Harnessing Nanoparticles and Nanofluidics as Sustained, Local Delivery Approaches

Adverse side effects are known to be a critical problem as a result of systemic drug delivery and, therefore, researchers are moving towards local, sustained release approaches. Here, we present several different delivery platform technologies to aid in the continuous, low-dose, constant administration of therapeutics to treat multiple indications. Technologies discussed will include the use of nanochannel membranes for sustained release of therapeutics to treat metabolic syndrome as well as induce bone growth, intratumoral delivery of gold nanoparticles for the treatment of lung cancer, and intrapericardial delivery of polymeric nanoformulations for heart failure. The described implantable nanochannel membrane offers an alternative to conventional daily administration, which is subject to compliance issues in clinical settings.

BIO
Dr. Carly Filgueira obtained her Bachelor of Science degree in Chemistry Magna Cum Laude from The George Washington University in Washington, DC. In her second year as an undergraduate, she was awarded the A.D. Britt scholarship which sponsored her to perform research in the Chemistry Department at GWU under the direction of Dr. J. Houston Miller. She continued in the Miller lab until undergraduate graduation, where they worked on the application of UV-VIS spectroscopy and elastic/inelastic light scattering to examine the chemistry between gold nanoparticles and biopolymers. Dr. Filgueira obtained her masters and doctorate degrees in Chemistry from Rice University in 2005 and 2009. As a pre-doctoral student, she fabricated and characterized optically responsive nanostructures and their plasmonic interactions under the direction of Dr. Naomi Halas. She was awarded several honors, including a NIH Keck Nanobiology training fellowship, NSF sponsorship to attend the 55th Lindau Nobel Laureate Meeting in Germany, and a Dean's Office Travel Award. She was also honored with both The Harry B. Weiser Award for Excellence in Service and The Harry B. Weiser Research Award in Recognition of Research Excellence at Rice University. Dr. Filgueira joined Houston Methodist in 2011 as a postdoctoral student under the direction of Dr. Anders Berkenstam and Dr. Paul Webb in collaboration with Dr. Jan-Ake Gustafsson. She focused on nuclear hormone receptors, specifically Estrogen Receptor beta and Liver X Receptor beta, and small molecule screening using a combination of direct binding and cell based assays. Dr. Filgueira is currently a member of the Department of Nanomedicine with appointments as Assistant Research Member in the Research Institute, and Assistant Research Professor of Nanomedicine in the Institute for Academic Medicine.

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2:00-3:00 pm
Refreshments will be served at 1:45 p.m.