

Table S1

*Nucleotide sequences of primers.*

Mutant		Primer sequence
R31A	sense	5'-GTGATCTCGGCGCGC <sub>gcc</sub> GCCTTCCGCGTGTCG-3'
	anti-sense	5'-CGACACGCGGAAGGC <sub>ggc</sub> GCGCGCCGAGATCAC-3'
R31E	sense	5'-GATCTCGGCGCGC <sub>gag</sub> GCCTTCCGCGTG-3'
	anti-sense	5'-CACGCGGAAGGC <sub>ctc</sub> GCGCGCCGAGATC-3'
R31L	sense	5'-GTGATCTCGGCGCGC <sub>cta</sub> GCCTTCCGCGTGTCG-3'
	anti-sense	5'-CGACACGCGGAAGGC <sub>tag</sub> GCGCGCCGAGATCAC-3'
R31Q	sense	5'-GATCTCGGCGCGC <sub>cag</sub> GCCTTCCGCGTG-3'
	anti-sense	5'-CACGCGGAAGGC <sub>ctg</sub> GCGCGCCGAGATC-3'
R90A	sense	5'-TGGTCTACCTGTTTCGCG <sub>gcc</sub> CTCCGCTACTTCCAGG-3'
	anti-sense	5'-GGAAGTAGCGGAG <sub>ggc</sub> CGCGAACAGGTAGA-3'
R90Q	sense	5'-TCTACCTGTTTCGCG <sub>cag</sub> CTCCGCTACTTCCAG-3'
	anti-sense	5'-CTGGAAGTAGCGGAG <sub>ctg</sub> CGCGAACAGGTAGA-3'
R92A	sense	5'-GTTTCGCGCGCCTC <sub>gcc</sub> TACTTCCAGGGC-3'
	anti-sense	5'-GCCCTGGAAGTA <sub>ggc</sub> GAGGCGCGCGAAC-3'
R92Q	sense	5'-ACCTGTTTCGCGCGCCTC <sub>cag</sub> TACTTCCAGGGCTACG-3'
	anti-sense	5'-CGTAGCCCTGGAAGTA <sub>ctg</sub> GAGGCGCGCGAACAGGT-3'
R99A	sense	5'-CAGGGCTACGCG <sub>gcc</sub> TCCGCGCAGCT-3'
	anti-sense	5'-AGCTGCGCGGA <sub>ggc</sub> CGCGTAGCCCTG-3'
R99Q	sense	5'-CAGGGCTACGCG <sub>cag</sub> TCCGCGCAGCTCA-3'
	anti-sense	5'-TGAGCTGCGCGGA <sub>ctg</sub> CGCGTAGCCCTG-3'
R104A	sense	5'-CGCTCCGCGCAGCTC <sub>gca</sub> CTGGCACCGCTGTAC-3'
	anti-sense	5'-GTACAGCGGTGCCAG <sub>tgc</sub> GAGCTGCGCGGAGCG-3'
R104Q	sense	5'-CTCCGCGCAGCTC <sub>cag</sub> CTGGCACCGCTG-3'
	anti-sense	5'-CAGCGGTGCCAG <sub>ctg</sub> GAGCTGCGCGGAG-3'
R113A	sense	5'-ACGCGAGCGCG <sub>gcc</sub> GCCCTCTGGC-3'
	anti-sense	5'-GCCAGAGGGC <sub>ggc</sub> GCGCTCGCGT-3'
R113Q	sense	5'-ACGCGAGCGCG <sub>cag</sub> GCCCTCTGGCTG-3'
	anti-sense	5'-CAGCCAGAGGGC <sub>ctg</sub> GCGCTCGCGT-3'