

# 4<sup>th</sup> World Congress on **Virology**

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## **Chimigen® HBV therapeutic vaccine: A novel dendritic cell receptor-targeted immunotherapy for treating chronic Hepatitis B virus infection**

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Worldwide, there are more than 370 million people who are chronically infected with Hepatitis B Virus (HBV) and at the risk of developing liver cirrhosis and hepatocellular carcinoma. More than one million people die every year due to complications of HBV-related chronic liver disease. Antiviral agents can efficiently control virus replication, but rarely eliminate the virus and the emergence of mutant strains of the virus is a major disadvantage. Host immune help is needed in the complete elimination of viral infection. Immunotherapeutic approaches to treating chronic HBV infection is a major unmet medical need, and currently none is available.

Chimigen® Vaccines are a new class of chimeric molecules with functional attributes of both antigen and antibody. These molecules target the host immune system using specific receptors on dendritic cells (DCs), are taken up and processed for antigen presentation through both MHC class I and class II pathways to elicit cellular and humoral immune responses. Chimigen® HBV (S1/S2-core) Vaccine, a fusion protein of HBV S1 and S2 surface antigen fragments, Core and a murine Fc fragment was produced in insect cells. In ex vivo assays using human PBMC-derived DC/T cell assays, the vaccine, following binding to CD32 and CD206 receptors, was internalized and activated T cells (CD8+/CD4+) which produce IFN- $\gamma$ , TNF- $\alpha$ , GrB, Pfn and are capable of killing target cells. These effects were also shown in assays using HBV-infected individuals. In addition, the vaccine showed production of T responder cells which are capable of removing T regulatory cells which induce tolerance to HBV in the host. In animal studies, the vaccine elicited T cell and B cell activation, induced the production of inflammatory cytokines in the liver of HBV-transgenic animals.

### **Biography**

Rajan George is President & Chief Scientific Officer at Akshaya Bio Inc., Edmonton, Canada. Previously, CTO, Paladin Biosciences and Senior VP of ViRexx Medical Corp. Received Ph.D degree in Biochemistry from the Indian Institute of Science (Bangalore, India). Had Postdoctoral training at the University of Wisconsin in Madison, WI, USA and at the University of Alberta (Edmonton, Alberta, Canada). Holds Adjunct Faculty appointment in the Faculty of Medicine and Dentistry, University of Alberta, Edmonton, Canada. Lead inventor of Chimigen® Technology with more than 16 issued patents.

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