

5th Asia Pacific Global Summit and Expo on **Vaccines & Vaccination**

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Modern vaccine delivery systems

Subunit vaccines that contain the minimal microbial components necessary to stimulate appropriate immune responses have the potential to overcome allergic response or autoimmunity that can result from using classical vaccines. We developed new delivery systems by combining the adjuvant and antigenic peptide epitopes into one chemically bonded dendritic entity. Our self-adjuvanting lipid core peptide (LCP) dendrimer system included an antigen, a T helper epitope, a carrier, and the adjuvant within the same molecular entity. We tested our vaccine delivery platform using Luteinizing Hormone Releasing Hormone (LHRH) as a peptide antigen to control fertility and treat prostate cancer. The anti-LHRH vaccine constructs have shown promising results, eliciting antibodies against LHRH in murine and ovine models. The approach is suitable for modifying other peptide vaccine candidates of interest.

Infection with group A streptococci (*Streptococcus pyogenes*, GAS), one of the most common human pathogens, can result in a broad range of diseases, with the potential to develop acute and post-infectious rheumatic fever and rheumatic heart disease. Immunity to GAS relies on the production of opsonic antibodies specific to the hypervariable N-terminal and conserved C-terminal regions of the coiled-coil α -helical M protein. The presentation of epitopes was optimized to elicit a strong, biologically relevant (IgA, IgG) immune response.

Biography

Professor Istvan Toth is a Chemical Engineer specialized in Medicinal Chemistry. Istvan ARC Australian Professorial Fellow is Chair in Biological Chemistry and Professor of Pharmacy at the University of Queensland. He has an adjunct Group leader appointment at the Institute of molecular Biosciences, UQ as well. His Ph.D. and postdoctoral research was focused on organic synthesis; mainly on reserpine alkaloids and terpenes. Then he changed his research directions towards peptide and carbohydrate chemistry and nowadays he is an internationally recognized expert in drug delivery. In 1994, he was awarded a DSc degree for his work on Drug Delivery. Istvan is also an elected Fellow of RACI and the Queensland Academy of Art and Science.

He has also demonstrated track record in research commercialization; Professor Toth is one of the key founders of Alchemia (ASX listed), Implicit Bioscience Pty Ltd, Neurotide Pty Ltd and TetraQ.

He is the Editor in Chief of Current Drug Delivery and Drug Delivery Letters; Associate Editor of Medicinal Chemistry; Board Member of Mini Reviews in Medicinal Chemistry, Open Drug Delivery, Open Medicinal Chemistry and Current Patents in Drug Delivery. Professor Toth has over 300 peer-reviewed publications and 43 patents.

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