

**Additional file 5: Table S4.** Nonsynonymous mutations of recoded HIV-1 variants after 15 passages in MT-4 cells.

	Virus	Mutation <sup>a</sup>	Number of clones
Replicate 1	HIV-Pwtp15	D25G	1/24
		M46L	1/24
		G49E	1/24
		V56I	1/24
		P79L	1/24
		V82I	1/24
		G94D	1/24
		N98P	1/24
		HIV-Pmaxp15	G27R
		G27E	1/21
		S37P	4/21
		L90S	1/21
	HIV-PminAp15	G17R	1/24
		G27R	1/24
		M36I	1/24
		G40E	1/24
		R41K	1/24
		G48R	1/24
		K55Q	1/24
Y59D		1/24	
C95Y		1/24	
Replicate 2	HIV-Pwtp15	L23V	1/21
		G27R	1/21
		I54M	1/21
		D60N	1/21
		L63V	2/21
		E65K	1/21
		K70I	1/21
		Q92R	1/21
		HIV-Pmaxp15	T26I
		L33F	1/17
		S37P	3/17
	HIV-PminAp15	D29N	1/20
		R41K	1/20
		W42STOP	1/20
		M46I	1/20
		G49E	1/20
		G49R	1/20
		V56I	1/20
		Q61E	2/20
		L63V	1/20
		E65K	1/20
		G68R	1/20
	Replicate 1	HIV-GwtAp15	G11R
G11E			1/21
K18R			2/21
G49D			1/21

		C87Y	1/21
		K110E	1/21
		A119T	1/21
	HIV-GminAp15	R4G	6/17
		R15Q	1/17
		E40K	1/17
		V46I	3/17
		P48T	14/17
		G49E	1/17
		I60V	5/17
		V82I	1/17
		T84A	7/17
		E105K	2/17
		K114R	17/17
		A115V	1/17
	HIV-GwtBp15	N126Y	1/21
		N126S	1/21
		A146T	1/21
		Q199R	1/21
		V215A	6/21
		T251A	1/21
	HIV-GminBp15	V164I	1/19
		V173I	4/19
	HIV-GwtCp15	T251A	1/21
		N255T	1/21
		S281N	1/21
		Q287N	1/21
		T320A	1/21
		A341V	1/21
	HIV-GminCp15	R286C	1/22
		T320A	1/22
		S368R	1/22
		V370A	16/22
		T371M	7/22
	HIV-GwtDp15	F383I	1/21
		R384K	15/21
		V390G	1/21
		T401I	1/21
		R409K	1/21
		M423L	1/21
		S451N	1/21
		P453T	1/21
		T469A	1/21
	HIV-GminDp15	M377T	1/12
		F283S	1/12
		N385S	1/12
		V390I	1/12
		K391R	1/12
		T401I	1/12
		N404S	2/12
		R406G	6/12
		A407V	1/12
Replicate 2	HIV-GwtAp15	E17Q	1/17

		K18R	2/17
		P23A	2/17
		W36G	2/17
		L50R	2/17
		L61R	2/17
		C87W	2/17
		V88G	2/17
		K112R	1/17
	HIV-GminAp15	A3T	1/22
		R4G	15/22
		K30R	1/22
		V35I	1/22
		E40G	1/22
		V46I	2/22
		P48T	20/22
		I60V	1/22
		T84A	5/22
		E105K	2/22
		N109S	1/22
		K110R	1/22
		K113T	1/22
		K113N	1/22
		K114R	22/22
		A115V	1/22
		Q117L	1/22
		A119V	1/22
	HIV-GwtBp15	N126S	1/15
		V128G	2/15
		V135G	2/15
		M142R	2/15
		N153K	2/15
		W155Q	2/15
		Q199A	1/15
		V215A	3/15
	HIV-GminBp15	V128I	1/23
		I138T	1/23
		A174T	1/23
		V191I	4/23
		W212STOP	1/23
	HIV-GwtCp15	A341S	1/9
		A341V	1/9
		G357S	2/9
		G357R	1/9
		S373T	1/9
	HIV-GminCp15	K290E	1/10
		F293V	1/10
		V297L	1/10
		Y301STOP	1/10
		A340V	1/10
		V370A	8/10
		T371M	5/10
		A374T	1/10
	HIV-GwtDp15	S374T	1/14

		T376I	1/14
		R386K	1/14
		V391G	1/14
		V391G	4/14
		H422P	1/14
		M424L	2/14
		G435STOP	1/14
		L450V	1/14
		E455G	1/14
		T502A	1/14
	HIV-GminDp15	N382F	1/12
		N385S	1/12
		I389V	1/12
		V390I	2/12
		E398G	1/12
		N404S	3/12
		R406G	6/12
		A407T	1/12
		R409S	1/12
		E419K	1/12
		E428D	1/12
		N432I	1/12
		A457S	1/12
		F463S	1/12
		S465P	1/12
		T470I	1/12

<sup>a</sup>protease and gag amino acid numbering