Abstract: Cardiovascular disease remains the leading cause of death in the United States. Coronary artery disease is the most common form of heart disease and involves occlusion and hardening of coronary arteries. Percutaneous coronary intervention (PCI) by either balloon angioplasty or stenting is the main form of treatment to re-open coronary arteries and restore blood flow to the heart. However, up to 60% of these cases end in restenosis, or re-narrowing, of the coronary within 6 months of treatment. The re-occlusion of coronary arteries is not simply due to mechanical recoil, but instead involves a complex biological cascade starting with damage and removal of the endothelium and ending with vascular smooth muscle cell migration and proliferation into the lumen of the coronary arteries (neointimal hyperplasia). As such, a need has existed to develop a better therapeutic approach, which would overcome many of these limitations. Polymeric endoluminal paving technology was established as an effort to develop a therapeutic strategy and technology that would overcome the limitations of stents and extend therapy through the addition of new functionalities. Specifically, paving coats the injured vessel with a polymeric material that: 1. creates a conformal customized support, 2. provides a synthetic lumen-wall barrier and 3. affords a mean for local, sustained therapeutic (Rx) release to the underlying vessel wall. This technology has been shown to decrease neointimal thickening, beyond levels seen with stents, as well as enhance the development of an endothelial layer as the polymer degrades. While paving is an advance over stenting, there is still significant room for improvement of this type of technology. The present paving system is a passive system, without any means of feedback to ongoing local arterial events. The advantage of moving to energy versus drug delivery is that energy is a repeatable means of therapy, without exhaustion from release of a drug, coupled with freedom from drug side effects and non-specificity. It is the focus of this study to explore this topic, specifically one of these added value features – the concept of utilizing galvanotaxis as a therapeutic “electroceutical” delivered via a biodegradable polymer layer.

Host: Dr. Marvin Slepian (chairman.syns@gmail.com)

Please join us on

Monday, April 23rd, 2018  2:00-2:50 pm, Keating 103
Refreshments will be available at 1:45 pm

Persons with a disability may request a reasonable accommodation by contacting the Disability Resource Center at 621-3268 (V/TTY).