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Enhancing antigen delivery and immunogenicity through the use of particles in vaccines

The future of vaccine development will integrate quality by design at vaccine conception to ensure desired efficacy and safety product profiles. The ability to define protective immune responses and desired mechanisms to target appropriate immune cells would be a key advantage in the development of next generation vaccines. For respiratory diseases like Flu and Pneumonia, protection from disease is generated by antibodies recognizing surface antigens. Intracellular pathogens like Mycobacterium tuberculosis require more sophisticated immunological responses to both control and eliminate disease. The evolution of vaccine development has evolved from inactivated whole cell microorganisms, to subunit vaccines that contain protein or protein-PS conjugates, to next generation vaccine candidates that include completely synthetic systems. Novel technologies allowing developers to design vaccines targeting specific immune response via selection of protective antigens with or without adjuvants would enable more directed immune targeting and potentially provide increased efficacy with improved safety outcomes. The PRINT® technology is a novel particle platform technology designed to incorporate quality early in the development process. The PRINT technology enables unique formulation advantages that have broad implications to vaccines development and production methodologies. The induction of potent immune responses to multiple protein/polysaccharide antigens without adjuvants has been demonstrated with PRINT particles. Co-delivery of antigens and adjuvants has been shown to improve both T cell and B cell immune responses including adjuvant dose sparing. Formulation of combination vaccine products containing incompatible components has also been shown with PRINT particles. The advantages demonstrated to date by the PRINT technology could profoundly impact the vaccine industry as products are brought to the clinic.

Biography

Michele Stone has completed her PhD in Biochemistry and Molecular Biology from University of Maryland, Baltimore and Postdoctoral studies also at the University of Maryland in the fields of Physiology and Neuorscience. She is currently the Executive Director of Vaccines at Liquidia Technologies, a premier biotechnology company focused on development of particulate based drug products to provide global health solutions. She has published more than 15 patents and many articles in reputed journals. She has a PMP certification and brings a perspective of life cycle management to product development.

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