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"Nanostructured Interfaces for Therapeutic Delivery"

Abstract: Efficient drug delivery remains an important challenge in medicine. Continuous release of therapeutic agents over extended time periods; local delivery to overcome systemic toxicity; penetration through biologic barriers, and increasing patient compliance are some of the unmet needs of present drug delivery technology. This talk will discuss in vivo drug delivery strategies that capitalize on the strengths of micro and nanofabrication. By taking advantage of our ability to control topography and chemistry at submicron size scales, we have developed organic and inorganic interfaces which modulate cell function while at the same time allow for enhanced therapeutic delivery. Examples include nanostructured microdevices for mucosal delivery, nanotubular architectures for vascular stent applications, and nanoporous thin films for ocular drug delivery. Such nanoengineered interfaces may be optimized for biomolecular selectivity and surface bioactivity, leading to unique interfacial properties not achieved through existing drug delivery approaches.

Bio: Dr. Tejal Desai is currently Professor of Bioengineering and Therapeutic Sciences at the University of California, San Francisco. She is also Chair of the UCSF/UC Berkeley Graduate Group in Bioengineering, Director of the UCSF/UC Berkeley Translational Medicine Program (MTM), and a member of the California Institute for Quantitative Biomedical Research. Dr. Tejal Desai directs the Laboratory of Therapeutic Micro and Nanotechnology at UCSF. Her research uses micro and nanofabrication techniques to create implantable biohybrid devices for cell encapsulation, drug delivery, and templates for cell and tissue regeneration. In addition to authoring over 150 technical papers and delivering over 150 invited talks, she is the co-editor of an encyclopedia on *Therapeutic Microtechnolog* and a senior editor of *Langmuir* and *Biomedical Microdevices*.

Desai's research efforts have earned her numerous awards. She has been cited by Technology Review Magazine as one of the nation's "Top 100 Young Innovators", received the Global Indus Technovator Award, and named as Popular Science's Brilliant 10. Desai's teaching efforts were recognized when she won the College of Engineering Best Advisor/Teacher Award. She also won the National Science Foundation's "New Century Scholar" award and the NSF "CAREER" award, which recognizes teacher-scholars most likely to become the academic leaders of the 21st century. Her research has also earned her the Visionary Science Award from the International Society of BioMEMS and Nanotechnology, the 2003 and 2006 Eurand Grand Prize Award for innovative drug delivery technology, the 2007 Young Career Award from the Engineering in Medicine and Biology Society (IEEE EMBS) and the UC Berkeley Distinguished Young Alumni award.