

**Table S3** Primer list

primer purpose	primer	sequence (5'-3')
<b>mutagenesis</b>		
amplification of aliB	aliB_1276	5' -GCGT <b>GCTAGCT</b> CAAAAACCTATAACTATGTT- 3'
	aliB_1277	5' -GCGC <b>GAGCTC</b> TTATTTGACATGTTTTGCC- 3'
amplification of comDE	comDE_1224	5' -GGGATTCCTACCATAAATAGAAAATTGACTTT- 3'
	comDE_1225	5' -GATATGATTGAGCACTATCAAAGCAAGCTATTCC- 3'
	comC_fwd	5' - <u>GCTAAGTTTGAAATGATTGAGTTATCAGATG</u> -3'
	comD_kan_rev2	5'-CCATTTCTCTGGAATAGGCGTCGACGCG <u>CCCAAATC</u> <u>CAAATAAATCCATTAC</u> -3'
	comD_kan_fwd2	5'- <u>GTAATGGATTTATTTGGATTTGGGCGCGTCGACGCCTA</u> <u>TTCCAGAGGAAATGG</u> -3'
	comE_kan_fwd2	5'-CCGCAACTGTCCATACTCTGATGGGATATTTTAGAG <u>AAAAAATCTC</u> -3'
	comE_kan_rev2	5'- <u>GAGATTTTTCTCTAAAATATCCCATCAGAGTAT</u> <u>GGACAGTTGCGG</u> -3'
comE_rev	5'- <u>GTTTACAAGGAGGAAATATGCAAGAAAG</u> -3'	
<b>recombinant protein production</b>		
spd_1357 (D39)	aliB_1288	5' -GCGT <b>GCTAGCG</b> GAAATCTAGCACTGCATC-3'
sp_1923 (TIGR4)	aliB_1277	5' -GCGC <b>GAGCTC</b> TTATTTGACATGTTTTGCC-3'
	ply_370	5'-CG <b>GATCC</b> GCAAATAAAGCAGTAAATGAC-3
	ply_371	5'-CG <b>GATACC</b> CTAGTCATTTCTACCTGAG-3'

Restriction sites are **bold**; pneumococcal sequences for overlap PCR are underlined. ply: pneumolysin