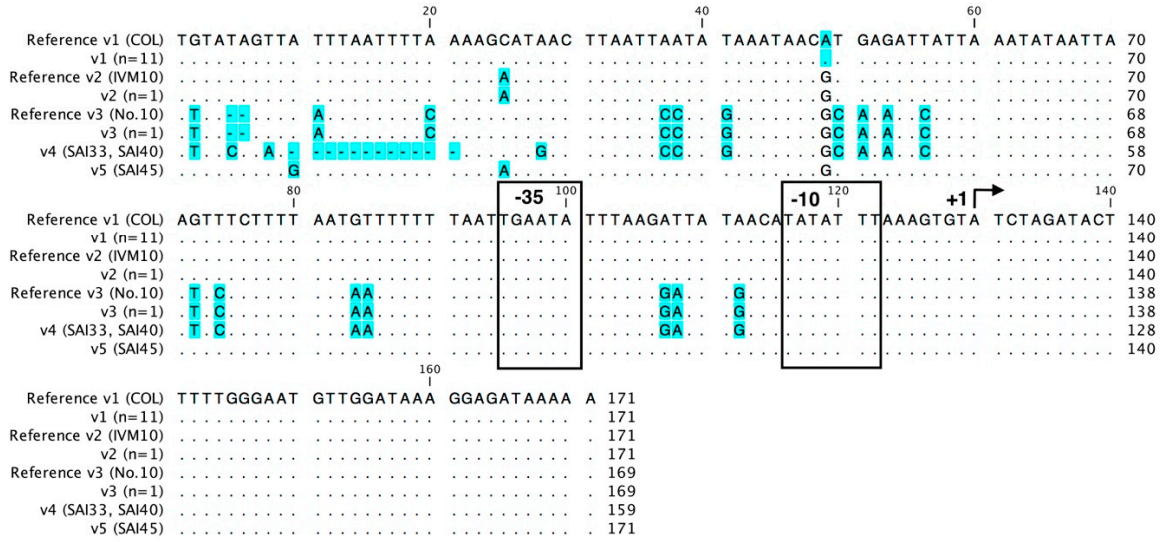


Supplementary Materials: Sequence Variability in Staphylococcal Enterotoxin Genes *seb*, *sec*, and *sed*

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SEB PROMOTER



SEB GENE

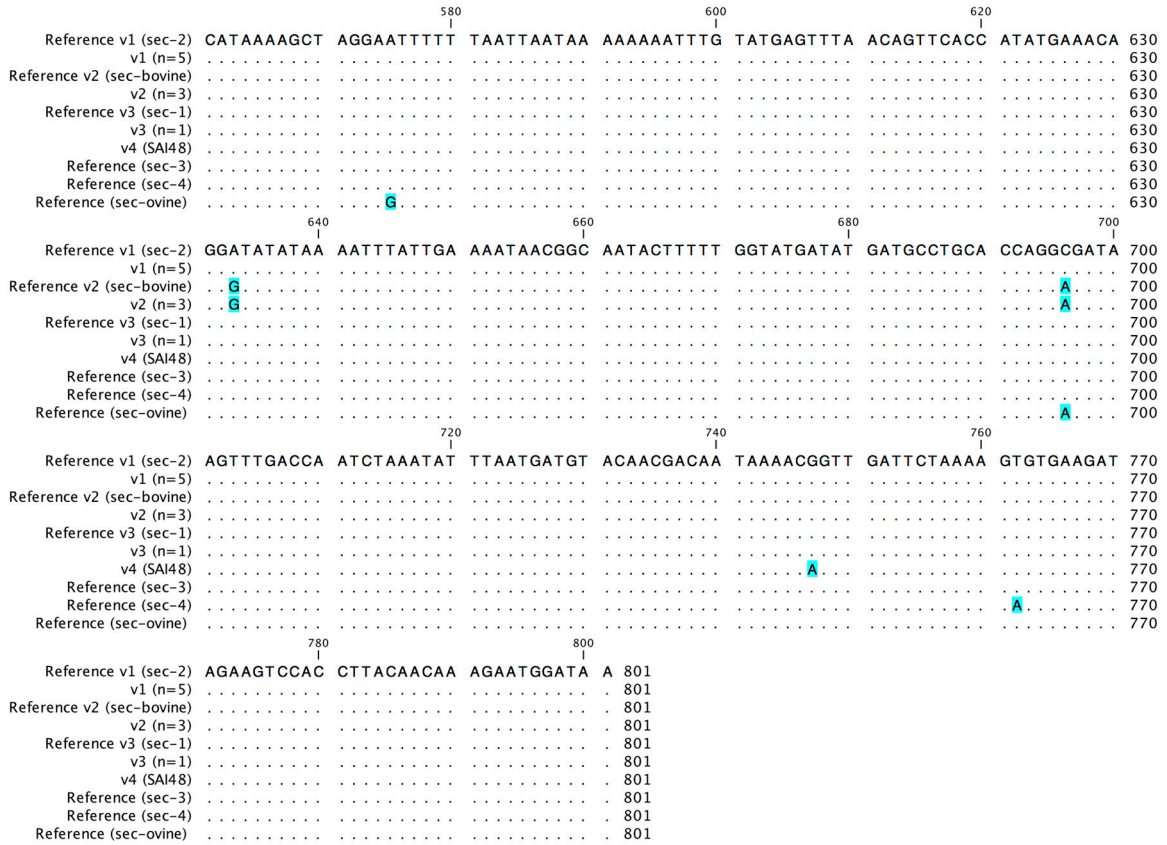
			20		40		60	
Reference v1 (COL)	ATGTATAAGA	GATTATTTAT	TTCACATGTA	ATTTTGATAT	TCGCACTGAT	ATTAGTTATT	TCTACACCCA	70
v1 (n=5)	.	.	.	.	.	.	.	70
Reference v2 (IVM10)	.	.	.	.	T	.	.	70
v2 (n=1)	.	.	.	.	T	.	.	70
Reference v3 (No. 10)	T	G	G	G	.	C	A	70
v3 (n=1)	T	G	G	G	.	C	A	70
Reference v4 (93b_S9)	.	.	.	.	T	.	.	70
v4 (n=1)	.	.	.	.	T	.	.	70
v5 (RKI4, SAI33)	T	G	G	G	.	C	A	70
		80		100		120		140
Reference v1 (COL)	ACGTTTTAGC	AGAGAGTCAA	CCAGATCCTA	AACCAGATGA	GTTGCACAAA	TCGAGTAAAT	TCACTGGTTT	140
v1 (n=5)	.	.	.	.	.	T	.	140
Reference v2 (IVM10)	.	.	.	.	.	G	.	140
v2 (n=1)	.	.	.	.	.	G	.	140
Reference v3 (No. 10)	.	A	C	.	.	G	.	140
v3 (n=1)	.	A	C	.	.	G	.	140
Reference v4 (93b_S9)	.	.	.	.	.	G	.	140
v4 (n=1)	.	.	.	.	.	G	.	140
v5 (RKI4, SAI33)	.	A	C	.	.	G	.	140
		160		180		200		210
Reference v1 (COL)	GATGGAAAAT	ATGAAAGTTT	TGTATGATGA	TAATCATGTA	TCAGCAATAA	ACGTTAAATC	TATAGATCAA	210
v1 (n=5)	.	.	.	.	.	.	.	210
Reference v2 (IVM10)	.	.	.	.	.	.	.	210
v2 (n=1)	.	.	.	.	.	.	.	210
Reference v3 (No. 10)	.	.	A	C	.	.	.	210
v3 (n=1)	.	.	A	C	.	.	.	210
Reference v4 (93b_S9)	.	.	.	.	.	.	.	210
v4 (n=1)	.	.	.	.	.	.	.	210
v5 (RKI4, SAI33)	.	.	A	C	.	.	.	210
		220		240		260		280
Reference v1 (COL)	TTTCTATACT	TTGACTTAAT	ATATTTCTATT	AAGGACACTA	AGTTAGGGAA	TTATGATAAT	GTTTCGAGTCG	280
v1 (n=5)	.	.	.	.	.	.	.	280
Reference v2 (IVM10)	.	.	.	.	.	.	.	280
v2 (n=1)	.	.	.	.	.	.	.	280
Reference v3 (No. 10)	.	.	.	.	.	.	.	280
v3 (n=1)	.	.	.	.	.	.	.	280
Reference v4 (93b_S9)	.	.	.	.	.	.	.	280
v4 (n=1)	.	.	.	.	.	.	.	280
v5 (RKI4, SAI33)	.	.	.	.	.	.	.	280
		300		320		340		350
Reference v1 (COL)	AATTTAAAAA	CAAAGATTTA	GCTGATAAAT	ACAAAGATAA	ATACGTAGAT	GTGTTTGGAG	CTAATTATTA	350
v1 (n=5)	.	.	.	.	.	.	.	350
Reference v2 (IVM10)	.	.	.	.	.	.	.	350
v2 (n=1)	.	.	.	.	.	.	.	350
Reference v3 (No. 10)	.	.	.	.	.	.	.	350
v3 (n=1)	.	.	.	.	.	.	.	350
Reference v4 (93b_S9)	.	.	.	.	.	.	.	350
v4 (n=1)	.	.	.	.	.	.	.	350
v5 (RKI4, SAI33)	.	.	.	.	.	.	.	350
		360		380		400		420
Reference v1 (COL)	TTATCAATGT	TATTTTTCTA	AAAAAACGAA	TGATATTAAT	TCGCATCAAA	CTGACAAAACG	AAAAACTTGT	420
v1 (n=5)	.	.	.	.	T	.	.	420
Reference v2 (IVM10)	C	.	.	.	A	.	.	420
v2 (n=1)	C	.	.	.	A	.	.	420
Reference v3 (No. 10)	.	.	.	.	A	.	T	420
v3 (n=1)	.	.	.	.	A	.	T	420
Reference v4 (93b_S9)	C	.	.	.	A	.	.	420
v4 (n=1)	C	.	.	.	A	.	.	420
v5 (RKI4, SAI33)	C	.	.	.	A	.	.	420
		440		460		480		490
Reference v1 (COL)	ATGTATGGTG	GTGTAAC TGA	GCATAATGGA	AACCAATTAG	ATAAATATAG	AAGTATTACT	GTTGGGTAT	490
v1 (n=5)	.	.	.	.	.	.	T	490
Reference v2 (IVM10)	.	.	.	.	.	.	T	490
v2 (n=1)	.	.	.	.	.	.	T	490
Reference v3 (No. 10)	.	.	.	T	.	.	A	490
v3 (n=1)	.	.	.	T	.	.	A	490
Reference v4 (93b_S9)	.	.	.	.	.	.	A	490
v4 (n=1)	.	.	.	.	.	.	A	490
v5 (RKI4, SAI33)	.	.	.	T	.	.	A	490
		500		520		540		560
Reference v1 (COL)	TTGAAGATGG	TAAAAATTTA	TTATCTTTTG	ACGTACAAAC	TAATAAGAAA	AAGGTGACTG	CTCAAGAATT	560
v1 (n=5)	.	.	.	.	.	T	.	560
Reference v2 (IVM10)	.	.	.	.	.	A	.	560
v2 (n=1)	.	.	.	.	.	A	.	560
Reference v3 (No. 10)	.	.	G	.	.	A	.	560
v3 (n=1)	.	.	G	.	.	A	.	560
Reference v4 (93b_S9)	.	.	.	.	.	A	.	560
v4 (n=1)	.	.	.	.	.	A	.	560
v5 (RKI4, SAI33)	.	.	G	.	.	A	.	560

			580		600		620		
Reference v1 (COL)	AGATTACCTA	ACTCGTCACT	ATTTGGTGAA	AAATAAAAAA	CTCTATGAAT	TTAACAACTC	GCCTTATGAA	630	
v1 (n=5)	.....	.....	.....	.....	.....	.....	.....	630	
Reference v2 (IVM10)	.....	.....	.....	.....	.....	.....	.....	630	
v2 (n=1)	.....	.....	.....	.....	.....	.....	.....	630	
Reference v3 (No. 10)	.....	.....	.....	.....	.....	.....	A	630	
v3 (n=1)	.....	.....	.....	.....	.....	.....	A	630	
Reference v4 (93b_S9)	.....	.....	.....	.....	.....	.....	.....	630	
v4 (n=1)	.....	.....	.....	.....	.....	.....	.....	630	
v5 (RKI4, SAI33)	.....	.....	.....	.....	.....	.....	A	630	
		640		660		680		700	
Reference v1 (COL)	ACGGGATATA	TAAATTTAT	AGAAAATGAG	AATAGCTTTT	GGTATGACAT	GATGCCTGCA	CCAGGAGATA	700	
v1 (n=5)	.....	.....	G	.....	.....	.....	.....	700	
Reference v2 (IVM10)	.....	.....	G	.....	.....	.....	.....	700	
v2 (n=1)	.....	.....	G	.....	.....	.....	.....	700	
Reference v3 (No. 10)	.....	.....	G	.....	.....	.....	.....	700	
v3 (n=1)	.....	.....	G	.....	.....	.....	.....	700	
Reference v4 (93b_S9)	.....	.....	G	.....	.....	.....	.....	700	
v4 (n=1)	.....	.....	G	.....	.....	.....	.....	700	
v5 (RKI4, SAI33)	.....	.....	G	.....	.....	.....	.....	700	
		720		740		760			
Reference v1 (COL)	AATTTGACCA	ATCTAAATAT	TAAATGATGT	ACAATGACAA	TAAATGGTT	GATTCTAAAG	ATGTGAAGAT	770	
v1 (n=5)	.....	.....	.....	C	T	.....	.....	770	
Reference v2 (IVM10)	.....	.....	.....	T	T	.....	.....	770	
v2 (n=1)	.....	.....	.....	T	T	.....	.....	770	
Reference v3 (No. 10)	.....	.....	.....	T	T	.....	.....	770	
v3 (n=1)	.....	.....	.....	T	T	.....	.....	770	
Reference v4 (93b_S9)	.....	.....	.....	T	T	.....	.....	770	
v4 (n=1)	.....	.....	.....	T	T	.....	.....	770	
v5 (RKI4, SAI33)	.....	.....	.....	T	T	.....	.....	770	
		780		800					
Reference v1 (COL)	TGAAGTTTAT	CTTACGACAA	AGAAAAAGTG	A	801				
v1 (n=5)	.....	.....	.....	.....	801				
Reference v2 (IVM10)	.....	.....	.....	.....	801				
v2 (n=1)	.....	.....	.....	.....	801				
Reference v3 (No. 10)	.....	.....	.....	.....	801				
v3 (n=1)	.....	.....	.....	.....	801				
Reference v4 (93b_S9)	.....	.....	.....	.....	801				
v4 (n=1)	.....	.....	.....	.....	801				
v5 (RKI4, SAI33)	.....	.....	.....	.....	801				

SEB AMINO ACID

			20		40		60		
Reference v1 (COL)	MYKRLFI SHV	ILIFALILVI	STPNVLAESQ	PDPKPDDELHK	SSKFTGLMEN	MKVLYDDNHV	SAINVKSIDQ	70	
v1 (n=5)	.....	.....	.....	.....	S	.....	.....	70	
Reference v2 (IVM10)	.....	V	.....	.....	A	.....	.....	70	
v2 (n=2)	.....	V	.....	.....	A	.....	.....	70	
Reference v3 (No. 10)	N	V	R	.....	A	.....	.....	70	
v3 (n=3)	N	V	R	.....	A	.....	.....	70	
		80		100		120		140	
Reference v1 (COL)	FLYFDLIYSI	KDTKLGNYDN	VRVEFKNKDL	ADKYKDKYVD	VFGANYYYQC	YFSKKTNDIN	SHQTDKRKTC	140	
v1 (n=5)	.....	.....	.....	.....	.....	.....	.....	140	
Reference v2 (IVM10)	.....	.....	.....	.....	.....	.....	.....	140	
v2 (n=2)	.....	.....	.....	.....	.....	.....	.....	140	
Reference v3 (No. 10)	.....	.....	.....	.....	.....	.....	.....	140	
v3 (n=3)	.....	.....	.....	.....	.....	.....	.....	140	
		160		180		200			
Reference v1 (COL)	MYGGVTEHNG	NQLDKYRSIT	VRVFEDGKNL	LSFDVQTNKK	KVTAQELDYL	TRHYLVKNKK	LYEFNNSPYE	210	
v1 (n=5)	.....	.....	.....	.....	.....	.....	.....	210	
Reference v2 (IVM10)	.....	.....	.....	.....	.....	.....	.....	210	
v2 (n=2)	.....	.....	.....	.....	.....	.....	.....	210	
Reference v3 (No. 10)	.....	H	.....	.....	.....	.....	.....	210	
v3 (n=3)	.....	H	.....	.....	.....	.....	.....	210	
		220		240		260			
Reference v1 (COL)	TGYIKFIENE	NSFWYDMMPA	PGDKFDQSKY	LMMYNDNKMV	DSKDVKIEVY	LTTKKK	267		
v1 (n=5)	.....	.....	.....	.....	.....	.....	267		
Reference v2 (IVM10)	.....	.....	.....	.....	.....	.....	267		
v2 (n=2)	.....	.....	.....	.....	.....	.....	267		
Reference v3 (No. 10)	.....	.....	.....	.....	.....	.....	267		
v3 (n=3)	.....	.....	.....	.....	.....	.....	267		

Figure S1. Sequence alignments for *seb*.



SEC AMINO ACID



Figure S2. Sequence alignments for sec.

SED PROMOTER

			20		40		60		
Reference v1 (pSAP074A)	ATAAAGTATA	TTTAAAATTT	TATTAATGAT	GGTTTCTTCG	ATAAAATGTT	TTAATTATTA	AGAGAGACTT	70	
v1 (n=8)	.....	.....	.....	.....	.....	.....	.....	70	
Reference v2 (pSK67)	T.....	.....	.....	.....	.....	.....	.....	70	
v2 (n=3)	T.....	.....	.....	.....	.....	.....	.....	70	
v3 (SAI48)	.....	.....	.....	.....	.....	.....	.....	70	
		80		100		120		140	
Reference v1 (pSAP074A)	GATCTGTTTA	GACCAAGTCT	CAAATTATTA	AAGATAATAT	TTGTTGGAGT	GTATGAAATG	GATCAAATAT	140	
v1 (n=8)	.....	.....	.....	.....	.....	.....	.....	140	
Reference v2 (pSK67)	.....	.....	.....	.....	.....	.....	.....	140	
v2 (n=3)	.....	.....	.....	.....	.....	.....	.....	140	
v3 (SAI48)	.....	.....	.....	.....	.....	.....	.....	140	
			160		180		200		
Reference v1 (pSAP074A)	ATTGATATAA	TGAAAGTGAG	CAAGTTGGAT	AGATTGCGGC	TAGTCTCTTG	AAAAAAGGGA	TTCCTATGTT	210	
v1 (n=8)	.....	.....	.....	.....	.....	.....	.....	210	
Reference v2 (pSK67)	.....	.....	.....	.....	.....	.....	.....	210	
v2 (n=3)	.....	.....	.....	.....	.....	.....	.....	210	
v3 (SAI48)	.....	.....	.....	.....	.....	.....	.....	210	
		220		240		260		280	
Reference v1 (pSAP074A)	TATAGTTGGT	ACTTCTAGGA	AGGACTAGCA	TGCTTATTT	CGAAATGCTG	ATGGTTGTAT	TAACAATTAT	280	
v1 (n=8)	.....	.....	.....	.....	.....	.....	.....	280	
Reference v2 (pSK67)	.....	.....	.....	.....	.....	.....	.....	280	
v2 (n=3)	.....	.....	.....	.....	.....	.....	.....	280	
v3 (SAI48)	.....	.....	.....	.....	.....	.....	.....	280	
			300		320		340		
Reference v1 (pSAP074A)	GAGTTTAGTC	TTAATTAGTA	ATCAAAACTC	TGAATGTATT	GTCTACATAA	TCGGTGTAAAC	AATAATATAT	350	
v1 (n=8)	.....	.....	.....	.....	.....	.....	.....	350	
Reference v2 (pSK67)	.....	.....	.....	.....	.....	.....	.....	350	
v2 (n=3)	.....	.....	.....	.....	.....	.....	.....	350	
v3 (SAI48)	.....	.....	.....	.....	.....	.....	.....	350	
		360		380		400		420	
Reference v1 (pSAP074A)	ATCCGAAAGA	TAAAGTACT	CTATAAAAGA	ATCATTTAAA	GGTGCTCAAA	TTTATTGAAA	AAAGGTGGAA	420	
v1 (n=8)	.....	.....	.....	.....	.....	.....	.....	420	
Reference v2 (pSK67)	.....	.....	.....	.....	.....	.....	.....	420	
v2 (n=3)	.....	.....	.....	.....	.....	.....	.....	420	
v3 (SAI48)	.....	.....	.....	.....	.....	.....	.....	420	
Reference v1 (pSAP074A)	T	421							
v1 (n=8)	.	421							
Reference v2 (pSK67)	.	421							
v2 (n=3)	.	421							
v3 (SAI48)	.	421							

SED GENE

		20		40		60	
Reference v1 (pSAP074A)	ATGAAAAAAT	TAAACATTCT	TATTGCATTA	CTCTTTTTTA	CTAGTTTGGT	AATATCTCCT	TAAACGTTA 70
v1 (n=4)	.....	.....	.....	.....	.....	.....	70
Reference v2 (pSK67)	.....	.....	.....	.....	.....	.....	70
v2 (n=4)	.....	.....	.....	.....	.....	.....	70
Reference v3 (P502A)	.....	.....	.....	.....	.....	.....	70
v3 (n=6)	.....	.....	.....	.....	.....	.....	70
v4 (SANC30)	.....	.....	.....	.....	.....	.....	70
Reference (pIB485)	.....	.....	.....	.....	.....	.....	70
		80		100		120	
Reference v1 (pSAP074A)	AAGCCAATGA	AAACATTGAT	TCAGTAAAAG	AGAAAGAATT	GCATAAAAAA	TCTGAATTAA	GTAGTACCGC 140
v1 (n=4)	.....	.....	.....	.....	.....	.....	140
Reference v2 (pSK67)	.....	.....	.....	.....	.....	.....	140
v2 (n=4)	.....	.....	.....	.....	.....	.....	140
Reference v3 (P502A)	.....	.....	.....	.....	.....	.....	140
v3 (n=6)	.....	.....	.....	.....	.....	.....	140
v4 (SANC30)	.....	.....	.....	.....	.....	.....	140
Reference (pIB485)	.....	.....	.....	.....	.....	.....	140
		160		180		200	
Reference v1 (pSAP074A)	GCTAAATAAT	ATGAAACATT	CTTATGCAGA	TAAAAATCCA	ATAATAGGAG	AAAATAAAAAG	TACAGGAGAT 210
v1 (n=4)	.....	.....	.....	.....	.....	.....	210
Reference v2 (pSK67)	.....	.....	.....	.....	.....	.....	210
v2 (n=4)	.....	.....	.....	.....	.....	.....	210
Reference v3 (P502A)	.....	.....	.....	.....	.....	.....	210
v3 (n=6)	.....	.....	.....	.....	.....	.....	210
v4 (SANC30)	.....	.....	.....	.....	.....	.....	210
Reference (pIB485)	.....	.....	.....	.....	.....	.....	210
		220		240		260	
Reference v1 (pSAP074A)	CAATTTTTAG	AAAATACTTT	GCTTTACAAA	AAATTTTTTA	CTGACCTTAT	CAATTTTGAA	GATTTATTAA 280
v1 (n=4)	.....	.....	.....	.....	.....	.....	280
Reference v2 (pSK67)	.....	.....	.....	.....	.....	.....	280
v2 (n=4)	.....	.....	.....	.....	.....	.....	280
Reference v3 (P502A)	.....	.....	.....	.....	.....	.....	280
v3 (n=6)	.....	.....	.....	.....	.....	.....	280
v4 (SANC30)	.....	.....	.....	.....	.....	.....	280
Reference (pIB485)	.....	.....	.....	.....	.....	.....	280
		300		320		340	
Reference v1 (pSAP074A)	TAAACTTCAA	TTCAAAAGAA	ATGGCTCAAC	ATTTCAAATC	TAAAAATGTA	GATGTTTACG	CTATAAGATA 350
v1 (n=4)	.....	.....	.....	.....	.....	.....	350
Reference v2 (pSK67)	.....	.....	.....	.....	.....	.....	350
v2 (n=4)	.....	.....	.....	.....	.....	.....	350
Reference v3 (P502A)	.....	.....	.....	.....	.....	.....	350
v3 (n=6)	.....	.....	.....	.....	.....	.....	350
v4 (SANC30)	.....	.....	.....	.....	.....	.....	350
Reference (pIB485)	.....	.....	.....	.....	.....	.....	350
		360		380		400	
Reference v1 (pSAP074A)	TAGCATTAAAT	TGTTATGGTG	GTGAAATAGA	TAGGACTGCT	TGTACATATG	GAGGTGTCAC	TCCACACGAA 420
v1 (n=4)	.....	.....	.....	.....	.....	.....	420
Reference v2 (pSK67)	.....	.....	.....	.....	.....	.....	420
v2 (n=4)	.....	.....	.....	.....	.....	.....	420
Reference v3 (P502A)	.....	.....	.....	.....	.....	.....	420
v3 (n=6)	.....	.....	.....	.....	.....	.....	420
v4 (SANC30)	.....	.....	.....	.....	.....	.....	420
Reference (pIB485)	.....	.....	.....	.....	.....	.....	420
		440		460		480	
Reference v1 (pSAP074A)	GGTAATAAAT	TAAAAGAACG	AAAAAAAATA	CCAATCAATT	TGTGGATAAA	TGGTGTAACA	AAAGAAGTTT 490
v1 (n=4)	.....	.....	.....	.....	.....	.....	490
Reference v2 (pSK67)	.....	.....	.....	.....	.....	.....	490
v2 (n=4)	.....	.....	.....	.....	.....	.....	490
Reference v3 (P502A)	.....	.....	.....	.....	.....	.....	490
v3 (n=6)	.....	.....	.....	.....	.....	.....	490
v4 (SANC30)	.....	.....	.....	.....	.....	.....	490
Reference (pIB485)	.....	.....	.....	.....	.....	.....	490
		500		520		540	
Reference v1 (pSAP074A)	CTTTAGATAA	AGTTCAAACA	GATAAAAAAA	ATGTTACCGT	ACAAGAATTA	GATGCACAAG	CAAGGCGCTA 560
v1 (n=4)	.....	.....	.....	.....	.....	.....	560
Reference v2 (pSK67)	.....	.....	.....	.....	.....	.....	560
v2 (n=4)	.....	.....	.....	.....	.....	.....	560
Reference v3 (P502A)	.....	.....	.....	.....	.....	.....	560
v3 (n=6)	.....	.....	.....	.....	.....	.....	559
v4 (SANC30)	.....	.....	.....	.....	.....	.....	559
Reference (pIB485)	.....	.....	.....	.....	.....	.....	560
							560

		580		600		620	
Reference v1 (pSAP074A)	TTTGCAAAG	GATTTAAAT	TGTATAATA	TGATACTCT	GGAGGAAAA	TACAGCGCG	AAAAATAGAG 630
v1 (n=4)	.....	.....	.....	.....	.....	.....	630
Reference v2 (pSK67)	.....	.....	.....	.....	.....	.....	630
v2 (n=4)	.....	.....	.....	.....	.....	.....	630
Reference v3 (P502A)	.....	.....	.....	.....	.....	.....	629
v3 (n=6)	.....	.....	.....	.....	.....	.....	629
v4 (SANC30)	.....	.....	.....	.....	.....	.....	630
Reference (piB485)	.....	.....	.....	.....	.....	.....	630
	640		660		680		700
Reference v1 (pSAP074A)	TTTGATTCTT	CTGATGGGTC	TAAAGTCTCT	TATGATTAT	TTGATGTTAA	GGGTGATTTT	CCCGAAAAAC 700
v1 (n=4)	.....	.....	.....	.....	.....	.....	700
Reference v2 (pSK67)	.....	.....	.....	.....	.....	.....	700
v2 (n=4)	.....	.....	.....	.....	.....	.....	700
Reference v3 (P502A)	.....	.....	.....	.....	.....	.....	699
v3 (n=6)	.....	.....	.....	.....	.....	.....	699
v4 (SANC30)	.....	.....	.....	.....	.....	.....	700
Reference (piB485)	.....	.....	.....	.....	.....	.....	700
		720		740		760	
Reference v1 (pSAP074A)	AATTACGAAT	ATACAGTGAT	AATAAAACAT	TATCCACAGA	GCACCTTCAT	ATTGACATCT	ATTTATATGA 770
v1 (n=4)	.....	.....	.....	.....	.....	.....	770
Reference v2 (pSK67)	.....	.....	.....	.....	.....	.....	770
v2 (n=4)	.....	.....	.....	.....	.....	.....	770
Reference v3 (P502A)	.....	.....	.....	.....	.....	.....	769
v3 (n=6)	.....	.....	.....	.....	.....	.....	769
v4 (SANC30)	.....	.....	.....	.....	.....	.....	770
Reference (piB485)	.....	.....	.....	.....	.....	.....	770
Reference v1 (pSAP074A)	AAAGTAG	777					
v1 (n=4)	.....	777					
Reference v2 (pSK67)	.....	777					
v2 (n=4)	.....	777					
Reference v3 (P502A)	.....	776					
v3 (n=6)	.....	776					
v4 (SANC30)	.....	777					
Reference (piB485)	.....	777					

SED AMINO ACID

		20		40		60	
Reference v1 (pSAP074A)	MKKFNILIAL	LFFTSLVISP	LNVKANENID	SVKEKELHKK	SELSSTALNN	MKHSYADKNP	IIGENKSTGD 70
v1 (n=4)	.....	.....	.....	.....	.....	.....	70
Reference v2 (pSK67)	.....	.....	.....	.....	.....	.....	70
v2 (n=4)	.....	.....	.....	.....	.....	.....	70
Reference v3 (p502A)	.....	.....	.....	.....	.....	.....	70
v3 (n=6)	.....	.....	.....	.....	.....	.....	70
v4 (SANC30)	.....	.....	.....	.....	.....	.....	70
Reference (piB485)	.....	.....	.....	.....	.....	.....	70
	80		100		120		140
Reference v1 (pSAP074A)	QFLENTLLYK	KFFFTDLINFE	DLLINFNSKE	MAQHFKSKNV	DVYAIRYSIN	CYGGIEDRTA	CTYGGVTPHE 140
v1 (n=4)	.....	.....	.....	.....	.....	.....	140
Reference v2 (pSK67)	.....	.....	.....	.....	.....	.....	140
v2 (n=4)	.....	.....	.....	.....	.....	.....	140
Reference v3 (p502A)	.....	.....	.....	.....	.....	.....	140
v3 (n=6)	.....	.....	.....	.....	.....	.....	140
v4 (SANC30)	.....	.....	.....	.....	.....	.....	140
Reference (piB485)	.....	.....	.....	.....	.....	.....	140
		160		180		200	
Reference v1 (pSAP074A)	GNK LKERKK I	PINLWINGVQ	KEVSLDKVQT	DKKNV - - - T	VQELDAQARR	YLQKDLKLYN	NDTLGGK IQR 206
v1 (n=4)	.....	.....	.....	.....	.....	.....	206
Reference v2 (pSK67)	.....	.....	.....	.....	.....	.....	206
v2 (n=4)	.....	.....	.....	.....	.....	.....	206
Reference v3 (p502A)	.....	.....	.....	.....	.....	.....	180
v3 (n=6)	.....	.....	.....	.....	.....	.....	180
v4 (SANC30)	.....	.....	.....	.....	.....	.....	206
Reference (piB485)	.....	.....	.....	.....	.....	.....	206
	220		240		260		
Reference v1 (pSAP074A)	GK I EFDSSDG	SKVSYDLFDV	KGDFPEKQLR	IYSDNKT LST	EHLHID I YLY	EK	259
v1 (n=4)	.....	.....	.....	.....	.....	.....	259
Reference v2 (pSK67)	.....	.....	.....	.....	.....	.....	259
v2 (n=4)	.....	.....	.....	.....	.....	.....	259
Reference v3 (p502A)	.....	.....	.....	.....	.....	.....	180
v3 (n=6)	.....	.....	.....	.....	.....	.....	180
v4 (SANC30)	.....	.....	.....	.....	.....	.....	259
Reference (piB485)	.....	.....	.....	.....	.....	.....	259

Figure S3. Sequence alignments for *sed*.

Table S1. Primers used in this study.

Target	Primer ID	Primer Sequence (5'-3')	Annealing Temperature (°C)
<i>seb</i> promoter	seb_p_fwd	TGAGGAGATTGAAGCAACGC	56
	seb_p_rev	AGGCAGGTACTCTATAAGTGCC	
<i>seb</i>	seb_fwd	TGATGATAATCATGTATCAGCA	61
	seb_rev	ACGGCGACACAGTAACTATCCA	
<i>sec</i> promoter	sec_p_fwd	TCAAGATGCTTAGAAATCCTCTGT	66
	sec_p_rev	AGCTTTCTGGAAGACCGTATCCTGT	
<i>sec</i>	sec_fwd	TCAAGATGCTTAGAAATCCTCTGT	63
	sec_rev	TCGGTGCTTGCCTTTTATAGGA	
<i>sed</i> promoter	sed_p_fwd	ATCCGGCTGTTCTATGGCACC	56
	sed_p_rev	AGATGCACAAGCAAGGCGCT	
<i>sed</i>	sed_fwd	TTCGAAATGCTGATGGTTGT	62
	sed_rev	AGCTATCATCAATTTCTTTCAAGC	