Retrovirology

Oral presentation

Novel Adenovirus Vector-Based Vaccines for HIV

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To overcome the problem of pre-existing anti-Ad5 immunity, rAd vectors are being developed from rare Ad serotypes such as Ad35. However, studies have suggested that rAd35 vectors are less immunogenic than rAd5 vectors. We therefore constructed novel chimeric rAd35 vector incorporating the Ad5 fiber knob (rAd35k5). Both rAd35 and rAd35k5 vectors proved immunogenic in mice with and without anti-Ad5 immunity. In rhesus monkeys, rAd5 vectors elicited potent Gag/Env-specific immune responses, but a homologous boost immunization failed to enhance these responses as a result of high Ad5-specific NAbs. The rAd35 vectors elicited lower antigen-specific immune responses as compared with rAd5 vectors, but these responses increased substantially following a homologous boost immunization, consistent with lower vector-specific NAbs induced in these animals. Interestingly, rAd35k5 vectors elicited antigen-specific immune responses and vector-specific NAb titers that were between those induced by rAd5 and rAd35 vectors following the initial immunization. After the boost immunization, rAd35k5 vectors elicited potent cellular immune responses that were 2–3-fold higher than those elicited by both rAd5 and rAd35 vectors. These data demonstrate the immunogenicity of rare serotype and chimeric rAd vectors in rhesus monkeys. Moreover, these studies suggest that chimeric rAd vectors can be constructed to combine the beneficial immunologic and serologic properties of different Ad serotypes.