



Nanoparticles for Intracellular Delivery of Drugs

Researcher

Prof. Smadar Cohen

Avram and Stella Goldstein-Goren
Department of Biotechnology
Engineering

Research

Within the FTA framework, Prof. Cohen's lab has developed nanoparticles targeted for intracellular delivery of drugs. The nanoparticles can encapsulate a wide variety of cargo, including nucleic acids, such as siRNA, and insoluble small molecules with anti-cancer activities.

Advantages

- Nanoparticles are made of biocompatible materials, calcium ions and polysaccharides
- Their fabrication is simple and easy; It merely requires mixing the components together in aqueous ("green") conditions and at room temperature. The mechanism underlying their formation is based on electrostatic interactions between the components
- The nanoparticles have an average diameter of 100 nm with a narrow size distribution and have a mild anionic zeta potential (-6 mV). These features enable their efficient entry into the cell cytoplasm
- We demonstrated excellent efficacy, and in the case of siRNA, we showed tumor-specific knockdown of the targeted mRNA (STAT 3 and VEGF)

Applications & Products

- Hepatocarcinoma siRNA therapeutics
- Breast cancer chemotherapy
- Cardiovascular miRNA therapeutics

Patent Status

Two patent applications pending.