

Table 3. *Staphylococcus aureus* strain Newman genes required for nematode killing

Phoenix mutant	ORF	<i>Caenorhabditis elegans</i> killing, %		Gene	Predicted product
		Adult	L4		
Insertions in metabolic genes					
ΦNE05074	SAV0185	Ns	64	<i>argD1</i>	ornithine aminotransferase
ΦNE05298	SAV0248	Ns	75	<i>gutB</i>	sorbitol dehydrogenase
ΦNE03871	SAV0475	10	11	<i>agl</i>	α-glucosidase
ΦNE01545	SAV0588	5	25	<i>pta</i>	phosphotransacetylase
ΦNE02038	SAV0643	23	32	<i>abcA</i>	ATP-binding cassette transporter A
ΦNE03711	SAV0711	90	69	<i>ptpS</i>	6-pyruvoyl tetrahydrobiopterin synthase homologue
ΦNE10868	SAV1094	22	0	<i>phdB</i>	pyruvate dehydrogenase E1 component
ΦNE00656	SAV1201	Ns	72	<i>pyrC</i>	dihydroorotase
ΦNE00678	SAV1202	Ns	77	<i>pyrAA</i>	carbamoyl-phosphate synthase small chain
ΦNE02887	SAV1203	88	ns	<i>pyrAB</i>	carbamoyl-phosphate synthase large chain
ΦNE02904	SAV1205	Ns	64	<i>pyrE</i>	orotate phosphoribosyltransferase
ΦNE00263	SAV1350	58	34	<i>citB</i>	aconitase
ΦNE09110	SAV1356	Ns	41	<i>alsT</i>	sodium/alanine symporter
ΦNE10240	SAV1370	72	11	<i>trpC</i>	indole-3-glycerol phosphate synthase
ΦNE02026	SAV1413	Ns	30	<i>odhA</i>	oxoglutarate dehydrogenase
ΦNE10390	SAV1518	90	1	<i>lpd</i>	dihydrolipoamide dehydrogenase
ΦNE01982	SAV1687	77	36	<i>gapB</i>	glyceraldehyde 3-phosphate dehydrogenase 2
ΦNE05271	SAV1694	76	52	<i>citC</i>	isocitrate dehydrogenase
ΦNE11740	SAV1765	Ns	77		lysophospholipase homologue
ΦNE01969	SAV1791	Ns	77	<i>pckA</i>	phosphoenolpyruvate carboxykinase
ΦNE03937	SAV1851	63	30	<i>citG</i>	fumarate hydratase
ΦNE04769	SAV1918	82	80		pyrazinamidase/nicotinamidase homologue
ΦNE09246	SAV2164	Ns	77	<i>arg</i>	arginase
ΦNE01975	SAV2516	26	23	<i>fbp</i>	fructose-biphosphatase
ΦNE04818	SAV0511	75	11	<i>ftsH</i>	ATP-dependent Zn metallopeptidase
ΦNE13116	SAV0768	31	2	<i>clpP</i>	ATP-dependent Clp protease
ΦNE09483	SAV0721	68	44	<i>recQ</i>	probable DNA helicase
ΦNE11173	SAV1227	84	10	<i>recG</i>	ATP-dependent DNA helicase
Insertions in regulatory genes					
ΦNE09725	SAV0705	Ns	61	<i>saeS</i>	sensor histidine kinase
ΦNE01594	SAV0706	Ns	73	<i>saeR</i>	response regulator
ΦNE12844	SAV1491	Ns	57	<i>srrB</i>	staphylococcal respiratory response protein
ΦNE01835	SAV2356	55	57	<i>tcaA</i>	TcaA protein
ΦNE06220	SAV2355	Ns	64	<i>tcaB</i>	TcaB protein
ΦNE11797	SAV1362	87	68	<i>msrR</i>	peptide methionine sulfoxide reductase regulator
ΦNE02575	SAV2499	Ns	73	<i>sarH2</i>	<i>sarA</i> homologue
Insertions in genes encoding extracellular factors					
ΦNE09823	SAV0815	93	66	<i>nuc</i>	staphylococcal nuclease
ΦNE02140	SAV1163	Ns	57	<i>hla</i>	α-hemolysin
ΦNE05448	SAV0154	63	67	<i>cap5F</i>	capsular polysaccharide synthesis enzyme
ΦNE03492	SAV0158	71	Ns	<i>capJ</i>	capsular polysaccharide synthesis enzyme

		<i>Caenorhabditis elegans</i> killing, %			
ΦNΞ01957	SAV0161	76	Ns	<i>capM</i>	capsular polysaccharide synthesis enzyme
ΦNΞ09330	SAV2161	35	40	<i>glmM</i>	phosphoglucosamine-mutase
Insertions in unknown genes					
ΦNΞ03224	SAV0258	85	Ns		similar to β-glycosyltransferase
ΦNΞ01776	SAV0709	78	Ns		conserved hypothetical protein
ΦNΞ11117	SAV0713	Ns	50		hypothetical protein
ΦNΞ04880*	SAV0727*	Ns	80		similar to di-tripeptide ABC transporter
ΦNΞ04279	SAV0841	10	51		conserved hypothetical protein
ΦNΞ07262*	SAV0855*	70	18		hypothetical protein (φMu50B)
ΦNΞ12478*	SAV0862*	Ns	21		hypothetical protein (φMu50B)
ΦNΞ08772*	SAV0866*	Ns	50		hypothetical protein (φMu50B)
ΦNΞ03004*	SAV0876*	17	13		hypothetical protein (φMu50B)
ΦNΞ10876	SAV0940	Ns	66		conserved hypothetical protein
<u>ΦNΞ05437</u>	<u>SAV0944</u>	25	11		conserved hypothetical protein
ΦNΞ00126	SAV1012	35	78		hypothetical protein
ΦNΞ10949	SAV1190	Ns	73		conserved hypothetical protein
<u>ΦNΞ12600</u>	<u>SAV1221</u>	26	53		conserved hypothetical protein
ΦNΞ01851*	SAV1619*	71	63		similar to deoxyribonuclease
ΦNΞ01639	SAV1677	48	63		conserved hypothetical protein
ΦNΞ01819	SAV1706	Ns	51		conserved hypothetical protein
ΦNΞ09771	SAV1725	75	20		hypothetical protein
ΦNΞ04883*	SAV1926*	30	11		hypothetical protein
ΦNΞ11080*	SAV1927*	20	3		conserved hypothetical protein
ΦNΞ01449	SAV1928	15	13		hypothetical protein
ΦNΞ01508*	SAV1932*	Ns	13		hypothetical protein
ΦNΞ02679	SAV1978	15	15		hypothetical protein (φMu50A)
<u>ΦNΞ03200*</u>	<u>SAV1986*</u>	28	59		hypothetical protein (φMu50A)
ΦNΞ00556	SAV2068	86	Ns		hypothetical protein
<u>ΦNΞ03531</u>	<u>SAV2117</u>	Ns	61		similar to protoporphyrinogen oxidase HemK
ΦNΞ13125	SAV2123	76	Ns		conserved hypothetical protein
ΦNΞ03603	SAV2167	66	Ns		hypothetical protein
ΦNΞ02863	SAV2175	Ns	65		similar to ferrichrome ABC transporter
ΦNΞ04180*	SAV2567*	51	48		similar to acyltransferase

Data are reported as percentage of worm killing based on 100% killing by *S. aureus* strain Newman wild-type. ΦNΞ mutants with underlined ORFs displayed growth defects in tryptic soy broth medium at 37°C. ΦNΞ mutants marked with an asterisk were tested in a mouse model of infection. Ns, not significant.