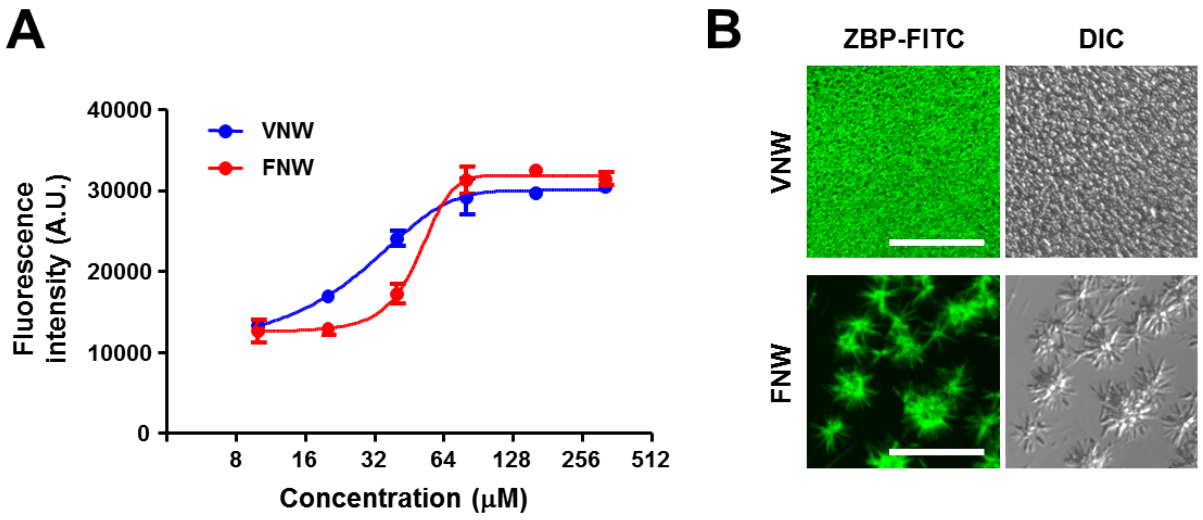

Fig. S2. Coating of ZnO nanowire arrays with ZBP-FITC. (**A**) Vertical (VNW) or fan-shaped (FNW) nanowires were incubated with indicated concentration of ZnO-binding peptides (ZBP) conjugate with FITC for 1 h at 37ºC. ZnO nanowire arrays coated with ZBP-FITC were assessed the relative binding of ZBP-FITC by measuring the fluorescence intensity. (**B**) Representative images of ZnO nanowire arrays coated with ZBP-FITC. DIC, differential interference contrast. White bar, 10 μm.

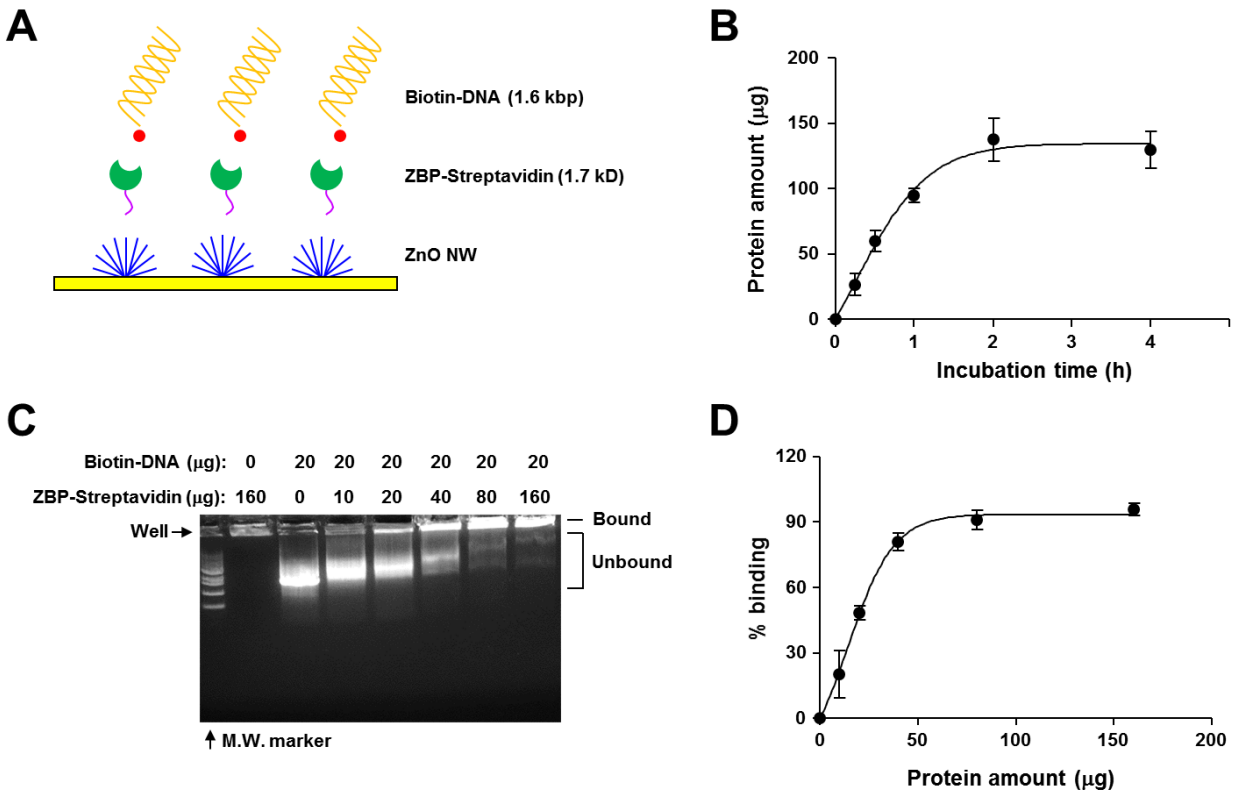

Fig. S3. Complex formation of ZBP-streptavidin and biotin-labeled DNA. (**A**) Schematic diagram of complex formation strategy for ZBP (purple)-streptavidin (green) and biotin (red)-labeled DNA (oragnge) on ZnO nanowire (blue) array. (**B**) Kinetic binding of ZBP-streptavidin to ZnO nanowire array on a coverslip. Clustered ZnO NW array on a coverslip were incubated with 300 μg purified ZBP-streptavidin at 37°C for indicated time interval and the bound proteins were assessed by BCA protein assay kit (see Methods). (**C** and **D**) The electrophoretic mobility shift assay was performed to confirm the complex formation of ZBP-streptavidin and biotinylated DNA. Indicated amount of ZBP-spreptavidin protein were incubated with biotinylated DNA encoding GFP expression cassette and the resulting complexes were

visualized under UV light after agarose gel electrophoresis (**C**). Relative binding of biotinylated DNA to ZBP-streptavidin were presented from triplicate experiments. Error bar, ± SD.