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VP22-Mediated Delivery of Oligonucleotides Into Cells

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The HSV protein, VP22, has the unusual property of intercellular transport whereby the protein is transported from the cells in which it is synthesised to neighbouring cells (Elliot and O'Hare, 1997; Elliot and O'Hare, 1999). This property has the potential to augment delivery in gene therapy applications (Phelan *et al*, 1998; Dilber *et al*, 1999). Here we show that the VP22 protein itself can form novel macromolecular complexes with small nucleic acids including antisense oligonucleotides which are efficiently transported into cells. A functional subdomain of VP22 was expressed in bacteria and purified to homogeneity. Incubation with oligonucleotides forms regular spherical particles of 500 nm-1 µm which were stable in serum. These complexes efficiently enter cells where they are stable for days and are retained during cell passage. Release and transport of oligonucleotides have been followed by time-lapse microscopy.

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