

Multifunctional Nanoparticles for Targeted Drug Delivery of Cancer Therapeutics

Overview of Technology:

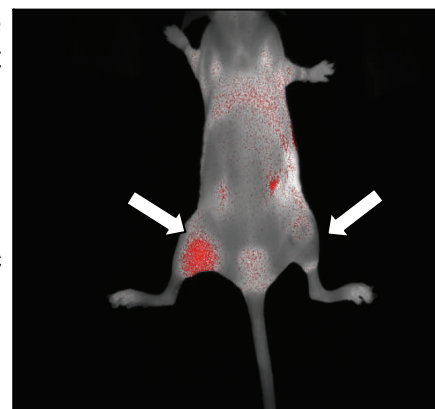
Targeted delivery of small molecule cancer therapeutics as well as imaging agents is an emerging field in cancer treatment and diagnosis. Further, use of short sequences of interfering RNA (siRNA) in this field holds remarkable promise. However, the biggest challenge for potential siRNA-based therapeutics lies in delivering the siRNA of interest to the target cell type and tissue, at a safe therapeutic level.



5-50 nm

This technology describes the synthesis and use of innovative multifunctional biocompatible nanoparticles termed “HPPS” that allows for targeted delivery of such cancer therapeutics. Linking of specific targeting moieties can help target the nanoparticle to direct the payload to the intended target tissue. In addition to being nontoxic, nonimmunogenic, and biocompatible, this invention’s competitive advantage is based on its ability to accommodate payloads of different size, versatility to carry both hydrophobic and hydrophilic payloads, stable long circulating time, and favorable biodistribution.

An example of proof of concept for this technology is demonstrated here and shows that the nanoparticles can target the human cancer xenograft expressing the targeted receptor but not the xenograft that lacks such receptor (marked by arrow on the hind leg).



Related Publication:

Corbin, I.R. and Zheng, G. Mimicking nature's nanocarrier: synthetic low-density lipoprotein-like nanoparticles for cancer-drug delivery. *Nanomed.* **2(3)**, 375-80 (2007)

Patent:

PCT/CA2008/002203 - Filed 12 Dec 2008

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UHN Reference # - 7006