

**Supplementary Table S6** Signal transduction mechanisms associated genes in the genome of V4 strain

Number	Gene	Accession number	Gene product	Function	
<b>Two-component system</b>					
1	1)	cheA	NLG40_00995	Chemotaxis protein CheA	Chemotaxis protein histidine kinase and related kinases
2		cheA	NLG40_16280	Chemotaxis protein CheA	Chemotaxis protein histidine kinase and related kinases
3		cheW	NLG40_00990	Chemotaxis protein CheW	Chemotaxis signal transduction protein
4		cheW	NLG40_16285	Chemotaxis protein CheW	Chemotaxis signal transduction protein
5		cheY	NLG40_00960	Chemotaxis protein CheY	FOG: CheY-like receiver
6		cheY	NLG40_16045	Chemotaxis protein CheY	FOG: CheY-like receiver
7		cheB	NLG40_00965	Protein-glutamate methylesterase/protein-glutamine glutaminase	Chemotaxis response regulator containing a CheY-like receiver domain and a methylesterase domain
8		cheB	NLG40_16050	Protein-glutamate methylesterase/protein-glutamine glutaminase	Chemotaxis response regulator containing a CheY-like receiver domain and a methylesterase domain
9		cheR	NLG40_00970	Chemotaxis protein methyltransferase	Methylase of chemotaxis methyl-accepting proteins
10		cheR	NLG40_16055	Chemotaxis protein methyltransferase	Methylase of chemotaxis methyl-accepting proteins
11		tar	NLG40_00975	Methyl-accepting chemotaxis protein II	Methyl-accepting chemotaxis protein
12		tar	NLG40_00985	Methyl-accepting chemotaxis protein II	Methyl-accepting chemotaxis protein
13		tar	NLG40_15495	Methyl-accepting chemotaxis protein II	Methyl-accepting chemotaxis protein
14		tar	NLG40_21575	Methyl-accepting chemotaxis protein II	Methyl-accepting chemotaxis protein
15		tsr	NLG40_00980	Methyl-accepting chemotaxis protein I	Methyl-accepting chemotaxis protein
16		tsr	NLG40_03225	Methyl-accepting chemotaxis protein I	Methyl-accepting chemotaxis protein
17		tas	NLG40_04250	Methyl-accepting chemotaxis aspartate transducer	Methyl-accepting chemotaxis protein
18		tas	NLG40_07960	Methyl-accepting chemotaxis aspartate transducer	Methyl-accepting chemotaxis protein
19		tas	NLG40_16290	Methyl-accepting chemotaxis aspartate transducer	Methyl-accepting chemotaxis protein
20		tas	NLG40_16405	Methyl-accepting chemotaxis aspartate transducer	Methyl-accepting chemotaxis protein
21		tas	NLG40_14610	Methyl-accepting chemotaxis aspartate transducer	Methyl-accepting chemotaxis protein
22		tas	NLG40_17365	Methyl-accepting chemotaxis aspartate transducer	Methyl-accepting chemotaxis protein
23		tap	NLG40_08095	Methyl-accepting chemotaxis protein IV	Methyl-accepting chemotaxis protein
24		tcp	NLG40_16245	Methyl-accepting chemotaxis citrate transducer	Methyl-accepting chemotaxis protein
25		trg	NLG40_19090	Methyl-accepting chemotaxis protein III	Methyl-accepting chemotaxis protein
26		cheV2	NLG40_19180	Chemotaxis protein CheV2 SV=1	Chemotaxis signal transduction protein
27		ctpL	NLG40_03385	Methyl-accepting chemotaxis protein CtpL	Methyl-accepting chemotaxis protein
28		mcpA	NLG40_17385	Methyl-accepting chemotaxis protein McpA	Methyl-accepting chemotaxis protein
29		mcpA	NLG40_01480	Methyl-accepting chemotaxis protein McpA	Methyl-accepting chemotaxis protein
30	2)	bvgS	NLG40_00055	Virulence sensor protein BvgS	ABC-type amino acid transport/signal transduction systems, periplasmic component/domain
31		bvgS	NLG40_03550	Virulence sensor protein BvgS	Signal transduction histidine kinase
32		bvgS	NLG40_11825	Virulence sensor protein BvgS	Signal transduction histidine kinase
33		bvgS	NLG40_11830	Virulence sensor protein BvgS	Signal transduction histidine kinase
34		bvgA	NLG40_11835	Virulence factors putative positive transcription regulator BvgA	Response regulator containing a CheY-like receiver domain and an HTH DNA-binding domain
35		bvgA	NLG40_03545	Virulence factors putative positive transcription regulator BvgA	Response regulator containing a CheY-like receiver domain and an HTH DNA-binding

					domain
36	3)	kdpD	NLG40_11530	Sensor protein KdpD	Osmosensitive K <sup>+</sup> channel histidine kinase
37		kdpE	NLG40_03765	KDP operon transcriptional regulatory protein KdpE	Response regulators consisting of a CheY-like receiver domain and a winged-helix DNA-binding domain
38	4)	phoR	NLG40_05485	Phosphate regulon sensor protein PhoR	Signal transduction histidine kinase
39		phoB	NLG40_05490	Phosphate regulon transcriptional regulatory protein PhoB	Response regulators consisting of a CheY-like receiver domain and a winged-helix DNA-binding domain
40	5)	cpxA	NLG40_10115	Sensor protein CpxA	Signal transduction histidine kinase
41		cpxR	NLG40_10110	Transcriptional regulatory protein CpxR	Response regulators consisting of a CheY-like receiver domain and a winged-helix DNA-binding domain
42	6)	ntrB	NLG40_10400	Sensory histidine kinase/phosphatase NtrB	Signal transduction histidine kinase, nitrogen specific
43		ntrC	NLG40_10405	DNA-binding transcriptional regulator NtrC	Response regulator containing CheY-like receiver, AAA-type ATPase, and DNA-binding domains
44	7)	qseC	NLG40_10530	Sensor protein QseC	Signal transduction histidine kinase
45		qseB	NLG40_10525	Transcriptional regulatory protein QseB	Response regulators consisting of a CheY-like receiver domain and a winged-helix DNA-binding domain
46	8)	pmrB	NLG40_13170	Sensor histidine kinase PmrB	Signal transduction histidine kinase
47		pmrA	NLG40_13175	Transcriptional regulatory protein PmrA	Response regulators consisting of a CheY-like receiver domain and a winged-helix DNA-binding domain
48	9)	phoQ	NLG40_19285	Virulence sensor histidine kinase PhoQ	Signal transduction histidine kinase
49		phoP	NLG40_19290	Transcriptional regulatory protein PhoP	Response regulators consisting of a CheY-like receiver domain and a winged-helix DNA-binding domain
50	10)	rstB	NLG40_21665	Sensor protein RstB	Signal transduction histidine kinase
51		rstA	NLG40_21660	Transcriptional regulatory protein RstA	Response regulators consisting of a CheY-like receiver domain and a winged-helix DNA-binding domain
52	11)	dcuS	NLG40_19515	Sensor histidine kinase DcuS	Signal transduction histidine kinase regulating citrate/malate metabolism
53		dcuR	NLG40_19510	Transcriptional regulatory protein DcuR	Response regulator of citrate/malate metabolism
54	12)	rcsC	NLG40_17960	Sensor histidine kinase RcsC	Signal transduction histidine kinase
55		rcsB	NLG40_17965	Transcriptional regulatory protein RcsB	Response regulator containing a CheY-like receiver domain and an HTH DNA-binding domain
56		rcsB	NLG40_10315	Transcriptional regulatory protein RcsB	Response regulator containing a CheY-like receiver domain and an HTH DNA-binding domain
57		rcsD	NLG40_17970	Phosphotransferase RcsD	FOG: HPt domain
58	13)	baeS	NLG40_18425	Signal transduction histidine-protein kinase BaeS	Signal transduction histidine kinase
59		baeR	NLG40_18420	Transcriptional regulatory protein BaeR	Response regulators consisting of a CheY-like receiver domain and a winged-helix DNA-binding domain
60	14)	arcB	NLG40_13005	Aerobic respiration control sensor protein ArcB	Signal transduction histidine kinase
61		arcA	NLG40_07180	Aerobic respiration control protein ArcA	Response regulators consisting of a CheY-like receiver domain and a winged-helix DNA-binding domain
62	15)	envZ	NLG40_12245	Sensor histidine kinase EnvZ	Signal transduction histidine kinase
63		ompR	NLG40_12240	DNA-binding dual transcriptional regulator OmpR	Response regulators consisting of a CheY-like receiver domain and a winged-helix DNA-binding domain

64	barA	NLG40_15460	Signal transduction histidine-protein kinase BarA	Signal transduction histidine kinase
65	qseE	NLG40_16535	Sensor histidine kinase QseE	Signal transduction histidine kinase
66	gltI	NLG40_03905	Glutamate/aspartate import solute-binding protein	ABC-type amino acid transport/signal transduction systems, periplasmic component/domain
67	dgcQ	NLG40_08300	Probable diguanylate cyclase DgcQ	FOG: GGDEF domain
68	aer	NLG40_08790	Aerotaxis receptor	FOG: PAS/PAC domain
69	crp	NLG40_12375	cAMP-activated global transcriptional regulator CRP	cAMP-binding proteins - catabolite gene activator and regulatory subunit of cAMP-dependent protein kinases
70	csrA	NLG40_15685	Translational regulator CsrA	Carbon storage regulator (could also regulate swarming and quorum sensing)
71	glrR	NLG40_16545	Transcriptional regulatory protein GlrR	Response regulator containing CheY-like receiver, AAA-type ATPase, and DNA-binding domains
72	narP	NLG40_16975	Nitrate/nitrite response regulator protein NarP	Response regulator containing a CheY-like receiver domain and an HTH DNA-binding domain
73	amsI	NLG40_18505	Probable low molecular weight protein-tyrosine-phosphatase AmsI	Protein-tyrosine-phosphatase
74	PA0034	NLG40_11820	Putative transcriptional regulator	Response regulator containing a CheY-like receiver domain and an HTH DNA-binding domain
75	PA0034	NLG40_00060	Putative transcriptional regulator	Response regulator containing a CheY-like receiver domain and an HTH DNA-binding domain
76	uvrY	NLG40_02210	Response regulator UvrY	Response regulator containing a CheY-like receiver domain and an HTH DNA-binding domain
<b>Quorum sensing</b>				
1	qseC	NLG40_10530	Sensor protein QseC	Signal transduction histidine kinase
2	qseE	NLG40_16535	Sensor histidine kinase QseE	Signal transduction histidine kinase
3	qseB	NLG40_10525	Transcriptional regulatory protein QseB	Response regulators consisting of a CheY-like receiver domain and a winged-helix DNA-binding domain
4	crp	NLG40_12375	cAMP-activated global transcriptional regulator CRP	cAMP-binding proteins - catabolite gene activator and regulatory subunit of cAMP-dependent protein kinases
5	luxS	NLG40_15730	S-ribosylhomocysteine lyase	LuxS protein involved in autoinducer AI2 synthesis
6	glrR	NLG40_16545	Transcriptional regulatory protein GlrR	Response regulator containing CheY-like receiver, AAA-type ATPase, and DNA-binding domains
7	pdeR	NLG40_00105	Cyclic di-GMP phosphodiesterase PdeR	FOG: EAL domain
8	kdpE	NLG40_03765	KDP operon transcriptional regulatory protein KdpE	Response regulators consisting of a CheY-like receiver domain and a winged-helix DNA-binding domain