Table 16: **Env**

HXB2 Location	Author Location	Sequence	Immunogen	Species(HLA)	References
Env( )	gp160( )		HIV-1 canary pox vaccine	human( )	[Belshe (1998)]
	• The live canary pox vaccine ALVAC-HIV(vCP205) carrying MN gp120, LAI gp41, Gag and Protease, and boosted with SF-2 rpg120 was given to HIV-1 seronegative volunteers – HIV-specific Env or Gag CD8+ CTL were detected in 64% of the volunteers				
Env( )	gp41(842–850 IIIB BH8)		HIV-1 infection	human(B7)	[Pantaleo (1997), Soudeyns & Pantaleo(1997)]
	• Clonotype-specific PCR and analysis of *in vivo* HIV-specific CTL showed that in early infection HIV-specific CTL clones preferentially accumulate in blood rather than lymph nodes and that they accumulate prior to down-regulation of virus				
Env( )	Env( )		HIV-1 infection	human( )	[Buseyne (1998b)]
	• In infants with positive CTL responses, most responses showed cross-clade reactivity with somwhat diminished recognition of epitopes from different subtypes				
Env( )	gp120( )		gp120 or gp160 DNA vaccine	Rhesus monkeys( )	[Shiver (1997)]
	• DNA vaccinations of Rhesus monkeys with a gp120 or gp160 DNA vaccine elicited a strong CD8 cytotoxic T cell response				
Env( )	gp160( )	polyclonal	HIV-1 infection	Macaca nemestrina()	[Kent (1997b)]
	• Macaques can be infected with HIV, and clear the infection within 6 months, so it is of interest to examine their initial immune response • A strong CTL response against env, pol and gag antigens can be detected • The CTL response peaked by 4 weeks and declined dramatically by 8 weeks • The response in the lymph nodes and peripheral blood was comparable				
Env( )	gp160( )		DNA gag/pol, vif, and env vaccine	murine( )	[Kim (1997b)]
	• A gag/pol, vif or env DNA vaccine, when delivered in conjuction with the plasmid encoding the co-stimulatory molecules B7 and IL-12, gave a dramatic increase in both the cytotoxic and proliferative responses in mice • When IL-12 was present, CTL response could be detected even without *in vitro* stimulation				
Env( )	gp160( )		DNA gag/pol, and env vaccine	murine( )	[Kim (1997c)]
	• A gag/pol or env DNA vaccine, when delivered in conjuction with the plasmid encoding the co-stimulatory molecules CD86, gave a dramatic increase in both the cytotoxic and proliferative responses in mice • When CD86 was present, CTL response could be detected even without *in vitro* stimulation				

HXB2 Location	Author Location	Sequence	Immunogen	Species(HLA)	References
Env( )	gp120( )	polyclonal	gp160 DNA vaccine, env protein boost	Macaca mulatta( )	[Letvin (1997)]
• Vaccination of Macaques mulatta (Rhesus monkeys) with a HXBc2 env DNA prime and a protein boost elicited a T-cell proliferative response, a CTL response, and type-specific neutralizing antibodies • Vaccinated animals challenged with SHIV-HXB2 were protected from infection					
Env( )	gp120( )	polyclonal	env + rev MN DNA vaccine	human( )	[MacGregor (1998)]
• An HIV DNA env and rev vaccine given to 15 asymptomatic HIV+ individuals at three different dosages, 30, 100 or 300 ug, was safe • The CTL response to gp120 was enhanced in 0/4 patients in the 30 μg group, 2/3 patients in the 100 μg group, and 0/3 in the 300 μg group – but the non-responding patients in the 300 μg group had a strong CTL response prior to vaccination, and the CTL results are inconclusive					
Env( )	gp120( )		HIV infection	human( )	[Trickett (1998)]
• 12 HIV-1 infected patients were re-infused with their own lymphocytes, cryopreserved from an earlier time point in the infection • Improvement in CD4+ and CD8+ T cells was seen in 7/12, and an increase in the CTL response to Env was seen in one patient					
Env( )	gp120( )		HIV infection	human( )	[Legrand (1997)]
• 17 recently infected patients were tested for CTL response to HIV proteins Env, Gag, Pol, Rev, Nef, Vif and Tat • An early response (within a month following PI) was noted in 87% of the subjects to Gag, 75% to Env, and 50% to Nef • Early responses to Pol, Rev, Vif and Tat were rare					
Env( )	gp120( )		HIV infection	human( )	[Corey (1998)]
• Vaccinia-naive subjects were vaccinated with vaccinia-gp160 LAI and boosted with gp120 SF2, LAI, MN, or 160 MN • 26/51 had an anti-Env CTL response, and those that were boosted with gp120 tended to produce Abs that neutralized autologous laboratory strains with some cross-reactivity					
Env( )	Env( )		HIV-1 infection	human( )	[Betts (1997)]
• 6/8 individuals from Zambia infected with C clade virus had CTL that were able to make response to B clade HIV-1 IIIB vaccinia expressed Gag, Pol and Env proteins • A vigorous cross-clade response was not limited to a particular protein, and the level of recognition of different proteins varied among the six patients					

HXB2 Location	Author Location	Sequence	Immunogen	Species(HLA)	References
Env( )	Env( )		HIV-1 infection	human( )	[De Maria (1997)]
• CD3+ cells that also carry a natural killer cell receptor (NKR+) can exhibit down regulation of T-cell function • Anti-NKR IgM MAb masked this inhibitory function and increased HIV-1 specific CTL activity in phytohemagglutinin-activated PBMC cultured in the presence of IL-2 from 3/5 patients, and in one other case anti-NKR MAb brought HIV-1 specific CTL activity to detectable levels					
Env( )	Env( )		DNA vaccine pCMV160/Rev	murine(H-2^d)	[Ishii (1997)]
• pCMV160/Rev is a DNA vaccine candidate carrying gp160 and Rev linked to a cytomegalovirus (CMV promotor)					
Env( )	Env( )		HIV-1 infection	human( )	[Buseyne (1998a)]
• This study showed a correlation with strong CTL memory and greater breadth of response in 7-12 months old infants, and remaining AIDS free for the first year of life, having higher absolute CD4 and CD8 cells, and lower viral load					
Env( )	Env( )		HIV-1 exposure	human( )	[Goh (1999)]
• 13/37 exposed uninfected individuals with repeated high risk sexual exposure had HIV-1 specific CTL against Env, Gag , Pol, or a combination of proteins – CTL activity was correlated with a CCR5 WT genotype • In this group, the highest CTLp frequencies were directed at Gag, but the most common response was to Env and four individuals had responses to multiple HIV-1 proteins					
Env( )	Env( )		Canary pox -HIV vaccine	human( )	[Evans (1999)]
• A Canary pox vaccine expressing gp120, gp41, Gag, Protease, Nef and Pol CL epitopes gave rise to CTL that could be detected in 61% of the volunteers – responses to Gag, Env, Nef and Pol were detected 3-6 months after the last vaccination					
Env( )	Env( )		HIV-DNA prime - HIV vaccinia boost	Macaca nemestrina( )	[Kent (1998)]
• Priming with an HIV-DNA vaccine and boosting with a vaccinia construct induced greater levels of HIV T cell immunity than either vaccine alone. • The proliferative response to Env and Gag after the DNA vaccination had a mean SI of 1.5-4, but after boosting with rHIV-fowlpox virus, there was a 6-17 fold increase in the mean SI for HIV Gag and Env. The T help response happened despite a fall in antibody titers, suggesting that the Th response was primarily Th1, not Th2. The CTL response was also enhanced.					
Env( )	Env( )		ALVAC-HIV vaccine	human( )	[Salmon-Ceron (1999)]
• A live attenuated canarypox vector expressing MN gp120 and LAI gp41/gag/protease could induce CTL and a lymphoproliferative response in healthy uninfected volunteers					

HXB2 Location	Author Location	Sequence	Immunogen	Species(HLA)	References
Env( )	Env( )		DNA vaccine + CD80 and CD86 expression cassettes	chimpanzee( )	[Kim (1998)]
	• The study explores the use of co-stimulatory molecules co-expressed with an HIV-1 immunogen in a DNA vaccine to enhance the immune response – co-exprssion of CD86, but not CD80, dramatically increased both HIV Env and Gag/Pol specific CTL and Th proliferative responses				
Env( )	gp120( )		VLP SIVmac Pr56 – gp120	Macaca mulatta( )	[Notka (1999)]
	• Immunization of SIV Pr56gag derived VLPs with HIV-1 gp120 anchored on their surface induced Abs, CTL and Th responses to HIV gp120. Priming with the HIV antigens in Semliki-Forest Viruses enhanced the immunological outcome. • Immunized monkeys challenged with SHIV showed a more rapid reduction of plasma viremia.				