

Evaluation of a new generation dendritic cell-based vaccine for treatment of patients with castration-resistant prostate cancer

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Active immunotherapy using *ex vivo* generated dendritic cells (DCs) represents a promising treatment option for control of minimal residual disease (MRD) in cancer patients by boosting the patient's immune response to tumor antigens. However, the clinical benefit of DC-based vaccines is still not satisfactory.

In order to improve the clinical outcome of DC-based immunotherapy, we have developed a new generation of DCs with improved immunogenicity and optimized for the use in cell-based immunotherapy of cancer. These DCs are generated within 3 days of culture and have capacity for induction of Th1-polarized T cell responses. Currently, we develop a DC-based vaccine formulation specific for the treatment of patients with castration-resistant prostate cancer (CRPC). Therefore, we perform an extensive preclinical evaluation of DCs expressing different antigens associated with prostate cancer (CaP). To qualify for use in a DC vaccine formulation, expression of the candidate antigen must be detectable in DCs, following transfection with antigen-encoding mRNA. Additionally, it is important that antigen expression does not negatively influence phenotype and function of our optimized DCs. Moreover, only CaP-antigens able to activate antigen-specific T cell responses *de novo* are considered for the final DC vaccine formulation.

Up to now four antigen candidates demonstrated high potential for use in a DC vaccine formulation. Antigen expression in the DCs was demonstrated by flow cytometry and not altered by cryopreservation. Moreover, antigen expression and cryopreservation did not negatively impact on the co-stimulatory profile and migratory capacity of the DCs as well as on their ability to secrete the pro-inflammatory cytokine IL-12p70. Furthermore, in autologous priming experiments these four CaP-antigens showed capacity for induction of antigen-specific T cell responses *in vitro*.

For the final vaccine formulation, the three best candidate antigens will be selected after completion of our validation program.