TEXAS TECH UNIVERSITY
Department *of* Chemical Engineering

Design of Peptide- and Aptamer-Amphiphiles for Receptor-Targeted Therapeutics

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ABSTRACT

Drug delivery systems that include site-specific surface ligands could further enhance selective targeting. In this talk I will discuss the design and evaluation of two different ligands. The first one is a fibronectin mimetic peptide-amphiphile, PR_b, that specifically targets the alpha(5)beta(1) integrin which is over-expressed in a variety of cancer cells and on tumor vasculature, and plays an important role in angiogenesis and metastasis. PR_b functionalized nanoparticles have been evaluated in vitro and in vivo and have shown enhanced binding, intracellular uptake, and delivery of their encapsulated load compared to non-targeted and GRGDSP-functionalized particles targeted to different cancers, as well as the capability to deliver a wide variety of therapeutic cargoes. The second example is our recent effort to design a ligand for fractalkine. Fractalkine is a chemokine that acts as an adhesion molecule for leukocytes and more important is only expressed at sites of inflammation, such as cancer. We have recently identified an aptamer, FKN-S2, that binds fractalkine with high affinity and specificity. Our results demonstrate the effect of the hydrophobic tail of the aptamer-amphiphile on its self-assembly and binding characteristics.

When: May 4th at 3:00 pm.
Where: Livermore Center 101
Unless otherwise specified