

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

October 06-08, 2014 Hilton San Antonio Airport, TX, USA

## **Adeno-associated virus vectors expressing IFN- $\beta$ induction pathway activating elements as alternative to recombinant IFN- $\beta$ antiviral refractory treatments**

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Detection of pathogens by cells is a key event of defense against infections. RIG-I like receptors (RLRs) detect specific RNAs produced by virus replication and activate a signaling cascade that results in the production of interferon beta (IFN- $\beta$ ) as well as several other antiviral and proinflammatory cytokines. Conventional type I IFN antiviral treatments are based on administration of recombinant purified protein or administration of different vectors that can produce type I IFN. Despite its proven antiviral and antitumoral effects, many individuals do not respond to administration of such therapies. We hypothesize that triggering of RLR pathways instead of direct IFN administration is a valid alternative for the induction of antiviral, antiproliferative and proinflammatory genes. We have developed adeno-associated virus (AAV) vectors expressing different elements of the RLR dependent pathway. Some constructs lead to an efficient IFN- $\beta$  induction in a broad spectrum of cells from different species. Those vectors have been tested for their ability to induce IFN- $\beta$ , creating an antiviral state in different *in vitro* and *in vivo* models, even in a scenario that is not responding to recombinant IFN- $\beta$ . Some of AAV vectors can synergize with the host immune system and combat viral infections. We propose the use of our strategy as an alternative to malignancies that are refractory to such type I IFN treatment like some IFN-treated resistant chronic viral infections.

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