

**UC Berkeley**  
**M.Eng. in Bioengineering**  
**Project Opportunities**

The Department of Bioengineering faculty listed below welcome MEng students for the following one-on-one lab internship opportunities:



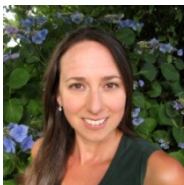
The **Arkin Lab** has two opportunities for students to engage in ongoing research to (1) Help determine genes mediating plant-microbe interactions and (2) Understand how environmental conditions affect type and strength of microbial competition.



The **Conboy Lab** would be interested in mentoring 1-2 MEng students. Lab research focuses on (1) Stem cell niche engineering to boost tissue repair; Orthogonal translation in live mammals to identify the key regulators of myogenesis and neurogenesis; (2) CRISPR approaches to treat genetic disorders of skeletal muscle; (3) Novel clinical modalities for the FDA approved therapies.



The **Fletcher Lab CellScope Project** is developing mobile phone-based medical devices, with applications to infectious and non-communicable disease diagnosis at home and in low-resource settings. M.Eng. students with interest in digital health and point-of-care diagnostics are invited to participate. Expertise in optics, electronics, programming, and image processing is needed to explore new diagnostic ideas and move existing technologies into clinical validation.



MEng projects in The **Herr Lab for Bioinstrumentation for Quantitative Biology & Medicine** will center on design, prototyping, and validation of controller infrastructure for our microfluidic tools and devices. A major focus of our lab is engineering innovation for analysis of complex biological systems -- as is required to address questions important to both fundamental biological systems and applied clinical research. We employ a combination of approaches drawn from chemical engineering, mechanical engineering, and electrical engineering with strong foundations in biology, materials science, and analytical chemistry. In essence, we strive to advance the "mathematization" of biology & medicine. MEng projects will dovetail with this overarching goal and focus on control

systems for thermal and mass transfer, interfacing to microfluidic devices, and optical systems for quantitative characterization of microscale phenomena. MEng students will strengthen their engineering design expertise, including in understanding/assessing unmet needs, development of quantitative performance specifications, innovation in devising solutions (“ideation”), experience with solid/thermal/optical modeling approaches, and hands-on prototyping and testing experience. The MEng students will also gain valuable experience in quantitative analysis and statistical methods, project management, and in both oral and written communication.



The **Kumar Laboratory** investigates how mechanics and materials influence cell and tissue behavior, with an eye towards developing new biotechnologies for stem cell engineering and cancer. Virtually all of our work fuses traditional cell and molecular biology approaches with cutting-edge microscale engineering tools, including microfluidics, single-cell analysis, atomic force microscopy, and femtosecond laser ablation.



The **Liepmann Micro-Fluid Dynamics Laboratory** is a multidisciplinary group working on many aspects of fluid mechanics at small scales. This work spans many areas including

- Design of MEMS and Microfluidic Devices, Components and Systems,
- BioMEMS and the application of MEMS to Biomedical Problems,
- Fundamental studies of fluid mechanics at very small scales, and
- Integrated systems.



The **Murthy Laboratory** is focused on developing new materials for drug delivery and molecular imaging. We currently have projects on delivering Cas9 protein in vivo, the development of new antibiotics, and the development of new assays for rapid screening of bacterial drug resistance.