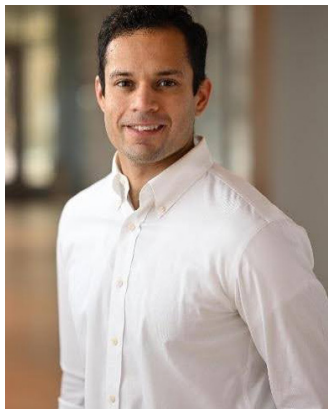


Bioelectronics for closed loop disease management



PRESENTED BY

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Assistant Professor
Electrical Engineering
Stanford University

SCHEDULE

Doherty Hall (DH) 2315

**Thursday
August 27th
(9:30 AM - 10:30 AM)**

Recent advances in engineering science have led to new classes of medical devices with emergent mechanical, electrical, and thermal properties that offer new opportunities for interfacing with living cells. I will discuss conceptual advances in microfabrication, device physics, power transfer and microscale transport phenomena that enable novel biosensors and drug and cell delivery systems, with an emphasis on three recent examples from our work: (i) Soft, skin-interfacing wearable flow sensors for novel neurosurgical diagnostics; (ii) Implantable devices for the delivery of particulate forms of biologic drugs; (iii) Battery-free bioelectronic systems for “living drug factories” that combine inorganic device elements with living cells for long-term, functional cures for a range of diseases with an emphasis on oxygenation strategies and immune-isolation. I will illustrate the utility of the latter platform with examples of specific cell and disease models. Finally, I will present a vision for how these types of technologies could lead to both fundamental scientific discoveries and next generation bioelectronic cell therapy platforms for the treatment and sensing of chronic disease.

Siddharth R. Krishnan, PhD, is an Assistant Professor of Electrical Engineering, and, by courtesy, of Bioengineering and Materials Science and Engineering at Stanford University. His work has focused on the development of bioelectronic devices for sensing and therapeutics. focused on translating his graduate work on wireless wearable diagnostic tools for neurological surgery. His work has been recognized through several awards, including a postdoctoral fellowship from the Juvenile Diabetes Research Foundation, the 2019 Illinois Innovation Prize, a graduate student medal from the Materials Research Society and being named on MIT Technology Review’s Global Innovators Under 35 list and on Forbes 30 under 30 list in science.