BIOMEDICAL ENGINEERING
COLLEGE OF ENGINEERING AND APPLIED SCIENCE

SUMMER RESEARCH OPPORTUNITIES FOR UNDERGRADUATE students

APPLICATION DEADLINE: 03/01/2023

PROJECT TITLE: Wearable Molecular Monitors

Physical Requirement: Must be able to work at a standing lab bench.
Project's Technical Skills Requirement: • Basic chemistry • Familiarity with electronic test equipment • Good hands-on skills (required for building biosensor devices)
Project's Available Positions: 1

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Project Description

The use of continuous glucose monitors for diabetes management is a historical achievement in modern diagnostics, but unfortunately it remains an isolated success despite acute needs for the real-time monitoring of many other molecules across the broader field of human disease management (cardiac, drug dosing, fertility, etc., Heikenfeld 2019). The limitation is that glucose sensors are enzymatic (i.e., enzymes oxidize/reduce the target molecule), limiting their generalizability to other molecules. Unlike enzymatic sensors, electrochemical aptamer-based (EAB) sensors are broadly generalizable, demonstrated by several examples of real-time demonstrations. This project will be completed in UC’s Novel Device Laboratory, and involves adapting existing continuous glucose meter technology with EAB sensors to measure molecules beyond just glucose.