HIV Therapeutic Vaccine

Summary

A next-generation immunotherapy, targeting HIV peptide antigens to dendritic cell (DC) via novel recombinant antibody fusion proteins to mount cellular immunity. Baylor Scott & White Research Institute has identified the superiority of CD40 over other DC receptors (both C-type lectin and non-lectin) for eliciting antigen-specific CD8+ T cell responses required for effective anti-viral immunity

Key Investigator
Gerard Zurawski, PhD

Field
Immunology

Technology
DC-targeted fusion proteins

Key Features
Therapeutic vaccine

Stage of Development
Preclinical proof of concept

Status
Available for licensing

Patent Status
US8961991
Worldwide patents issued or pending

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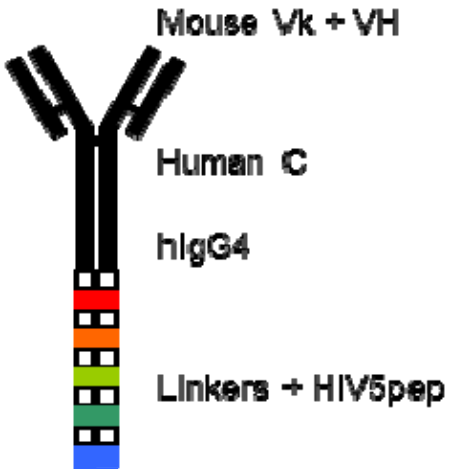
Market

HIV continues to be a major global public health issue. In 2014, an estimated 36.9 million people were living with HIV (including 2.6 million children). The standard of care treatment is a combination of antivirals to reduce the viral load. Using antiretrovirals in various combinations delays resistance and enhances the potency of the drugs. Resistance, which can take weeks to months to evolve, occurs when a mutation in the structure of the virus enables it to evade the action of the drugs. Once HIV becomes resistant to a drug, the drug is no longer effective. Thus, there is a need for improved treatments.

Currently, vaccine treatment strategies combining DNA, viral vectors, or proteins are being explored. BSWRI has developed novel immunotherapeutic proteins to boost HIV antigen-specific CD8+ cell responses.

Technology

One candidate molecule is a fusion protein of a humanized anti-CD40 (IgG4) and HIV peptide antigens from Gag, Nef, and Pol fused to both the heavy and light chains. In collaboration with the National Agency of Research on AIDS and Viral Hepatitis (ANRS) in France, BSWRI and ANRS have demonstrated robust antigen-specific CD8+ T cell expansion in vitro in HIV patient PBMC and in vivo in non-human primates. Cell line development of this molecule has been completed. GMP manufacturing and clinical trials in HAART-controlling HIV patients are planned.



For more information see publication: Flamar AL, etc. Targeting concatenated HIV antigens to human CD40 expands a broad repertoire of multifunctional CD4+ and CD8+ T cells. AIDS. 2013 Aug 24;27(13):2041-51