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## Utilizing rosette nanotubes for the delivery of siRNA for cancer therapeutics

**Gino Karlo L Delos Reyes** and **Hicham Fenniri**
Northeastern University, USA

Rosette Nanotubes (RNTs), a self-assembled supramolecular nanomolecule composed of fused guanine-cytosine (G^C) bases, provide a novel and innovative modality for the delivery of gene therapeutics to target cells with high efficacy. This study aims at utilizing RNTs as a nanocarrier platform for the delivery of small interfering RNA (siRNA) to knockdown oncogenic genes to facilitate the elimination of cancer from the body. By conjugating positively charged lysine functional groups to the surface of the RNTs, the nanotubes gain the ability to complex negatively charged siRNA through electrostatic interactions. Through specialized FRET-labeled siRNA and gel retardation assay, we have shown that cationic charges on the RNTs strongly affect the binding interaction and the intracellular delivery of the RNT-siRNA nanocomplex. Furthermore, we have observed higher levels of intracellular siRNA delivery utilizing the RNTs as compared to commercially available Lipofectamine through the use of fluorescently labelled siRNA. Improved gene silencing capabilities were also exhibited compared to commercially available siRNA transfection agents. These data suggest that RNTs has the potential to be both an efficient and biocompatible gene delivery platform.

### Biography

Gino Karlo L Delos Reyes is a second year Chemical Engineering PhD student in Dr. Fenniri's Supramolcular Nanomaterials Lab at Northeastern University. He studies how novel rosette nanotubes can be used as targeted drug delivery agents, especially its applications in cancer. He completed his undergraduate degree at the University of California, San Diego where he received a double major in Chemical Engineering and Biochemistry/Cellular Biology.

delosreyes.g@husky.neu.edu

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