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# Mother-child immunity against HIV-1 after gagp, nef, tat, gp160/rev plasmid DNA prime recombinant gp160 boost vaccine regimen.

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**Background:** HIV-1 subtype B vaccine was used shown to induce potent responses in immunized newborn animals born to HIV-1 immune mothers. Further enhanced immunogenicity by HIV-1 DNA immunization when mucosal adjuvants are used.

**Objectives:** To evaluate the importance of HIV-1 plasmid/recombinant protein induced immunity in the mother when immunizing pups early in life.

**Methods:** Female C57Bl/6 mice were immunized three times with a combination of HIV-1 plasmids encoding gag, envelope, rev, nef and tat of subtype B or with empty plasmid as control. The females were divided into three immunization regimens, intramuscular, epidermal or intranasal routes of immunization. Further each group was further divided into groups with and without adjuvant in combination with the plasmids. The adjuvants used were N3 and PCPP. When a clear HIV-1 specific gag/env specific immunity was detected in the adult mice they were made pregnant. The newborn pups were then allowed to breast feed for 3 weeks before they were HIV-1 DNA plasmid immunized i.n.a, i.m or epidermally with or without adjuvant. The immunological assays used were for the cellular responses IFN-γ ELISpot. The HIV-specific humoral response was analyzed by ELISA, which was performed on serum IgG and IgA, fecal pellet IgG and IgA vaginal wash IgA.

**Results:** HIV-1 DNA and recombinant protein induced immunity was strong in the female adult mice when adjuvants N3 or PCPP was used. Among the newborn pups born to HIV-1 immune mothers a significantly stronger HIV-1 immunity was seen. In pups born to HIV-1 negative mothers. HIV-1 specific immunity was ewoked only if HIV-1 DNA combined with adjuvant N3 or PCPP was used. Mucosal (fecal and vaginal) immune responses was only seen in animals immunized via the intranasal routes, with highest HIV-1 specific IgA titers when adjuvant was used

**Conclusions:** Animals born to HIV-1 immune mothers benefit by responding with stronger humoral responses against HIV-1. To deliver HIV-1 DNA plasmids with adjuvant intranasally enhances the humoral immune responses, systemically and mucosally.