

**Supplementary Table 1. Convergent mutations.**

Nuc. Mut.	AA Mut.	Freq.	Subtype freq. <sup>1</sup>	env part	Observed in other studies	Identified by Wood et al.
A8216G	S668G	5	1	gp41	Confers neutralization sensitivity (O'Rourke et al., 2012).	N
G7355A	E381K	5	0	gp120	---	Y
G7632A	G473E	5	0	gp120	---	N
G7653A	R480K	5	0	gp120	---	N
G8198A	E662K	5	3	gp41	Facilitates entry into marmoset cells (Pacheco, Basmaciogullari, Labonte, Xiang, & Sodroski, 2008).	N
G8203A	L664L	5	162	gp41	---	N
G8204A	D664N	5	2	gp41	Monoclonal antibody escape mutation (Manrique et al., 2007).	N
G8329A	V706V	5	129	gp41	---	N
G8542A	L777L	5	155	gp41	---	N
G8551A	T780T	5	25	gp41	---	N
G8585A	E791K	5	2	gp41	---	N
G8108A	E632K	6	0	gp41	Mutation abolishes viral entry into cell (He et al., 2008)	Y
G8156A	E648K	6	10	gp41	Compensatory mutations, once resistant against fusion inhibitors, it increases viral replication rate (Bai et al., 2008).	Y
G8275A	M688I	6	20	gp41	---	N
G8614A	L801L	6	113	gp41	---	N
A7735G	Q508Q	7	49	gp41	---	N
G7742A	E510K	7	162	gp41	Reversion from E to the database consensus K.	Y
G8301A	R696K	9	6	gp41	---	Y
G7658A	E482K	14	1	gp120	Most common mutation observed in an <i>in vivo</i> experiment with humanized mice (Ince et al., 2010).	Y

<sup>1</sup>Frequency of mutant in subtype consensus out of 170 sequences

Bai, X., Wilson, K. L., Seedorff, J. E., Ahrens, D., Green, J., Davison, D. K., et al. (2008). Impact of the enfuvirtide resistance mutation N43D and the associated baseline polymorphism E137K on peptide sensitivity and six-helix bundle structure. *Biochemistry*, 47(25), 6662–6670. <http://doi.org/10.1021/bi702509d>

- He, Y., Liu, S., Li, J., Lu, H., Qi, Z., Liu, Z., et al. (2008). Conserved salt bridge between the N- and C-terminal heptad repeat regions of the human immunodeficiency virus type 1 gp41 core structure is critical for virus entry and inhibition. *Journal of Virology*, *82*(22), 11129–11139. <http://doi.org/10.1128/JVI.01060-08>
- Ince, W. L., Zhang, L., Jiang, Q., Arrildt, K., Su, L., & Swanstrom, R. (2010). Evolution of the HIV-1 env gene in the Rag2<sup>-/-</sup> gammaC<sup>-/-</sup> humanized mouse model. *Journal of Virology*, *84*(6), 2740–2752. <http://doi.org/10.1128/JVI.02180-09>
- Manrique, A., Rusert, P., Joos, B., Fischer, M., Kuster, H., Leemann, C., et al. (2007). In vivo and in vitro escape from neutralizing antibodies 2G12, 2F5, and 4E10. *Journal of Virology*, *81*(16), 8793–8808. <http://doi.org/10.1128/JVI.00598-07>
- O'Rourke, S. M., Schweighardt, B., Phung, P., Mesa, K. A., Vollrath, A. L., Tatsuno, G. P., et al. (2012). Sequences in glycoprotein gp41, the CD4 binding site, and the V2 domain regulate sensitivity and resistance of HIV-1 to broadly neutralizing antibodies. *Journal of Virology*, *86*(22), 12105–12114. <http://doi.org/10.1128/JVI.01352-12>
- Pacheco, B., Basmaciogullari, S., Labonte, J. A., Xiang, S.-H., & Sodroski, J. (2008). Adaptation of the human immunodeficiency virus type 1 envelope glycoproteins to new world monkey receptors. *Journal of Virology*, *82*(1), 346–357. <http://doi.org/10.1128/JVI.01299-07>