Localized Drug Delivery Approaches for Solid Tumor Therapy

Wednesday, April 26
1034 Emerging Technologies Building
9:10 a.m. to 10:00 a.m.

Over the past few decades research at the interface of materials science, drug discovery, biology and clinical translation has enabled the design and development of delivery systems for more effective and less toxic treatment of a variety of conditions such as cancer and infectious diseases. Most of these systems such as liposomes and polymeric matrices are designed for passive delivery of bioactive agents. Recent advances in nanotechnology, materials science and engineering, as well as improved understanding of the diseased conditions have provided opportunities for the development of better defined delivery strategies in response to changes in local stimuli. This talk will focus on a few examples of such strategies. The use of gold nanorod-mediated hyperthermia and high intensity focused ultrasound for enhancing localized delivery of polymer therapeutics to solid tumors will be presented. Example of design and development of recombinant polymers with motifs sensitive to matrix metaloproteases for delivery of gene carriers to treat head and neck tumors and as liquid embolics will be discussed. In vitro and in vivo toxicity and cellular uptake of silica nanoconstructs as a function of shape, size, porosity and surface functionality and development of degradable silica nanoparticles will be presented.

Hamid Ghandehari is a Professor at the Departments of Bioengineering and Pharmaceutics and Pharmaceutical Chemistry, Director of Utah Center for Nanomedicine and Co-Founder and Co-Director of the Nano Institute of Utah at the University of Utah. His research focuses on the design of recombinant polymers for gene and drug delivery, targeted delivery of polymer therapeutics to solid tumors, oral delivery of chemotherapeutics, and assessing the biocompatibility of silica and dendritic nanoconstructs. Dr. Ghandehari is Editor in Chief of Advanced Drug Delivery Reviews, Fellow of the American Institute for Medical and Biological Engineering, the American Association of Pharmaceutical Scientists and the Controlled Release Society. He serves on the scientific advisory board of several national and international drug delivery organizations such as the Controlled Release Society. He has published over 170 articles, and given over 230 invited talks. He received his BS in Pharmacy and PhD in Pharmaceutics and Pharmaceutical Chemistry from the University of Utah.