

# 5<sup>th</sup> World Congress on **Biotechnology**

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## Ocular delivery of peptides and proteins

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The recent advances in the field of biotechnology have resulted in a multitude of proteins and peptides being used to treat diseases in a safer and more efficient way. However, the delivery of these 'biotechnology derived' drugs remains a challenge since most of these drugs are still delivered parenterally. A number of options are therefore being considered by researchers such as the oral, pulmonary, nasal and ocular route. Although each of these delivery routes has its pros and cons, this presentation will focus on the strategies or approaches used for ocular delivery of these biologic drugs. One of the approaches studied is the use of prodrugs to change the physicochemical properties of a drug in order to increase its permeation across the cornea thereby enhancing bioavailability. A number of peptide prodrugs of ganciclovir have been developed aimed at achieving this result. Another approach employed is the use of mucoadhesive particulate carriers. The use of cationic mucoadhesive polymers like chitosan can help prolong the retention time of the polymer-associated drug. The delivery of cyclosporine A has been studied using chitosan composed nanoparticles. Similarly, liposomes, biodegradable nanoparticles, solid-lipid nanoparticles, dendrimers, etc. are also being investigated for delivery of proteins and peptides to the eye. The use of eye drops containing penetration enhancers have also been studied for systemic delivery of insulin through the eye. Although a successful product based on these strategies is yet to be approved, the current development in this field encourages researchers and shows promise for the future.

### Biography

Richard Addo is currently an Associate Professor of Pharmaceutics at Union University, School of Pharmacy, Jackson TN USA. He completed his PhD from Mercer University, Atlanta GA and thereafter served as an Assistant Professor in Shenandoah University School of Pharmacy and Adjunct Professor at George Washington University, School of Medicine simultaneously. He has published several research papers related to the development of microparticulate systems for drug delivery and served as reviewer for peer reviewed journals. Currently, his research involves exploring the formulation of nanoparticles containing anti-oxidants and anti-angiogenic drugs for ocular delivery and treatment of Age Related Macular Degeneration.

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