DEPARTMENT OF BIOMEDICAL ENGINEERING SEMINAR SERIES

presents

Chris Camp
BME Ph.D. student

“ELP as universal scaffold to construct diverse antimicrobial materials”

Abstract: Antimicrobial peptides (AMPs) have shown broad range efficacy against antibiotic-resistant bacteria such as gram-positive staphylococcus aureus (MRSA) and gram-negative Yersinia pestis (plague) as well as viruses and fungi. However, treatment of patients with antimicrobial peptides is often limited because high AMP dosages that are necessary for efficacy can be toxic to human organs. Research has shown that materials that locally concentrate AMPs such as nanoparticles increase the antimicrobial efficacy of AMPs, though the production of these materials is generally difficult and high in cost. In this talk I will present our recent development of a universal protein platform inspired by biocompatible elastin-like polypeptide (ELP) that can be synthesized in high yield from Escherichia coli and cost-effectively purified by applying its reversible phase change behavior in response to environmental factors such as temperature, salt concentrations, and pH. Moreover, I will discuss how the phase change behavior allows this ELP-AMP platform to spontaneously transform from membraneous structures to nanoparticles, making it a universal platform that can change into multiple material structures to suit several clinical applications.

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Rheagan Chambers
BME M.S. Student

“Pupillary Device for Ocular Cranial Nerve Monitoring”

Abstract: Inspection of the pupillary reflex and extraocular motor function can provide invaluable information about the integrity of the cranial nerves, as well as indirectly indicate changes in intracranial pressure (ICP). In critical ICU patients and patients with severe traumatic brain injuries (TBI), monitoring these physiological mechanisms has shown that dysfunction may be proportional to the degree of injury. Current devices for reflex pupillometry are based on 40-year-old technology, measure at irregular intervals, and require logistically difficult manipulations. In this presentation, we describe a prototype device design that can be positioned on or nearly on-eye, and provide continuous measurement of both ipsilateral and contralateral pupil responses simultaneously in real-time or near real-time while being minimally invasive. The primary application of this device is in neurosurgery, emergency medicine, and telemedicine.

Please join us on

Monday, September 18th, 2017
2:00-2:50 pm, Keating Bldg, Room 103
Refreshments will be available at 1:45 pm

Host: Jane Mohler, Ph.D.
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Persons with a disability may request a reasonable accommodation by contacting the Disability Resource Center at 621-3268 (V/TTY).