

**Supplementary Table S6.** Pairs of homologous genes exhibiting alternative methylation in the region from -117 to -81 bp upstream of the transcription start sites (TSS), belonging to different gene expression categories.

Locus tag identifiers of different test cultures are: NW338 - *S. aureus* 150; K8B68 - *S. aureus* 597/2; K8B78 - *S. aureus* 598; and HMPRNC0000 - *S. aureus* BAA-39.

Query locus tag	Sbjct locus tag	Methylation query   sbjct	Gene expression category: query   sbjct	Gene	Gene name	Annotation
HMPRNC0000_0001	K8B68_00005	1   2	5   4	<i>dnaA</i>	<i>dnaA</i>	Chromosomal replication initiator protein DnaA
HMPRNC0000_0001	K8B78_00005	1   2	5   4	<i>dnaA</i>	<i>dnaA</i>	Chromosomal replication initiator protein DnaA
HMPRNC0000_0029	K8B68_00130	1   5	4   2	<i>rlmH</i>	<i>rlmH</i>	23S rRNA (pseudouridine(1915)-N(3))-methyltransferase
HMPRNC0000_0093	NW338_00230	1   2	3   2	<i>hipO2</i>	<i>hipO2</i>	N-acyl-L-amino acid amidohydrolase
HMPRNC0000_0191	K8B68_00720	1   6	3   1	<i>brnQ</i>	<i>brnQ</i>	Branched-chain amino acid transport system carrier protein
HMPRNC0000_0227	K8B78_00725	1   2	4   3	.	.	putative M23 peptidase domain protein
HMPRNC0000_0244	K8B78_00800	1   2	6   3	.	.	hypothetical protein
HMPRNC0000_0285	NW338_01020	1   3	4   3	.	.	Transcriptional regulator, GntR family
HMPRNC0000_0444	NW338_01770	1   2	1   0	.	.	Exotoxin 7
HMPRNC0000_0690	K8B68_03010	1   2	5   4	<i>sitC</i>	<i>sitC</i>	Manganese ABC transporter, periplasmic-binding protein SitA
HMPRNC0000_0690	NW338_02985	1   2	5   2	<i>sitC</i>	<i>sitC</i>	Manganese ABC transporter, periplasmic-binding protein SitA
HMPRNC0000_0738	K8B78_03155	1   2	4   3	.	.	hypothetical protein
HMPRNC0000_1167	NW338_05075	1   3	2   1	.	.	UPF0348 protein family
HMPRNC0000_1308	NW338_05675	1   8	2   1	.	.	hypothetical protein
HMPRNC0000_1430	K8B78_06440	1   2	6   5	<i>kataA</i>	<i>kataA</i>	Catalase KatE
HMPRNC0000_1589	K8B78_07135	1   4	4   3	<i>gpsA</i>	<i>gpsA</i>	Glycerol-3-phosphate dehydrogenase (NAD(P)+)
HMPRNC0000_1649	K8B78_07410	1   2	5   4	<i>xseA</i>	<i>xseA</i>	Exodeoxyribonuclease VII large subunit
HMPRNC0000_1782	K8B78_08035	1   2	3   2	<i>mreC</i>	<i>mreC</i>	Rod shape-determining protein MreC
HMPRNC0000_2135	K8B68_09840	1   2	5   0	<i>lytN</i>	<i>lytN</i>	Phage lysin, N-acetylmuramoyl-L-alanine amidase
HMPRNC0000_2183	K8B68_05980	1   3	2   0	.	.	hypothetical protein
HMPRNC0000_2536	K8B78_12250	1   3	5   3	<i>amiD2</i>	<i>amiD2</i>	Autolysin
HMPRNC0000_2545	NW338_11770	1   2	5   4	.	.	Transcriptional regulator, DeoR family
HMPRNC0000_2711	K8B68_12025	1   2	4   3	.	.	Na+//H+ antiporter
HMPRNC0000_2711	K8B78_12965	1   2	4   2	.	.	Na+//H+ antiporter
HMPRNC0000_2711	NW338_12440	1   2	4   3	.	.	Na+//H+ antiporter
HMPRNC0000_2760	NW338_12730	2   3	4   0	.	.	hypothetical protein
HMPRNC0000_2771	K8B68_12330	1   2	5   4	<i>gntP</i>	<i>gntP</i>	gluconate permease
HMPRNC0000_2771	K8B78_13255	1   2	5   3	<i>gntP</i>	<i>gntP</i>	gluconate permease
HMPRNC0000_3011	K8B68_13335	1   2	6   3	.	.	hypothetical protein
K8B68_00555	HMPRNC0000_0151	1   2	3   2	<i>cap8C</i>	<i>cap8C</i>	type 8 capsular polysaccharide synthesis protein Cap8C
K8B68_03470	K8B78_03590	2   4	4   2	.	.	ABC transporter ATP-binding protein
K8B68_03470	NW338_03445	2   3	4   3	.	.	ABC transporter ATP-binding protein
K8B68_03775	K8B78_03895	1   2	5   4	<i>rnr</i>	<i>rnr</i>	ribonuclease R
K8B68_04205	HMPRNC0000_0990	2   3	5   2	<i>argH</i>	<i>argH</i>	argininosuccinate lyase
K8B68_04205	NW338_04240	2   3	5   3	<i>argH</i>	<i>argH</i>	argininosuccinate lyase
K8B68_05025	NW338_05075	1   3	2   1	.	.	nucleotidyltransferase
K8B68_05330	HMPRNC0000_1233	1   2	4   3	.	.	cell division protein FtsQ//DivIB
K8B68_06195	K8B78_06440	1   2	6   5	.	.	catalase
K8B68_06295	NW338_06300	2   3	4   2	<i>parE</i>	<i>parE</i>	DNA topoisomerase IV subunit B
K8B68_06670	K8B78_06915	3   6	4   3	.	.	thymidylate synthase
K8B68_06895	K8B78_07135	2   4	5   3	.	.	NAD(P)H-dependent glycerol-3-phosphate dehydrogenase
K8B68_07020	K8B78_07270	1   2	3   1	.	.	NUDIX hydrolase
K8B68_07020	NW338_07355	1   2	3   2	.	.	NUDIX hydrolase
K8B68_07160	K8B78_07425	1   2	5   1	<i>accC</i>	<i>accC</i>	acetyl-CoA carboxylase biotin carboxylase subunit
K8B68_07160	NW338_07505	1   2	5   3	<i>accC</i>	<i>accC</i>	acetyl-CoA carboxylase biotin carboxylase subunit
K8B68_07165	K8B78_07430	1   2	5   3	<i>accB</i>	<i>accB</i>	acetyl-CoA carboxylase biotin carboxyl carrier protein
K8B68_07835	K8B78_08100	1   2	5   2	<i>hemB</i>	<i>hemB</i>	porphobilinogen synthase
K8B68_07940	HMPRNC0000_1816	1   2	5   4	<i>coaE</i>	<i>coaE</i>	dephospho-CoA kinase
K8B68_09155	K8B78_09880	1   3	4   2	<i>gatC</i>	<i>gatC</i>	Asp-tRNA(Asn)//Glu-tRNA(Gln) amidotransferase subunit GatC
K8B68_10015	HMPRNC0000_2231	2   3	4   1	<i>ilvD</i>	<i>ilvD</i>	dihydroxy-acid dehydratase
K8B68_10190	K8B78_11080	3   4	5   3	.	.	UDP-N-acetylmuramoyl-tripeptide--D-alanyl-D- alanine ligase
K8B68_12300	NW338_12730	1   3	1   0	.	.	hypothetical protein
K8B68_12845	HMPRNC0000_2894	1   2	6   5	.	.	fructose bisphosphate aldolase
K8B68_12860	K8B78_13785	1   2	6   4	.	.	AMP-binding protein
K8B68_13040	HMPRNC0000_2936	1   3	2   0	.	.	arginine repressor
K8B78_00130	K8B68_00130	2   5	4   2	<i>rlmH</i>	<i>rlmH</i>	23S rRNA (pseudouridine(1915)-N(3))-methyltransferase RlmH
K8B78_00250	K8B68_00325	1   2	5   3	.	.	oleate hydratase
K8B78_00250	NW338_00250	1   2	5   4	.	.	oleate hydratase
K8B78_00430	K8B68_00525	1   2	1   0	.	.	DNA-binding protein

K8B78_00980	K8B68_01075	1   3	5   4	<i>scdA</i>	iron-sulfur cluster repair di-iron protein ScdA
K8B78_01010	NW338_01020	1   3	5   3	.	GntR family transcriptional regulator
K8B78_02735	NW338_02735	1   2	4   3	<i>mvaD</i>	diphosphomevalonate decarboxylase
K8B78_02745	K8B68_02810	2   3	5   3	.	YuzB family protein
K8B78_05070	NW338_04940	1   4	1   0	.	XRE family transcriptional regulator
K8B78_05205	NW338_05075	1   3	2   1	.	nucleotidyltransferase
K8B78_05590	K8B68_05400	1   2	4   2	.	NCS2 family nucleobase:cation symporter
K8B78_05765	NW338_05635	1   2	3   2	<i>smc</i>	chromosome segregation protein SMC
K8B78_06080	K8B68_05885	1   2	5   4	<i>thiW</i>	energy coupling factor transporter S component ThiW
K8B78_06535	K8B68_06290	1   2	6   3	<i>plsY</i>	glycerol-3-phosphate 1-O-acyltransferase PlsY
K8B78_06535	NW338_06295	1   2	6   5	<i>plsY</i>	glycerol-3-phosphate 1-O-acyltransferase PlsY
K8B78_07110	K8B68_06870	1   2	6   5	<i>ndk</i>	nucleoside-diphosphate kinase
K8B78_08295	K8B68_08030	1   4	5   4	.	metal-dependent hydrolase
K8B78_09110	K8B68_08715	1   2	5   2	.	helix-turn-helix transcriptional regulator
K8B78_12650	K8B68_11730	1   2	3   2	<i>rsp</i>	AraC family transcriptional regulator Rsp
K8B78_12650	NW338_12120	1   2	3   1	<i>rsp</i>	AraC family transcriptional regulator Rsp
K8B78_12675	NW338_12140	1   2	3   2	.	DUF3139 domain-containing protein
K8B78_12955	NW338_12430	2   3	4   2	.	metallophosphoesterase
K8B78_13060	NW338_12545	1   2	6   5	.	YehR family lipoprotein
K8B78_13230	NW338_12730	1   3	4   0	.	hypothetical protein
K8B78_13355	NW338_12870	1   2	6   4	.	VOC family protein
K8B78_13390	NW338_12910	1   3	4   2	.	hypothetical protein
K8B78_13490	K8B68_12560	1   2	5   3	<i>clpL</i>	ATP-dependent Clp protease ATP-binding subunit ClpL
K8B78_13770	HMPRNC0000_2894	1   2	6   5	.	fructose bisphosphate aldolase
K8B78_13960	K8B68_13035	1   3	6   0	.	hypothetical protein
K8B78_13960	NW338_13495	1   4	6   0	.	hypothetical protein
K8B78_14275	K8B68_13335	1   2	6   3	.	HdeD family acid-resistance protein
NW338_00005	K8B68_00005	1   2	5   4	<i>dnaA</i>	chromosomal replication initiator protein DnaA
NW338_00005	K8B78_00005	1   2	5   4	<i>dnaA</i>	chromosomal replication initiator protein DnaA
NW338_00130	HMPRNC0000_0029	1   2	5   4	<i>rlmH</i>	23S rRNA (pseudouridine(1915)-N(3))-methyltransferase RlmH
NW338_00130	K8B68_00130	1   5	5   2	<i>rlmH</i>	23S rRNA (pseudouridine(1915)-N(3))-methyltransferase RlmH
NW338_00130	K8B78_00130	1   2	5   4	<i>rlmH</i>	23S rRNA (pseudouridine(1915)-N(3))-methyltransferase RlmH
NW338_03190	K8B68_03215	2   4	5   4	.	DUF402 domain-containing protein
NW338_03325	K8B68_03350	2   3	5   4	.	DeoR//GlpR family DNA-binding transcription regulator
NW338_03445	K8B78_03590	3   4	3   2	.	ABC transporter ATP-binding protein
NW338_03760	K8B78_03895	1   2	5   4	<i>rnr</i>	ribonuclease R
NW338_03920	K8B78_04010	1   2	5   4	.	GNAT family N-acetyltransferase
NW338_04405	K8B78_04525	1   2	4   2	<i>trpS</i>	tryptophan--tRNA ligase
NW338_05945	K8B68_05885	1   2	5   4	<i>thiW</i>	energy coupling factor transporter S component ThiW
NW338_06195	K8B78_06440	1   2	6   5	.	catalase
NW338_06670	K8B78_06915	2   6	4   3	.	thymidylate synthase
NW338_06685	K8B68_06685	1   2	4   2	.	NifU N-terminal domain-containing protein
NW338_06900	K8B78_07135	1   4	5   3	.	NAD(P)H-dependent glycerol-3-phosphate dehydrogenase
NW338_07510	K8B78_07430	1   2	4   3	<i>accB</i>	acetyl-CoA carboxylase biotin carboxyl carrier protein
NW338_07705	K8B68_07360	1   2	6   4	<i>recO</i>	DNA repair protein RecO
NW338_08210	HMPRNC0000_1795	1   2	5   3	<i>hemL</i>	glutamate-1-semialdehyde 2,1-aminomutase
NW338_08320	HMPRNC0000_1816	1   2	6   4	<i>coaE</i>	dephospho-CoA kinase
NW338_08410	K8B68_08030	1   4	5   4	.	metal-dependent hydrolase
NW338_09625	K8B78_09880	1   3	3   2	<i>gatC</i>	Asp-tRNA(Asn)//Glu-tRNA(Gln) amidotransferase subunit GatC
NW338_09695	K8B68_09225	1   2	4   3	.	nitric oxide synthase oxygenase
NW338_09985	HMPRNC0000_2156	1   2	2   0	.	phage terminase small subunit P27 family
NW338_10425	HMPRNC0000_2231	2   3	4   1	<i>ilvD</i>	dihydroxy-acid dehydratase
NW338_10545	K8B68_10140	1   2	3   2	.	PH domain-containing protein
NW338_10545	K8B78_11030	1   2	3   2	.	PH domain-containing protein
NW338_10595	K8B78_11080	1   4	4   3	.	UDP-N-acetylmuramoyl-tripeptide--D-alanyl-D- alanine ligase
NW338_10835	K8B78_11320	1   2	4   3	<i>coaW</i>	type II pantothenate kinase
NW338_11210	K8B68_10800	1   2	3   1	.	NAD-dependent protein deacylase
NW338_11595	K8B68_11190	1   2	5   4	.	ATP-binding cassette domain-containing protein
NW338_11680	K8B68_11275	1   3	6   5	<i>sarR</i>	HTH-type transcriptional regulator SarR
NW338_11680	K8B78_12190	1   2	6   5	<i>sarR</i>	HTH-type transcriptional regulator SarR
NW338_12195	K8B78_12730	1   2	5   3	<i>narH</i>	nitrate reductase subunit beta
NW338_13090	K8B68_12640	1   2	3   1	<i>crtQ</i>	4,4'-diaponeurosporenoate glycosyltransferase
NW338_13305	HMPRNC0000_2894	1   2	6   5	.	fructose bisphosphate aldolase
NW338_13500	HMPRNC0000_2936	1   3	1   0	.	arginine repressor
NW338_13575	HMPRNC0000_2955	1   3	2   0	<i>asp2</i>	accessory Sec system protein Asp2