

Table 9: **gp41**

Location	WEAU	Sequence	Immunogen	Species(HLA)	References
gp41(557-565 IIIB)	gp41(47-55)	RAIEAQQQHL	HIV-1 infection	human	[Walkerpercom96]
	<b>NOTES:</b>				
	<ul style="list-style-type: none"> <li>Epitope defined in the context of the Pediatric AIDS Foundation ARIEL Project, a mother-infant HIV transmission study</li> <li>RAIDAQQQHL and RVIEAQQQHL, naturally occurring variants, were found in mother and are recognized</li> </ul>				
gp41(557-565 IIIB)	gp41(47-55)	RAIEAQQQHL	HIV-1 infection	human(B51)	[Sipsas97]
	<b>NOTES:</b>				
	<ul style="list-style-type: none"> <li>HIV IIIB proteins were used to define the range of CTL epitopes recognized by 3 lab workers accidentally infected with HIV-1 IIIB</li> <li>KAIEAQQQHL, a variant found in HIV-1 NY5CG, was also recognized</li> <li>RAIEAQQQHM, a variant found in HIV-1 JRCSE, was also recognized</li> <li>RAIDAQQQHL, a variant found in HIV-1 ETR, was also recognized</li> <li>RAIKAQQQHL, a variant found in HIV-1 CDC42, was also recognized</li> </ul>				
gp41(571-590 LAI)	gp41(60-79)	VWGIKQLQARILAVERYLKD	rec LAI gp160 vac- cina HIVAC-1e and rgp160	human (CD4+ CTL (DR-1))	[Kent97]
	<b>NOTES:</b>				
	<ul style="list-style-type: none"> <li>VWGIKQLQARILAVERYLKD, present in HIV-1 LAI, was the immunizing strain</li> <li>VWGIKQLQARVLAVERYLKD, present in HIV-1 MN, was also recognized</li> <li>VWGIKQPQARVLAVERYLRD was the form carried by the autologous strain that infected the vaccinee</li> <li>Lysis of the target cells by CD4+ CTL was inhibited with the addition of the peptide representing the autologous strain</li> <li>The infecting virus epitope also antagonized the proliferative functions of the CD4+ CTL clone</li> <li>The behavior of the autologous strain presents a possible mechanism for vaccine failure since the infecting virus not only escapes CTL activity, but inhibits the ability of CTL to recognize other variants</li> </ul>				
gp41(572-590 BRU)	gp41(62-80)	GIKQLQARILAVERYLKDQ	rgp160 BRU vaccine	human(DPw4.2)	[Hammond91]
	<b>NOTES:</b>				
	<ul style="list-style-type: none"> <li>CD4+ CTL</li> </ul>				
gp41(575-599 IIIB)	gp41(65-89)	QLQARILAVERYLKDDQ- LLGIWGCS	HIV-1 infection	human(B14)	[Jassoy92]
	<b>NOTES:</b>				
	<ul style="list-style-type: none"> <li>Epitope recognized by CTL clone derived from CSF</li> </ul>				

## HIV CTL Epitopes

Location	WEAU	Sequence	Immunogen	Species(HLA)	References
gp41(583-592 PV22)	gp41(73-82)	VERYLKDQQL	HIV-1 infection	human(B14)	[Jassoy93]
	<b>NOTES:</b>				
					<ul style="list-style-type: none"> <li>• HIV-1 specific CTLs release <math>\gamma</math>-IFN, and <math>\alpha</math>- and <math>\beta</math>-TNF</li> </ul>
gp41	gp41(74-82)	ERYLKDQQL	HIV-1 infection	human(B14)	[Wagner98b]
	<b>NOTES:</b>				
					<ul style="list-style-type: none"> <li>• CTL specific for HIV epitopes were used to show that the mediators of both the cytolytic (granzyme A was used as the marker) and non-cytolytic (HIV-1 inhibitory chemokines MIP-1 <math>\alpha</math> and RANTES were used as markers) anti-viral responses are localized within the CTL's cytotoxic granules</li> </ul>
gp41(591-599 SF2)	gp41(74-82)	ERYLKDQQL	HIV-1 infection	human(B14)	[Lieberman97]
	<b>NOTES:</b>				
					<ul style="list-style-type: none"> <li>• Of 25 patients, most had CTL specific for more than 1 HIV-1 protein</li> <li>• 11 subjects had CTL that could recognize vaccinia expressed LAI gp160</li> <li>• One of these 11 had CTL response to this peptide</li> <li>• The responding subject was HLA-A3, -A32, -B7, -B14</li> </ul>
gp41(591-599 SF2)	gp41(74-82)	ERYLKDQQL	HIV-1 infection	human(B14)	[Cao97]
	<b>NOTES:</b>				
					<ul style="list-style-type: none"> <li>• The consensus sequence for clades B, C, and D is ERYLKDQQL</li> <li>• The consensus sequence for clade A is ERYLRDQQL and it is equally reactive</li> <li>• The consensus sequence for clade E is ERYLKDQKF and it is not reactive</li> </ul>
gp41	gp41(74-82)	ERYLKDQQL	HIV-1 exposure	human(B14)	[RowlandJones98]
	<b>NOTES:</b>				
					<ul style="list-style-type: none"> <li>• A CTL response was found in exposed but uninfected prostitutes from Nairobi using previously defined B clade epitopes that tended to be conserved in A and D clades – such cross-reactivity could protect against both A and D and confer protection in Nairobi where both subtypes are circulating</li> <li>• The A and D subtype consensus are identical to the B clade epitope, ERYLKDQQL</li> </ul>
gp41(584-592)	gp41(74-82)	ERYLKDQQL	HIV-1 infection	human(B14)	[Sipasas97]
	<b>NOTES:</b>				
					<ul style="list-style-type: none"> <li>• HIV III B proteins were used to define the range of CTL epitopes recognized by 3 lab workers accidentally infected with HIV-1 III B</li> </ul>

## HIV CTL Epitopes

Location	WEAU	Sequence	Immunogen	Species(HLA)	References
gp41(584-592)	gp41(74-82)	ERYLKDDQL	HIV-1 infection	human(B14)	[Yang96]
	<b>NOTES:</b>		<ul style="list-style-type: none"> <li>• CD4+ cell lines acutely infected with HIV were studied to determine their susceptibility to lysis by CTL</li> <li>• Clones specific for RT lysed HIV-1 infected cells at lower levels than Env or Gag specific clones</li> <li>• The distinction was thought to be due to lower expression of RT relative to Env and Gag</li> <li>• CTL can lyse infected cells early after infection, possibly prior to viral production</li> </ul>		
gp41(584-592)	gp41(74-82)	ERYLKDDQL	HIV-1 infection	human(B14)	[Yang97]
	<b>NOTES:</b>		<ul style="list-style-type: none"> <li>• CTL inhibit HIV-1 replication at effector cell concentrations comparable to those found <i>in vivo</i></li> <li>• CTL produced HIV-1-suppressive soluble factors – MIP-1<math>\alpha</math>, MIP-1<math>\beta</math>, RANTES, after antigen-specific activation</li> <li>• CTL suppress HIV replication more efficiently in HLA-matched cells</li> </ul>		
gp41(584-592)	gp41(74-82)	ERYLKDDQL	HIV-1 infection	human	[Price95]
	<b>NOTES:</b>		<ul style="list-style-type: none"> <li>• Study of cytokines released by HIV-1 specific activated CTL</li> </ul>		
gp41(584-592 PV22)	gp41(74-82)	ERYLKDDQL	HIV-1 infection	human(B14)	[Johnson92]
	<b>NOTES:</b>		<ul style="list-style-type: none"> <li>• Two overlapping CTL epitopes were mapped with different HLA restriction (also see YLKDDQLL HLA-B8)</li> </ul>		
gp41(584-592 PV22)	gp41(74-82)	ERYLKDDQL	HIV-1 infection	human(B14)	[Jassoy93]
	<b>NOTES:</b>		<ul style="list-style-type: none"> <li>• HIV-1 specific CTLs release <math>\gamma</math>-IFN, and <math>\alpha</math>- and <math>\beta</math>-TNF</li> </ul>		
gp41(584-592,HXB2)	gp41(74-82)	ERYLKDDQL	HIV-1 infection	human(B14)	[Kalams94, Kalams96]
	<b>NOTES:</b>		<ul style="list-style-type: none"> <li>• Longitudinal study of T cell receptor usage in a single individual</li> <li>• Persistence of oligoclonal response to this epitope for over 5 years</li> </ul>		
gp41(584-592)	gp41(74-82)	ERYLKDDQL	no CTL shown	human(B14)	[DiBriño94b]
	<b>NOTES:</b>		<ul style="list-style-type: none"> <li>• Epitope studied in the context of HLA-B14 binding</li> </ul>		

## HIV CTL Epitopes

Location	WEAU	Sequence	Immunogen	Species(HLA)	References
gp41(584-592)	gp41(74-82)	ERYLKDDQL	HIV-1 infection	human(B14)	[Hammond95]
	<b>NOTES:</b>				
					<ul style="list-style-type: none"> <li>This peptide can be processed for HLA-B14 presentation in a TAP-1/2 independent pathway</li> </ul>
gp41(584-592)	gp41(74-82)	ERYLKDDQL	HIV-1 infection	human	[Borrow94]
	<b>NOTES:</b>				
					<ul style="list-style-type: none"> <li>Three out of five patients with HIV-1 symptomatic infection controlled their viral infection well and mounted an early, strong HIV-1 specific MHC restricted CTL response</li> <li>One of the three, study subject BORI, specifically recognized this peptide</li> </ul>
gp41(584-592)	gp41(74-82)	ERYLKDDQL	HIV-1 infection	human(B14)	[Kalams96]
	<b>NOTES:</b>				
					<ul style="list-style-type: none"> <li>CTL response to this epitope was studied in 5 HLA-B14 positive persons</li> <li>CTL responses were detected in all five, and CTL clones were isolated from 4/5</li> <li>A diverse repertoire of TCRs recognized this epitope, with similar fine specificities</li> <li>3/5 subjects showed no variation in viral sequence, 2/5 had a dominate variant that resulted in poor recognition, ERYLQDDQL</li> <li>A minor CTL response specific for the ERYLQDDQL could be detected by two individuals, but the major CTL response was to the ERYLKDDQL form even when it was the minority form</li> <li>Some single amino acid substitutions were well tolerated by most of the CTL clones tested, but others, particularly in the center three amino acids positions, abrogated peptide stimulatory activity</li> </ul>
gp41(584-591 SF2)	gp41(75-82)	RYLRDQQL	HIV-1 infection	human(A*2402)	[IkedaMoore97]
	<b>NOTES:</b>				
					<ul style="list-style-type: none"> <li>Defined using reverse immunogenetics – 59 HLA-A-A*2402 binding peptides were predicted by searching for A*2402 anchors in HIV proteins, (Tyr at 2, and Phe, Leu or Ile at the C term) – 53 of the 59 peptides bound A*2402</li> <li>This peptide induced CTL in 2/4 HIV-1+ people tested</li> <li>RYLRDQQL bound to A*2402 weakly, the epitope can be processed in a vaccinia construct and presented – two specific CTL clones were obtained</li> </ul>

## HIV CTL Epitopes

Location	WEAU	Sequence	Immunogen	Species(HLA)	References
gp41(584-591 SF2)	gp41(75-83)	RYLRDQQLL	HIV-1 infection	human(A*2402)	[IkedaMoore97]
	<b>NOTES:</b>				
			<ul style="list-style-type: none"> <li>Defined using reverse immunogenetics – 59 HLA-A-A*2402 binding peptides were predicted by searching for A*2402 anchors in HIV proteins, (Tyr at 2, and Phe, Leu or Ile at the C term) – 53 of the 59 peptides bound A*2402</li> <li>This peptide induced CTL in 4/4 HIV-1+ people tested</li> <li>RYLRDQQLL bound to A*2402 strongly; the epitope can be processed in a vaccinia construct and presented – two specific CTL clones were obtained</li> </ul>		
gp41(584-591 SF2)	gp41(75-84)	RYLRDQQLGI	HIV-1 infection	human(A*2402)	[IkedaMoore97]
	<b>NOTES:</b>				
			<ul style="list-style-type: none"> <li>Defined using reverse immunogenetics – 59 HLA-A-A*2402 binding peptides were predicted by searching for A*2402 anchors in HIV proteins, (Tyr at 2, and Phe, Leu or Ile at the C term) – 53 of the 59 peptides bound A*2402</li> <li>This peptide induced CTL in 4/4 HIV-1+ people tested</li> <li>RYLRDQQLGI bound to A*2402 with medium strength, the epitope can be processed in a vaccinia construct and presented – two specific CTL clones were obtained</li> </ul>		
gp41(590-597 LAI)	gp41(75-82)	RYLKDDQQL	HIV-1 infection	human(B27)	[Shankar96]
gp41(586-593)	gp41(76-83)	YLKDDQQL	HIV-1 infection	human(B8)	[Johnson92]
	<b>NOTES:</b>				
			<ul style="list-style-type: none"> <li>Two overlapping CTL epitopes were mapped with different HLA restriction (also see ERYLKDDQQL HLA-B14)</li> </ul>		
gp41(586-593)	gp41(76-83)	YLKDDQQL	no CTL shown	human(B8)	[Sutton93]
	<b>NOTES:</b>				
			<ul style="list-style-type: none"> <li>Predicted epitope based on B8 binding motifs, from larger peptide QLQARILAVERYLKDDQQLGIWGCS</li> </ul>		
gp41(76-83)	gp41(76-83)	YLKDDQQL		human(B8)	[Goulder97c]
	<b>NOTES:</b>				
			<ul style="list-style-type: none"> <li>Included in a study of the B8 binding motif</li> </ul>		

## HIV CTL Epitopes

Location	WEAU	Sequence	Immunogen	Species(HLA)	References
gp41(584-591 NL43)	gp41(76-83)	YLKDQQLL	HIV-1 infection	human(A24)	[Dat92]
<p><b>NOTES:</b></p> <ul style="list-style-type: none"> <li>The lysine (K) is critical for eliciting a HLA-A24 CTL response</li> </ul>					
gp41(605-615 LAI)	gp41(96-104)	TAVPWNASW	gp160 vaccinia	human(B35)	[Johnson94]
<p><b>NOTES:</b></p> <ul style="list-style-type: none"> <li>Epitope for vaccine induced CD8+ clone</li> </ul>					
gp41(606-614 LAI)	gp41(96-104)	TAVPWNASW	gp160 vaccinia vaccine	human(B35)	[Johnson94c]
<p><b>NOTES:</b></p> <ul style="list-style-type: none"> <li>HLA restricted CTL response to epitope in HIV-1 vaccinia-env vaccinees</li> </ul>					
gp41(606-614 LAI)	gp41(96-104)	TAVPWNASW	gp160 vaccinia vaccine	human(B35)	[Hammond95]
<p><b>NOTES:</b></p> <ul style="list-style-type: none"> <li>Peptide only processed by a TAP-1/2-dependent pathway</li> </ul>					
gp41(606-614 HXB2)	gp41(96-104)	TAVPWNASW	synthetic peptide	human(B*3501)	[Ferris96]
<p><b>NOTES:</b></p> <ul style="list-style-type: none"> <li>Natural form of this peptide is not glycosylated, suggesting initial Class I processing may occur in the cytosol</li> </ul>					
gp41(641-655 SF2)	gp41(124-138)	EIDNYTNTYTLLEE	HIV-1 infection	human	[Lieberman97]
<p><b>NOTES:</b></p> <ul style="list-style-type: none"> <li>Of 25 patients, most had CTL specific for more than 1 HIV-1 protein</li> <li>11 subjects had CTL that could recognize vaccinia expressed LAI gp160</li> <li>One of these 11 had CTL response to this peptide</li> <li>The responding subject was HLA-A1, A2, B51, and B57</li> </ul>					

## HIV CTL Epitopes

Location	WEAU	Sequence	Immunogen	Species(HLA)	References
gp41(679-687 SF2)	gp41(170-179)	WYIKIFIFMI	HIV-1 infection	human(A*2402)	[IkedaMoore97]
	<b>NOTES:</b>				
					<ul style="list-style-type: none"> <li>Defined using reverse immunogenetics – 59 HLA-A-A*2402 binding peptides were predicted by searching for A*2402 anchors in HIV proteins, (Tyr at 2, and Phe, Leu or Ile at the C term) – 53 of the 59 peptides bound A*2402</li> <li>This peptide induced CTL in 1/4 HIV-1+ people tested</li> <li>WYIKIFIFMI bound to A*2402 strongly, the epitope can be processed in a vaccinia construct and presented – two specific CTL clones were obtained</li> </ul>
gp41(701-720 BH10)	gp41(191-210)	VLSIVNRVROGYSPLSFQTH	HIV-1 infection	human(A32)	[Safrit94a]
	<b>NOTES:</b>				
					<ul style="list-style-type: none"> <li>Recognized by CTL derived from acute seroconverter</li> </ul>
gp41(747-755)	gp41(237-245)	RLVNGSLAL	HIV-1 infection	human(A2)	[Parker92]
	<b>NOTES:</b>				
					<ul style="list-style-type: none"> <li>Studied in the context of HLA-A2 peptide binding</li> </ul>
gp41(606-614 LA1)	gp41(257-270)	SYHRLRDLLIVTR	HIV-1 infection	human(A31)	[Hammond95]
	<b>NOTES:</b>				
					<ul style="list-style-type: none"> <li>Peptide only processed by a TAP-1/2-dependent pathway</li> <li>CTL from an acute seroconverter</li> </ul>
gp41(766-774 SF2)	gp41(258-266)	SYRRLRDLL	HIV-1 infection	human(A*2402)	[IkedaMoore97]
	<b>NOTES:</b>				
					<ul style="list-style-type: none"> <li>Defined using reverse immunogenetics – 59 HLA-A-A*2402 binding peptides were predicted by searching for A*2402 anchors in HIV proteins, (Tyr at 2, and Phe, Leu or Ile at the C term) – 53 of the 59 peptides bound A*2402</li> <li>This peptide induced CTL in 1/4 HIV-1+ people tested</li> <li>SYRRLRDLL bound to A*2402 moderately, the epitope can be processed in a vaccinia construct and presented – two specific CTL clones were obtained</li> </ul>

## HIV CTL Epitopes

Location	WEAU	Sequence	Immunogen	Species(HLA)	References
gp41(769-777 BH10)	gp41(259-267)	HRLRDILLI	HIV-1 infection	human	[Safrit94a]
	<b>NOTES:</b> <ul style="list-style-type: none"> <li>Recognized by CTL derived from acute seroconverter</li> </ul>				
gp41(768-778 NL43)	gp41(260-270)	RLRDLLIVTR	HIV-1 infection	human(A3.1)	[Takahashi91]
	<b>NOTES:</b> <ul style="list-style-type: none"> <li>CD8+ T cell clone</li> </ul>				
gp41(768-778 NL43)	gp41(260-270)	RLRDLLIVTR	HIV-1 infection	human(A3)	[Cao97]
	<b>NOTES:</b> <ul style="list-style-type: none"> <li>The consensus peptide of clade B is RLRDILLIVTR</li> <li>The consensus peptide of clades A, C and E is RLRFILIVTR and it is less reactive</li> <li>The consensus peptide of clade D is SLRDLLIVTR and it is less reactive</li> </ul>				
gp41(770-780 BH10)	gp41(260-270)	RLRDLLIVTR	HIV-1 infection	human(A31)	[Safrit94a, Safrit94b]
	<b>NOTES:</b> <ul style="list-style-type: none"> <li>Recognized by CTL derived from acute seroconverter</li> </ul>				
gp41(788-809 HXB2)	gp41(271-292)	IVELLGRRGWALKYWW- NLLQY	HIV-1 infection	human(B27)	[Lieberman92]
	<b>NOTES:</b> <ul style="list-style-type: none"> <li>CTL epitope defined by T cell line and peptide mapping</li> </ul>				
gp120(788-809)	gp41(271-292)	IVELLGRRGWALKYWW- NLLQY	HIV infection	human	[Lieberman95]
	<b>NOTES:</b> <ul style="list-style-type: none"> <li>HIV-specific CTL lines developed by <i>ex vivo</i> stimulation with peptide</li> </ul>				
gp41(791-800 LAI)	gp41(276-285)	GRRGWALKY	HIV infection	human(B27)	[LiebermanPerCom]
	<b>NOTES:</b> <ul style="list-style-type: none"> <li>Optimal peptide mapped by titration J. Lieberman, per comm.</li> </ul>				



## HIV CTL Epitopes

Location	WEAU	Sequence	Immunogen	Species(HLA)	References
gp41(791-799 LAI)	gp41(276-284)	GRRRGWEALK	HIV-1 infection	human(B27)	[McMichael94]
<p><b>NOTES:</b></p> <ul style="list-style-type: none"> <li>• Review of HIV CTL epitopes</li> <li>• Also: J. Liebermann 1992 and pers. comm. J. Liebermann</li> </ul>					
gp41(802-823 HXB2)	gp41(285-306)	YVWVNLLOYWSQELKNSA-VNLLN	HIV-1 infection	human	[Liebermann92]
<p><b>NOTES:</b></p> <ul style="list-style-type: none"> <li>• CTL epitope defined by T cell line and peptide mapping</li> </ul>					
gp41(814-823 LAI)	gp41(303-312)	SLLNATDIAY	MN rec gp160	human(A2)	[Dupuis95]
<p><b>NOTES:</b></p> <ul style="list-style-type: none"> <li>• Of two CTL clones, one reacted only with 815-823, the other with 814-823 and 815-823</li> </ul>					
gp41(814-823)	gp41(303-312)	SLLNATDIAY	HIV-1 infection	human(A2)	[Kundu98]
<p><b>NOTES:</b></p> <ul style="list-style-type: none"> <li>• Allogenic dendritic cells (DCs) were obtained from HLA-identical siblings, pulsed with rgp160 MN or A2 restricted HIV-1 epitope peptides, and infused monthly into six HIV-infected patients</li> <li>• 1/6 showed increased env-specific CTL and increased lymphoproliferative responses, 2/6 showed increase only in proliferative responses, and 3/6 showed no change – pulsed DCs were well tolerated</li> <li>• SLLNATDIAY is a conserved HLA-A2 epitope included in this study – 4/6 patients had this sequence as their HIV direct sequence, and 3 of these had a detectable CTL response – the other two had either the sequence SLFNATDIAY or SLNNTTDIVV and no detectable CTL response</li> <li>• CTL demonstrated against peptide-coated target, epitope is naturally processed and enhanceable with vaccine</li> </ul>					
gp41(815-823 LAI)	gp41(304-312)	LLNATDIAY	MN rec gp160	human(A2)	[Dupuis95]
<p><b>NOTES:</b></p> <ul style="list-style-type: none"> <li>• Of two CTL clones, one reacted only with 815-823, the other with 814-823 and 815-823</li> </ul>					
env(815-823)	gp41(304-312)	LLNATAIAY	HIV-1 infection	human(A2)	[Kmicciak98]
<p><b>NOTES:</b></p> <ul style="list-style-type: none"> <li>• Increased CTL response to cells expressing a VV construct <math>\Delta</math>V3 mutant compared with a full-length env gene product</li> </ul>					

## HIV CTL Epitopes

Location	WEAU	Sequence	Immunogen	Species(HLA)	References
gp120(844-863)	gp41(327-346)	YRAIRHPRRIRQGLERILL	HIV infection	human	[Lieberman95]
	<b>NOTES:</b>				
					<ul style="list-style-type: none"> <li>• HIV-specific CTL lines developed by <i>ex vivo</i> stimulation with peptide</li> </ul>
gp120(844-863 SF2)	gp41(327-346)	YRAIRHPRRIRQGLERILL	HIV infection	human	[Lieberman97]
	<b>NOTES:</b>				
					<ul style="list-style-type: none"> <li>• Of 25 patients, most had CTL specific for more than 1 HIV-1 protein</li> <li>• 11 subjects had CTL that could recognize vaccinia expressed LAI gp160</li> <li>• One of these 11 had CTL response to this peptide</li> <li>• The responding subject was HLA-A2, A26, B7, and B38</li> </ul>
gp120(844-863 LAI)	gp41(327-346)	YRAIRHPRRIRQGLERILL	HIV-1 infection	human(B35)	[Shankar96]
gp41(834-848 IIB)	gp41(317-331)	DRVIEVVQGAYRAIR	vaccinia IIB gp160	murine(H-2 <sup>d,p,u,q</sup> )	[Shirai92]
	<b>NOTES:</b>				
					<ul style="list-style-type: none"> <li>• In a murine system multiple class I molecules can present to CTL</li> </ul>
gp41(834-848 IIB)	gp41(317-331)	DRVIEVVQGAYRAIR	rec vaccinia gp160	murine(H-2 <sup>d,p,u,q</sup> )	[Shirai96]
	<b>NOTES:</b>				
					<ul style="list-style-type: none"> <li>• Multiple murine MHC can cross-present this epitope (HPF53), and P18 RIQRGPGRAFVTGK, to specific CTL</li> </ul>
gp41(834-848 IIB)	gp41(317-331)	DRVIEVVQGAYRAIR	HIV exposure	human	[Pinto95]
	<b>NOTES:</b>				
					<ul style="list-style-type: none"> <li>• CTL and T helper cell reactivity in healthcare workers exposed to HIV</li> </ul>
gp41(834-848 IIB)	gp41(317-331)	DRVIEVVQGAYRAIR	HIV-1 infection	human(A2)	[Clerici91]
	<b>NOTES:</b>				
					<ul style="list-style-type: none"> <li>• Helper and cytotoxic T cells can be stimulated by this peptide (Th4)</li> </ul>
gp41(829-837 LAI)	gp41(318-326)	RVIEVLQRA	MIN rec gp160	human(A2)	[Dupuis95]
	<b>NOTES:</b>				
					<ul style="list-style-type: none"> <li>• CTL from HLA-A2 positive subject react with this peptide</li> </ul>

## HIV CTL Epitopes

Location	WEAU	Sequence	Immunogen	Species(HLA)	References
gp41(831-853)	gp41(320-344)	IEVVQGAYRAIRHIPP- RIRQGLERI	HIV-1 infection	human	[Price95]
	<b>NOTES:</b>				
					• Study of cytokines released by HIV-1 specific activated CTL
gp41(842-850 IIB BH8)	gp41(???)	???	HIV-1 infection	human(B7)	[Pantaleo97, Soudeyans97]
	<b>NOTES:</b>				
					• Clonotype-specific PCR and analysis of <i>in vivo</i> 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
gp41(844-863 HXB2)	gp41(327-346)	YRAIRHPPRRIRQGLERLL	HIV infection	human(B8)	[Lieberman92]
	<b>NOTES:</b>				
					• CTL epitope defined by T cell line and peptide mapping
gp41(848-856 LAI)	gp41(333-341)	IPRRIRQGL		human(B7)	[Brander95a]
	<b>NOTES:</b>				
					• Epitope defined in the context of the Pediatric AIDS Foundation ARIEL Project, a mother-infant HIV transmission study
gp41(848-856 LAI)	gp41(333-341)	IPRRIRQGL	HIV-1 infection	human(B7)	[Cao97]
	<b>NOTES:</b>				
					• The consensus peptide of clades A, B, D, and F is IPRRRIRQGL
					• The consensus peptide of clade C is IPRRRIRQGF, and it is equally reactive
gp41(852-863 HXB2)	gp41(335-346)	RRIRQGLERILL	HIV-1 infection	human(A30,B8)	[Lieberman92]
	<b>NOTES:</b>				
					• CTL epitope defined by T cell line and peptide mapping
gp41(852-863 LAI)	gp41(335-346)	RRIRQGLERILL	HIV-1 infection	human(B7)	[Shankar96]