Polymer Program

INSTITUTE OF MATERIALS SCIENCE

Seminar: 11:15 am Friday, September 6, 2024

Science 1: Room 1002

WebEx: LINK

Host: Mu-Ping Nieh

Daniel Kohane

Professor of Anesthesiology

Harvard Medical School

Developing Injectable Drug Delivery Systems for Prolonged Local Anesthesia

Abstract: For decades, investigators have been interested in prolonging the duration of local anesthetics, to provide continued patient comfort after procedures, and possibly to treat chronic pain. The need for prolonged local anesthesia has become more urgent with the advent of the opioid epidemic. Here we will discuss the development of injectable drug delivery systems for prolonged local anesthesia. We will also describe on-demand local anesthetics, i.e., where local anesthesia can be repeatedly triggered after administration. Finally, we will discuss a related system that provides on-demand reversal of opioid effect, for use in overdose.

Bio: Dr. Daniel S. Kohane obtained his MD and a PhD in Physiology from Boston University. He subsequently completed residencies in Pediatrics (Boston Children's Hospital) and Anesthesiology (Massachusetts general Hospital), followed by a fellowship in Pediatric Critical Care (Boston Children's Hospital; BCH). He is currently a Senior Associate in Pediatric Critical Care at BCH, where he directs the Laboratory for Biomaterials and Drug Delivery, a Professor of Anesthesiology at Harvard Medical School, and the Vice Chair for Research in the Department of Anesthesiology at BCH. His research interests include drug delivery, biomaterials, and nanomedicine, with considerable overlap between these. Some of the lab's projects are driven by developing new technologies, others by trying to find cures for specific diseases. Pain, opioid use disorder, otic diseases, ophthalmic diseases, peritoneal adhesions, sepsis, and cancer are among the medical conditions that receive the most attention in the lab.