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Multifunctional Targeted Nanocarriers for Cancer Therapy

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Overall Research Goal

Development of nanotechnology based systems for targeted delivery of small molecules, siRNA, plasmid DNA, and proteins for the treatment of various cancers, asthma and skin disorders.

Research Focus

- Lung and Breast Cancer
- Neuroblastoma
- Mesothelioma
- Asthma
- Topical and Transdermal delivery
Formulation of Nanocarriers

Rational for Therapeutic Agents

- siRNA
- Gene
- Etoposide
- DFMO
- Onconase
- Small molecule drugs
- Proteins
- Plasmids
Formulation of Nanocarriers

Rational for Nanocarrier systems

Gelatin, Albumin, Chitosan, PLGA based Targeted Hybrid Nanocarriers

Hydrophobic & Hydrophilic Nanocarriers

Liposome Nanocarriers
Routes of Administrations

- Parenteral
- Inhalation
- Oral
- Topical
- Transdermal

Elicit Therapeutic Effects
Improve efficacy of Mutifunctional Targeted Nanocarriers

- Over expression of receptors
- Require cell receptor specific ligand
- Receptor Medicated Endocytosis

Targetable NCs

NCs-PD → Spacer → Ligand
Outline of Nanocarrier Development and Evaluation

In vivo Anticancer activity followed by Toxicology

Tracking and Imaging of Nanocarriers

PK studies of Nanocarriers

Optimization of Multifunctional Nanocarriers
Instruments for Nanoparticle Characterization & Formulation

1) Nano Debee High Pressure Homogenizer; 2) Nicomp 380 ZLS Particle Size & Zeta Potential; 3) EasyMax 102 Crystallizer; 4) In vitro lung models; 5) HPLC; 6) Fluorescent Microscope; 7) Diffusion set up; 8) Biotek Synergy plate reader (absorbance/fluorescence/bioluminescence)
Relevant Publications


* Corresponding author
Pharmacovigilance Related Journals

- Journal of Molecular and Genetic Medicine
- Journal of Data Mining in Genomics & Proteomics
- Journal of Proteomics & Bioinformatics
Pharmacovigilance Related Conferences

- 2nd International Conference on Predictive, Preventive and Personalized Medicine & Molecular Diagnostics
- 4th International Conference on Proteomics & Bioinformatics
- 2nd International Conference on Genomics & Pharmacogenomics
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