

Nanotechnology platform for personalized cancer treatment

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Considerable technological success has been achieved in this burgeoning field of nanomedicine, but there remain substantial challenges, from this becoming a new paradigm in modern and evolving human needs for diagnostics and therapeutics. These include the complexities and heterogeneity of biology of chronic diseases, an incomplete understanding of nano-bio interactions and the challenges regarding chemistry, manufacturing and controls required for clinical translation and commercialization. This presentation will highlight the progress, challenges and opportunities in nanomedicine and discuss novel engineering approaches that capitalize on our growing understanding of biology and nano-bio interactions. Advances in knowledge of tumor microenvironment and the realization that the use of cancer cell cultures in 2D-monolayer format for anticancer drug discovery are responsible for the high attrition rate of drugs in clinical trials have led to use of 3D cell culture platforms that closely mimic *in vivo* tumors. Herein, we review the difference between 2D and 3D cultures and provide use of various nanotechnology platforms that are used not only to explicate the development of novel drug candidates that target tumor microenvironment, but also facilitate in personalizing cancer treatment.

Biography

Shyam Mohapatra is a distinguished USF Health Professor, Director of the Division of Translational Medicine (Internal Medicine) and Associate Dean of Graduate Programs at the College of Pharmacy in the University of South Florida. He also directs the USF Center for Research and Education in Nanobio-Engineering and is a Research Career Scientist at the James A Haley VA Hospital in Tampa. He has published over 200 papers and holds over 30 US and foreign patents. He is a Fellow of the AAAAI, NAI, AIMBE and AAAS and a 2014 Inductee of the Florida Inventors Hall of Fame

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