

DENDRITIC-CELL PEPTIDE TARGETING LIPOSOME PLATFORMS FOR ANTIGEN-SPECIFIC IMMUNOTHERAPY

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This talk will discuss functional dendritic cell subsets and their potential as targets for nanoparticulate cancer vaccines and tolerising immunotherapies for autoimmune diseases. In the autoimmune disease, rheumatoid arthritis (RA), disease modifying strategies with anti-inflammatory effects are used for treatment. Good response rates are achieved. However, limitations include toxicity, a response rate ceiling, cost and rationing of biologic therapies, inability to cure or permanently reverse RA pathology, and inability to prevent disease. In contrast other autoimmune diseases, such as type 1 diabetes (T1D), have no disease modifying strategies. In a recent proof-of-concept trial, delivery of autoantigenic peptides and autologous tolerogenic dendritic cells was safe and had immunomodulatory effects in RA. Subcutaneous peptide delivery has shown promise for immunotherapy of T1D. Checkpoint Immunotherapies have revolutionised the treatment of many cancers, such as melanoma and non-small cell lung cancer. Key limitations include poor overall response and toxicity – including autoimmunity - associated with indiscriminate immune stimulation. In both cancer and autoimmune disease, antigen-specific nanoparticle strategies targeting dendritic cells promise greater specificity and safety, without general immune suppression or activation, as well as the potential for intervention in at-risk subjects before disease onset. I will discuss the development, trials and associated challenges of novel liposome-based antigen-specific immunotherapies for cancer vaccination and tolerising strategies for autoimmune diseases.