

Supplemental Table S1
Primers for site-directed mutagenesis

SagUGL		
T235A	sense	5'- CCGTT AAAAG GTGTC <u>GCACG</u> ACAGG GTTAT AG -3'
	antisense	5'- CTATA ACCCT GTCGT <u>GCGAC</u> ACCTT TTAAC GG -3'
S365H	sense	5'- CTATT GCACG GTGTG TATCA <u>TTGGC</u> ATTCA GGTAA AGGAG -3'
	antisense	5'- CTCCT TTACC TGAAT GCCAA <u>TGATA</u> CACAC CGTGC AATAG -3'
S368G	sense	5'- CGGTG TGTAT TCGTG GCATG <u>GAGGT</u> AAAGG AGTAG ATGAA G -3'
	antisense	5'- CTTCA TCTAC TCCTT TACCT <u>CCATG</u> CCACG AATAC ACACC G -3'
K370I	sense	5'- CGTGG CATTG AGGTA <u>TAGGA</u> GTAGA TGAAG GTAAT ATTTG -3'
	antisense	5'- CAAAT ATTAC CTTC A TCTAC TCCTA <u>TACCT</u> GAATG CCACG -3'
BacillusUGL		
H210R	sense	5'-CATCC GCGGC GGCAC <u>GCGCC</u> AGGGC AACAC CGACG GC-3'
	antisense	5'-GCCGT CGGTG TTGCC CTG <u>GC</u> GCGTG CCGCC GCGGA TG-3'
H339S	sense	5'- CTTCA TCCGC CGCGG CTCCT AT <u>TCT</u> GTGCG CGGCG GCATC -3'
	antisense	5'- GATGC CGCCG CGCAC <u>AGAAT</u> AGGAG CCGCG GCGGA TGAAG -3'
G342S	sense	5'- CTATC ACGTG CGC <u>AG</u> TGGCA TCTCG CCCGA CGACT ACAC -3'
	antisense	5'- GTGTA GTCGT CGGGC GAGAT GCC <u>AC</u> TGC GC AC GTG ATAG -3'
I344K	sense	5'- CTATC ACGTG CGCGG CGGC <u>AA</u> TCG CCCGA CGACT ACACG -3'
	antisense	5'- CGTGT AGTCG TCGGG CGAT <u>T</u> TGCCG CCGCG CACGT GATAG -3'

Underline indicates the mutation site.