Materials Science & Engineering Seminar Series

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Nanostructured Interfaces for Therapeutic Delivery

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ABSTRACT:
The field of nanomedicine offers great potential to revolutionize clinical care, including medical devices, regenerative medicine, and molecular imaging approaches. Recent advancements in nanofabrication applied to biocompatible and biologic materials lay the groundwork for creating biomaterials with a high level of control at the molecular scale. These subtle interactions with cell and tissue assemblies can modulate properties such as proliferation, mechanotransduction, growth factor production, and immune activation. In particular, nanostructured materials may offer potential advantages over conventional drug delivery materials by providing topographic cues to enhance in vivo bioadhesion or paracellular transport. Examples include nanostructured thin films for enhancing the transport of biologics as well as nanostructured biopolymers for the modulation of fibrosis. By gaining a better understanding of how small scale topographies can influence the biological microenvironment, we can design more effective platforms for therapeutic delivery and tissue regeneration.

BIOGRAPHY: Dr.Tejal Desai is currently Professor and Chair of the department of Bioengineering and Therapeutic Sciences at the University of California, San Francisco. She is also a member of the California Institute for Quantitative Biomedical Research, former chair of the UCSF/UC Berkeley Graduate Group in Bioengineering, and founding director of the UCSF/UC Berkeley Master's in Translational Medicine. She received the Sc.B. degree in Biomedical Engineering from Brown University in 1994 and the Ph.D. degree in bioengineering from the joint graduate program at University of California, Berkeley and the University of California, San Francisco, in 1998. Dr. Desai currently directs the Laboratory of Therapeutic Micro and Nanotechnology where her research focuses on using micro and nanofabrication techniques to develop devices for cell and drug delivery, scaffolds for cell and tissue regeneration, and functional biomaterials. In addition to authoring over 200 technical papers and delivering over 200 invited talks, she has chaired and organized numerous conferences and symposia in the area of bioMEMS, micro and nanofabricated biomaterials, and micro/nanoscale drug delivery/tissue engineering. Her other interests include K-12 educational outreach, gender and science education, science policy issues, and biotechnology/bioengineering industrial outreach.

Her research efforts have earned recognition including Technology Review's "Top 100 Young Innovators," Popular Science's Brilliant 10, and NSF's New Century Scholar. Some of her other honors include the Eurand Grand Prize Award for innovative drug delivery technology, the Young Career Award from the Engineering in Medicine and Biology Society (IEEE EMBS), the Dawson Biotechnology award, and the UC Berkeley and Brown University Distinguished Engineering Alumni awards. In 2015, she was elected to the National Academy of Medicine.

Doherty Hall 2315, 11:30AM
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