



# ROBERT E. FISHELL INSTITUTE FOR BIOMEDICAL DEVICES

## 2025 Projects include:

- [Clinical Analysis](#): Measure the levels of oxidative stress in clinical serum samples collected from persons being treated for addiction and mental health disorders. (College Park)
- [Additive Manufacturing](#): Integrate advanced methods from electrochemistry and biology (e.g., protein engineering) to expand the emerging additive manufacturing method of electro-bio-fabrication. (College Park)
- [Redox Biology](#): Use redox as a modality to enable communication between biology and electronics. (College Park)
- [Material Science](#): Develop renewable materials (e.g., polysaccharides and phenolics) as a sustainable platform for electronic and interactive materials. (College Park)
- [Synthetic Biology](#): Couple synthetic biology with electrochemistry to enable gene expression to be controlled electronically. (College Park)
- [Data Analytics](#): Apply physics-based models (e.g., mathematical, molecular and engineering) with data-driven approaches to extract meaning from experimental measurements of complex biological systems. (College Park)
- [Moonlighting functions of Metabolic Enzymes](#): The intern will be involved in engineering KHK to enhance or disrupt its kinase activity, with the aim of identifying the molecular regions responsible for its multifunctional roles. (Baltimore)
- [Additive Manufacturing \(MIRAGE Lab\)](#): Design and manufacture parts using Stereolithography (SLA) and Fused Deposition, Modeling (FDM) technologies in the lab, and other responsibilities. (College Park)
- [Neuronal Plasticity](#): Study the mechanism of neuronal plasticity in small networks of cultured neurons. Opportunities to participate in research projects including, but not limited to, recording from neuronal networks (using HD-MEAs), studying the role of glia-neuron interactions in plasticity, and computational approaches to analyze large-scale data from neuronal networks. (College Park)