

Synthetic virus conveys genes, drug molecules to tumour cells

Korean researchers have created an artificial virus able to replicate the function of the original - transporting both genes and drugs into cancer cells.

But with a vital difference - they do not cause side-effects like sparking an immune response or causing cancer like their real counterparts.

A research team headed by Myongsoo Lee of Yonsei University, Seoul, has now developed a new strategy that allows the artificial viruses to maintain a defined form and size.

The researchers started with a ribbon like protein structure as their template. The protein ribbons organised themselves into a defined threadlike double layer that sets the shape and size.

Coupled to the outside are 'protein arms' that bind short RNA helices and embed them. If this RNA is made complementary to a specific gene sequence, it can very specifically block the reading of this gene.

Known as small interfering RNAs (siRNA), these sequences represent a promising approach to gene therapy.

Glucose building blocks on the surfaces of the artificial viruses should improve binding of the artificial virus to the glucose transporters on the surfaces of the target cells. These transporters are present in nearly all mammalian cells. Tumour cells have an especially large number of these transporters.

Trials with a line of human cancer cells demonstrated that the artificial viruses very effectively transport an siRNA and block the target gene.

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