

International Conference & Exhibition on Vaccines & Vaccination

22-24 Nov 2011 Philadelphia Airport Marriott, USA

Development of dendritic cell-based tumor vaccines with high efficacy by targeting the negative regulators of DC functions: Guiding the ‘misguided’

Fang-Ping Huang

Faculty of Medicine, Imperial College London, UK

The DC-based therapeutic vaccine has been a theoretically attractive approach being explored for cancer treatment during the last 2 decades. Its clinical application, however, has thus far been limited by the lack of achievable general efficacy and consistency. One of the major obstacles is believed to be the immunosuppressive tumor microenvironment these live DC cells are subjected to. To develop a novel DC-based tumor vaccine with high efficacy and stability, we have designed, tested and compared different ways of enhancing DC immunogenicity by functional conditioning of the cell vectors, targeting both the positive and negative arms of immune regulation. Findings from our studies indicate that the most effective way to enhance the vaccine efficacy is to block the negative regulators of DC functions. We showed that the vaccines delivered by DCs devoid or knock-down of IL-10, a potent immunosuppressive cytokine expressed by DC, were superior over the conventional DC vaccine in triggering anti-tumor immunity. The DCs lacking IL-10 were immunologically heightened, expressing enhanced levels of surface MHC class II molecules and Th1-related cytokines. By inducing tumor-specific killing and through the establishment of immunological memory, the IL-10/-DC vaccines could evoke strongly both therapeutic and protective immunity *in vivo*. This concept, based on original insights from studies on the mechanisms underlying autoimmunity, has now been tested by us successfully in different animal models of liver (hepatoma) and skin (melanoma) cancers [1-4]. It will have a great impact once being translated clinically into the treatment of malignant, and potentially infectious, diseases in man.

Biography

Dr Huang received his medical training in China (Shantou, 1977-82), and was awarded the Li Ka Sheng Academic Foundation Fellowship to undertake postgraduate training in the UK (1987-90). He has subsequently become engaged in active immunology research and teaching in the Universities of Glasgow (1990-97), Oxford (1997-2000) and Hong Kong (2000-7). He is now a Senior Lecturer affiliated to Imperial College London (since 2007). Immunology is his major field of research, with a focus on immune regulation in autoimmunity. He has published many papers in high impact scientific journals, and served in the editorial boards for 6 international scientific journals/publishers.