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Nanomedicine and Genome Editing Approaches for Disease Therapies

The integration of biomolecular engineering, nanotechnology and biology is expected to produce major breakthroughs in medical diagnostics and therapeutics. Due to the size-compatibility of nano-scale structures with proteins and nucleic acids, the design, synthesis and application of nanoprobes, nanocarriers and nanomachines provide unprecedented opportunities for achieving a better control of biological processes, and drastic improvements in disease detection, therapy, and prevention. Recent advances include the development of multi-functional nanoparticles, nano-structured materials and devices, and engineered nucleases for biological and medical applications.

In this talk I will showcase the recent development of magnetic nanoparticle based approaches in my lab for disease therapies, including heat generation by magnetic iron oxide nanoparticles for hyperthermia and nanowarming, nanoparticle-based stem cell targeting, the use of magnetic nanoparticles for enhancing in vivo drug/gene delivery, and the nanomagnet based delivery of CRISPR/Cas9 systems for in vivo genome editing. The opportunities and challenges of in vivo magnetic targeting are discussed.

Keck Seminar

Friday, Sept 21, 4pm

BioScience Research Collaborative

BRC Auditorium



The Gulf Coast Consortia is a collaboration of:

Rice University | Baylor College of Medicine | University of Houston | University of Texas Health Science Center at Houston
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