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## Dual-function, cationic peptide-coated nanodiamond system: Facilitating gene delivery to the nucleus for enhanced disease therapy

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Nano-diamond becomes a promising candidate among the carbon-based nanomaterials in the recent decades. With the superior thermal stability and chemical inertness, excellent cellular uptake, innate biocompatibility, low cytotoxicity and non-photobleaching fluorescent property, they can be functionalized as a therapeutic agent or diagnostic tool through the chemical modifications. We demonstrate the use of nanodiamonds as a platform for effective delivery of biomolecule with nucleus targeting property. With the peptide modified surface, it enables nanodiamonds to bind with the negative charged nucleic acid via electrostatic force. Antisense oligonucleotide 4625 is applied as an example to be transported, the suppression of *Bcl-2* and *Bcl-xL* anti-apoptotic genes and triggering of apoptosis in breast carcinoma MCF-7 indicate the enhanced drug delivery efficiency. Therefore, nanodiamonds are promising nanocarriers to enhance the cellular delivery of certain biomolecules.

### Biography

Hoi Man Leung is a Postgraduate student in Dr. Peggy Lo's Research Group in City University of Hong Kong. Her research interest is in the design and creation of DNA nanostructures and nanoparticles as nanocarriers for the biomedical applications, including gene knockdown in disease cells, BBB penetrating property and brain cancer cell targeting.

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