

An artificial virus for nucleic acid delivery

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Certain short pieces of DNA/RNA can be used to silence genes and thus halt protein production in living cells. This has important implications both in medicine, as they could be used to treat a wider variety of diseases than conventional drugs, and in biotechnology, as they are important tools to regulating protein expression. Unfortunately, both DNA and RNA suffer from poor cellular uptake and stability in biological media. The development of strategies to overcome this is an important challenge which will ultimately affect science across a variety of disciplines. One promising strategy to enable the use of DNA/RNA for therapeutics is to encapsulate them inside a molecular container, the same strategy employed by viruses. The research presented concerns the development of an artificially designed protein cage to selectively load DNA/RNA molecules within its interior cavity. The ability of the system to load and protect its cargo, enter cells and control protein expression will be described.