

HIV CTL Epitopes

Table 8 Nef

Location	WEAU	Sequence	Immunogen	Species(HLA)	References
Nef(13-20 LAI)	Nef(13-20)	WPTVRERM	?	human(B8)	[Brander & Walker(1996)]
					<ul style="list-style-type: none"> • P. Goulder, submitted
Nef(61-80)	Nef(60-79)	EEEEVGFPVTPQVPL- RPMTY	HIV infection	human(?)	[Lieberman et al.(1995)]
					<ul style="list-style-type: none"> • HIV-specific CTL lines developed by <i>ex vivo</i> stimulation with peptide
Nef(66-80 BRU)	Nef(64-78)	VGFPVTPQVPLRMT	HIV-1 infection	human(A1,B8)	[Hadida et al.(1992)]
					<ul style="list-style-type: none"> • HIV-1 specific CTLs detected in lymphoid organs of HIV-1 infected patients
Nef(68-77 LAI)	Nef(66-75)	FPVTPQVPLR	HIV-1 infection	human(B7)	[Haas et al.(1996)]
					<ul style="list-style-type: none"> • Also pers. comm. B. Maier and B. Autran
Nef(72-80 SF2)	Nef(66-74)	FPVRPQVPL	HIV-1 infection	human(B35)	[Shiga et al.(1996)]
					<ul style="list-style-type: none"> • Binds HLA-B*3501
Nef(75-85 SF2)	Nef(69-79)	RPQVPLRPMTY	HIV-1 infection	human(B35)	[Shiga et al.(1996)]
					<ul style="list-style-type: none"> • Binds HLA-B*3501
Nef(73-82 NL432)	Nef(71-80)	QVPLRPMTYK	HIV-1 infection	human(A3.1)	[Koenig et al.(1990)]
					<ul style="list-style-type: none"> • Tyr is critical for binding to A3.1
Nef(73-82 BRU)	Nef(71-80)	QVPLRPMTYK	HIV-1 infection	human(A3,A11,B35)	[Culmann et al.(1991)]
					<ul style="list-style-type: none"> • Nef CTL clones from HIV+ donors
Nef(73-82 LAI)	Nef(71-80)	QVPLRPMTYK	HIV-1 infection	human(A2)	[Robertson et al.(1993)]
					<ul style="list-style-type: none"> • Development of a retroviral vector (pNeoNef) to generate autologous CTL targets
Nef(73-82 LAI)	Nef(71-80)	QVPLRPMTYK	HIV-1 infection	human(A11)	[Couillin et al.(1994)]
					<ul style="list-style-type: none"> • Mutational variation in HIV epitopes in individuals with appropriate HLA types can result in evasion of CTL response
Nef(73-82 LAI)	Nef(71-80)	QVPLRPMTYK	HIV-1 infection	human(A11)	[Couillin et al.(1995)]
					<ul style="list-style-type: none"> • Mutations found in this epitope in HLA-A11 positive and negative donors were characterized
Nef(73-82)	Nef(72-80)	VPLRPMTYK	no CTL shown	human(A11)	[Zhang et al.(1993)]
					<ul style="list-style-type: none"> • Exploration of A11 binding motif
Nef(73-82 LAI)	Nef(72-79)	VPLRPMTY	HIV-1 or HIV-2 infection	human(B35)	[McMichael & Walker(1994)]
					<ul style="list-style-type: none"> • Review of HIV CTL epitopes; defined by B35 motif found within a larger peptide

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Nef(73-82 LAI)	Nef(72-79)	VPLRPMTY	HIV-1 or -2 infection	human(B35)	[Rowland-Jones et al.(1995)] <ul style="list-style-type: none"> • VPLRPMTY also recognized by CTL from HIV-2 seropositives, epitope is conserved
Nef(75-82)	Nef(72-79)	VPLRPMTY	no CTL shown	human(B*3501)	[Smith et al.(1996)] <ul style="list-style-type: none"> • Crystal structure of VPLRPMTY-class I B allele HLA B*3501 complex
Nef(74-82)	Nef(72-79)	VPLRPMTY		human(A3)	[Carreno et al.(1992)] <ul style="list-style-type: none"> • Included in A3 binding peptide competition study
Nef(75-82 LAI)	Nef(73-80)	PLRPMTYK	HIV-1 infection	human(A11)	[McMichael & Walker(1994)] <ul style="list-style-type: none"> • Review of HIV CTL epitopes; defined by All motif found within a larger peptide
Nef(83-94 BRU)	Nef(81-92)	AAVDLSHFLKEK	HIV-1 infection	human(A11)	[Culmann et al.(1991)] <ul style="list-style-type: none"> • Epitope defined by boundaries of overlapping peptides that stimulate Nef CTL clones
Nef(84-92 LAI)	Nef(82-90)	AVDLSHFLK	HIV-1 infection	human(A11)	[McMichael & Walker(1994)] <ul style="list-style-type: none"> • Review of HIV CTL epitopes; defined by A11 motif found within a larger peptide
Nef(84-92 LAI)	Nef(82-90)	AVDLSHFLK	HIV-1 infection	human(A11)	[Couillin et al.(1994)] <ul style="list-style-type: none"> • Mutational variation in HIV epitopes in individuals with appropriate HLA types can result in evasion of CTL response
Nef(84-92 LAI)	Nef(82-90)	AVDLSHFLK	HIV-1 infection	human(A11)	[Couillin et al.(1995)] <ul style="list-style-type: none"> • Mutations found in this epitope in HLA-A11 positive and negative donors were characterized
Nef(86-100 LAI)	Nef(84-98)	DLSHFLKEKGGLEGL	HIV-1 infection	human(B35)	[Buseyne et al.(1993)]
Nef(86-100 LAI)	Nef(84-98)	DLSHFLKEKGGLEGL	HIV-1 infection	human(A2)	[Robertson et al.(1993)] <ul style="list-style-type: none"> • Development of a retroviral vector (pNeoNef) to generate autologous targets
Nef(84-92 LAI)	Nef(84-92)	DLSHFLKEK	HIV-1 infection	human(A3.1)	[McMichael & Walker(1994)] <ul style="list-style-type: none"> • Review of HIV CTL epitopes; defined by A3.1 motif found within a larger peptide
Nef(89-97 LAI)	Nef(88-95)	FLKEKGGL	HIV-1 infection	human(B8)	[Price et al.(1997)] <ul style="list-style-type: none"> • CTL escape variants appeared over time in HLA B8 HIV-1+ individual • Most variants appear at position 5, an anchor residue • FLKE(ENQ)GGL showed reduced binding efficiency and recognition • double mutants (FIKENGGL, FLEENGGL, and FLKNGGGL) completely escaped recognition
Nef(93-106 BRU)	Nef(91-104)	EKGGLEGLIHSQRR	HIV-1 infection	human(A1,B8)	[Hadida et al.(1992)] <ul style="list-style-type: none"> • HIV-1 specific CTLs detected in lymphoid organs of HIV-1 infected patients
Nef(102-116 LAI)	Nef(100-114)	HSQRRQDILDWYIH	?	human(B7)	[Brander & Walker(1996)] <ul style="list-style-type: none"> • P. Goulder, pers. comm.
Nef(105-114 LAI)	Nef(103-112)	RRQDILDWLI	?	human(B27)	[Brander & Walker(1996)] <ul style="list-style-type: none"> • Subtype is HLA-B*2705, P. Goulder, submitted
Nef(103-127 PV22)	Nef(101-125)	SQRRQDILDWYIHT-QGYFPDWQNY	HIV-1 infection	human(B13)	[Jassoy et al.(1993)] <ul style="list-style-type: none"> • HIV-1 specific CTLs release γ-IFN, and α- and β-TNF

HIV CTL Epitopes

Location	WEAU	Sequence	Immunogen	Species(HLA)	References
Nef(111-132)	Nef(110-131)	LWIYHTQGYFPDWQN- YTPGPGV	HIV infection	human(?)	[Lieberman et al.(1995)]
		• HIV-specific CTL lines developed by <i>ex vivo</i> stimulation with peptide			
Nef(113-128 BRU)	Nef(111-126)	WIYHTQGYFPDWQNY- T	HIV-1 infection	human(A1)	[Hadida et al.(1992)]
		• HIV-1 specific CTLs detected in lymphoid organs of HIV-1 infected patients			
Nef(113-125 BRU)	Nef(111-123)	WIYHTQGYFPDWQ	HIV-1 infection	human(B17)	[Culmann et al.(1989)]
		• Nef CTL clones from HIV+ donors			
Nef(115-125 BRU)	Nef(113-123)	YHTQGYFPQWQ	HIV-1 infection	human(B17)	[Culmann et al.(1991)]
		• Nef CTL clones from HIV+ donors			
Nef(117-128 BRU)	Nef(115-126)	TQGYFPDWQNYT	HIV-1 infection	human(B17 and B37)	[Culmann et al.(1991)]
		• Nef CTL clones from HIV+ donors			
Nef(118-127 LAI)	Nef(116-125)	QGYFPDWQNY	?	human(Bw62)	[McMichael & Walker(1994)]
		• Review of HIV CTL epitopes; defined by Bw62 motif found within a larger peptide			
Nef(120-128 IIIB)	Nef(118-126)	YFPDWQNYT	HIV-1 infection	human(?)	[Wilkes et al.(1996)]
		• Epitope defined in the context of the Pediatric AIDS Found. ARIEL project mother-infant HIV transmission study			
		• FFPDWKNYT, a naturally occurring variant, was found in mother and infant and was recognized			
		• LFPDWKNYT, a naturally occurring variant, was found in infant and is not recognized			
Nef(120-144 SF2)	Nef(118-142)	YFPDWQNYTPGPGIR- YPLTFGWCYK	HIV-1 infection	human(A24)	[Jassey et al.(1992)]
		• Epitope recognized by CTL clone derived from CSF			
Nef(123-137 IIIB)	Nef(121-135)	QWQNYTPGPGVRYPL	HIV-1 infection	human(?)	[Wilkes et al.(1996), Goulder, per. comm.(1995)]
		• Epitope defined in the context of the Pediatric AIDS Found. ARIEL project mother-infant HIV transmission study			
		• FFPDYTPGPGTRFPL and FFPDYKPGPGTRFPL, naturally occurring variants, were found in mother and are not recognized			
		• LFPDYKPGPGTRFPL and FFPDYKPGPGTRFPL, naturally occurring variants, were found in infant and are not recognized			
Nef(126-138 BRU)	Nef(124-136)	NYTPGPGVRYPLT	HIV-1 infection	human(B7)	[Culmann et al.(1991)]
		• Nef CTL clones from HIV+ donors			
Nef(136-145 LAI)	Nef(126-135)	TPGPGVRYPL	HIV-1 infection	human(B7)	[Haas et al.(1996)]
		• Also: pers. comm. B. Maier and B. Autran			
Nef(130-143 LAI)	Nef(128-141)	GPGVRYPLTFGWCY	?	human(B57)	[Brander & Walker(1996)]
		• P. Goulder, in press in AIDS Res Human Reteroviruses			
Nef(132-147 BRU)	Nef(130-145)	GVRYPPLTFGWCYKLV- P	HIV-1 infection	human(A1,B8)	[Hadida et al.(1992)]
		• HIV-1 specific CTLs detected in lymphoid organs			
Nef(132-147 BRU)	Nef(130-145)	GVRYPPLTFGWCYKLV- P	HIV-1 infection	human(B18)	[Culmann et al.(1991)]
		• Nef CTL clones from HIV+ donors			

Location	WEAU	Sequence	Immunogen	Species(HLA)	References
Nef(133-148 LAI)	Nef(131-146)	VRYPLTFGWCYKLV- V	?	human(B57)	[Brander & Walker(1996)] • P. Goulder, pers. comm.
Nef(134-144 LAI)	Nef(132-142)	RYPLTFGWCYK	HIV-1 infection	human(B18)	[Couillin et al.(1994)] • Mutational variation in HIV epitopes in individuals with appropriate HLA types can result in evasion of CTL response
Nef(139-147 SF2)	Nef(133-141)	YPLTFGWCF	HIV-1 infection	human(B35)	[Shiga et al.(1996)] • Binds HLA-B*3501
Nef(161-180)	Nef(160-179)	TSLLHPVSLHGMDDP- EREVL	HIV infection	human(?)	[Lieberman et al.(1995)] • HIV-specific CTL lines developed by <i>ex vivo</i> stimulation with peptide
Nef(180-189 LAI)	Nef(178-187)	VLEWRFD SRL	HIV-1 infection	human(A2)	[Haas et al.(1996)] • Also: pers. comm. B. Maier and B. Autran
Nef(182-198 BRU)	Nef(180-196)	EWRFD SRLAFHHVAR- EL	HIV-1 infection	human(A1,B8)	[Hadida et al.(1992)] • HIV-1 specific CTLs detected in lymphoid organs of HIV-1 infected patients
Nef(182-198 BRU)	Nef(180-196)	EWRFD SRLAFHHVAR- EL	HIV-1 infection	human(A25)	[Cheynier et al.(1992)] • CTL isolated in children born to HIV-1 positive mothers
Nef(182-198 LAI)	Nef(180-196)	EWRFD SRLAFHHVAR- EL	HIV-1 infection	human(B35)	[Hadida et al.(1995)] • The C-terminal region of Nef (182-205) contains multiple CTL epitopes with 5 distinct HLA restrictions
Nef(182-198 LAI)	Nef(180-196)	EWRFD SRLAFHHVAR- EL	HIV-1 infection	human(A1,A25(10))	[Hadida et al.(1995)] • The C-terminal region of Nef (182-205) contains multiple CTL epitopes with 5 distinct HLA restrictions
Nef(186-193 LAI)	Nef(184-191)	DSRLAFHH	HIV-1 infection	human(B35)	[Hadida et al.(1995)] • The C-terminal region of Nef (182-205) contains multiple CTL epitopes with 5 distinct HLA restrictions
Nef(186-194 BRU)	Nef(184-192)	DSRLAFHHV	?	human(B51)	[Connan et al.(1994)] • Produced the significant assembly of HLA-B51; anchor residues: V (position 9) and L (position 4)
Nef(188-196 LAI)	Nef(186-194)	RLAFHHVAR	HIV-1 infection	human(B52)	[Hadida et al.(1995)] • The C-terminal region of Nef (182-205) contains multiple CTL epitopes with 5 distinct HLA restrictions
Nef(192-206 BRU)	Nef(190-204)	HHVARELHPEYFKNC	HIV-1 infection	human(A1)	[Hadida et al.(1992)] • HIV-1 specific CTLs detected in lymphoid organs of HIV-1 infected patients
Nef(190-198 LAI)	Nef(188-196)	AFHHVAREL	HIV-1 infection	human(B52,A2)	[Hadida et al.(1995)] • CTL recognition in the context of HLA B52 and A2.1, A2.2 and A2.4; high effector cell frequency