

Biotechnologicals and Nanomedicine

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Nanomedicine has become the leading source of research for the treatment of many hard to treat diseases. Nanomedicines are known for their ability to improve the solubility, stability, biodistribution, and controlled delivery of drugs that are not biocompatible; however, the shift towards more biotechnological drug molecules such as enzymes, DNA, siRNA, and mRNA still present numerous difficulties for their successful delivery. The sensitivity of these molecules to formulation stresses, biological stresses, and their need to be delivered to the right biological compartment to have a therapeutic effect is still one of the dogmas of nanomedicine delivery of bio-drugs. This talk will focus on problems and recent research to deliver these powerful but sensitive molecules, with a highlight of some of our own recent results to improve the protection of enzymes and DNA during formulation and by incorporating the use of microfluidic technology that is leading the way in new nano based vaccine and drug delivery system production.