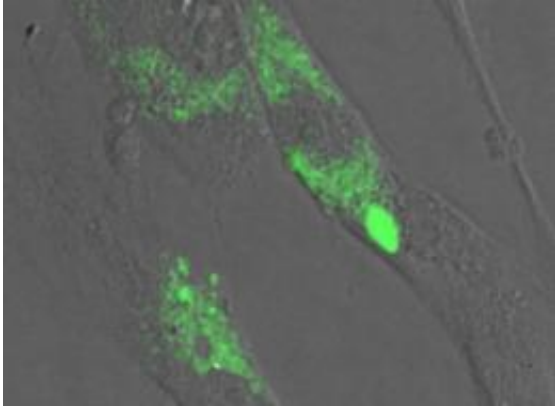


Scientists copy the ways viruses deliver genes

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Confocal fluorescence micrograph of cells containing a gene delivered by GeT, encoding for the synthesis of green fluorescent protein

Scientists at the National Physical Laboratory (NPL) have mimicked the ways viruses infect human cells and deliver their genetic material. The research hopes to apply the approach to gene therapy – a therapeutic strategy to correct defective genes such as those that cause cancer.

Gene therapy is still in its infancy, with obvious challenges around targeting damaged [cells](#) and creating corrective genes. An equally important challenge, addressed by this research, is finding ways to transport the corrective genes into the cell. This is a problem, because of the poor permeability of cell membranes.

This research describes a model peptide sequence, dubbed GeT (gene transporter), which wraps around genes, transports them through cell

membranes and helps their escape from intracellular degradation traps. The process mimics the mechanisms viruses use to infect [human cells](#).

GeT was designed to undergo differential membrane-induced folding - a process whereby the peptide changes its structure in response to only one type of membranes. This enables the peptide, and viruses, to carry [genes](#) into the cell. Interestingly, the property also makes it antibacterial and so capable of gene transfer even in bacteria-challenged environments.

To prove the concept, the researchers used GeT to transfer a synthetic gene encoding for a green fluorescent protein – a protein whose fluorescence in cells can be seen and monitored using fluorescence microscopy.

The design can serve as a potential template for non-viral delivery systems and specialist treatments of genetic disorders.

This research, performed at NPL, is a part of the NPL-led international research project 'Multiscale measurements in biophysical systems', which is jointly funded by NPL and the Scottish Universities Physics Alliance.

More information: The team's article GeT peptides: a single domain approach to gene delivery, detailing this research has just been published in *Chem. Commun*: [pubs.rsc.org/en/Content/Article...
g/2011/CC/c1cc13043a](https://pubs.rsc.org/en/Content/Article.aspx?pubid=2011/CC/c1cc13043a)

Provided by National Physical Laboratory

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