

Supplemental Table 1. Genes differentially expressed in wild-type *V. cholerae* grown at 37°C the shifted to 15°C or 25°C for 1 h. Differentially expressed genes were determined using SAM software with ≥ 2.0 fold change in gene expression and False Discovery Rate (FDR) ≤ 0.03 .

Gene ID	Gene Name	FUNCTIONS	Fold Change	
			15°C / 37°C	25°C / 37°C
Biofilm Formation				
VC0916	vpsU	<i>Vibrio</i> polysaccharide gene U	3.9	
VC0917	vpsA	<i>Vibrio</i> polysaccharide gene A	7.2	
VC0918	vpsB	<i>Vibrio</i> polysaccharide gene B	8.6	
VC0919	vpsC	<i>Vibrio</i> polysaccharide gene C	6.0	
VC0921	vpsE	<i>Vibrio</i> polysaccharide gene E	3.8	
VC0922	vpsF	<i>Vibrio</i> polysaccharide gene F	7.2	
VC0924	vpsH	<i>Vibrio</i> polysaccharide gene H	4.8	
VC0925	vpsI	<i>Vibrio</i> polysaccharide gene I	6.6	
VC0926	vpsJ	<i>Vibrio</i> polysaccharide gene J	6.8	
VC0927	vpsK	<i>Vibrio</i> polysaccharide gene K	4.0	
VC0928	rbmA	Rugosity and biofilm structure modulator A	5.6	
VC0929	rbmB	Rugosity and biofilm structure modulator B	2.0	
VC0933	rbmF	Rugosity and biofilm structure modulator F	3.9	
VC0935	vpsM	<i>Vibrio</i> polysaccharide gene M	6.0	
Amino Acid Biosynthesis				
VC0019	avtA	Valine-pyruvate aminotransferase, avtA	2.0	
VC0030	ilvM	Acetolactate synthase II small subunit, ilvM	0.3	
VC0390	metH	5-methyltetrahydrofolate--homocysteine methyltransferase, metH		2.3
VC0391	lysC	Aspartokinase III lysine-sensitive, lysC	3.6	4.6
VC0941	glyA-1	Serine hydroxymethyltransferase, glyA-1		4.6
VC0991	asnB	Asparagine synthetase B glutamine-hydrolyzing, asnB		2.8
VC1061		Cysteine synthase/cystathionine beta-synthase family protein	4.1	
VC1137	hisA	Isomerase, hisA		3.2
VC1169	trpA	Tryptophan synthase alpha subunit, trpA		2.3
VC1293	aspC	Aspartate aminotransferase, aspC		4.0
VC1671	metC	Cystathionine beta-lyase, metC		3.2
VC2036	asd	Aspartate-semialdehyde dehydrogenase, asd		2.7
VC2116	aroC	Chorismate synthase, aroC		2.5
VC2152	dapE	Succinyl-diaminopimelate desuccinylase, dapE		3.3
VC2273	proA	Gamma-glutamyl phosphate reductase, proA	0.5	
VC2329	dapD	2345-tetrahydropyridine-26-dicarboxylate N-succinyltransferase, dapD	0.6	
VC2362	thrC	Threonine synthase, thrC	0.5	
VC2373	gltB-1	Glutamate synthase large subunit, gltB-1		5.3
VC2376	gltB-2	Glutamate synthase large subunit, gltB-2	2.0	
VC2481	serA	D-3-phosphoglycerate dehydrogenase, serA		11.0
VC2493	leuD	3-isopropylmalate dehydratase small subunit, leuD	0.5	
VC2618	argD	Acetylornithine aminotransferase, argD	10.2	6.2
VC2746	glnA	Glutamate ammonia ligase, glnA		2.9
VCA0278	glyA-2	Serine hydroxymethyltransferase, glyA-2	2.5	3.3
Biosynthesis of cofactors prosthetic groups and carriers				
VC0064	thiS	ThiS protein, thiS	2.1	
VC0065	thiG	ThiG protein, thiG	2.2	
VC0468	gshB	Glutathione synthetase, gshB	0.4	
VC0472	metK	S-adenosylmethionine synthase, metK	0.2	
VC0626	hemL	Heme porphyrin and cobalamin, hemL	0.3	
VC0889	dxs	1-deoxyxylulose-5-phosphate synthase, dxs	0.5	
VC0943	lipA	Lipoic acid synthetase, lipA	0.5	
VC0944	lipB	Lipoate-protein ligase B, lipB	0.3	
VC1112	bioB	Biotin synthase, bioB	0.4	
VC1114	bioC	Biotin synthesis protein BioC, bioC	0.6	
VC1296	thiD	Thiamine, phosphomethylpyrimidine kinase, thiD	3.1	
VC1299		6-pyruvoyl tetrahydrobiopterin synthase putative	0.5	0.3
VC1509	cobB	Heme porphyrin and cobalamin, cobB	2.1	
VC1942	folD	Folic acid, folD		6.6
VC1973	menB	Naphthoate synthase, menB	0.5	
VC2180	hemA	Glutamyl-tRNA reductase, hemA	0.3	
VC2308	thiJ	Thiamine, thiJ	0.5	
VC2422	nadC	Pyridine nucleotides, nadC	0.5	
VCA0723	hmgA	3-hydroxy-3-methylglutaryl CoA reductase, hmgA	0.5	
VCA0827	phhB	pterin-4-alpha-carbinolamine dehydratase, phhB	3.3	
Cell envelope				

VC0212	msbB	Biosynthesis/ degradation of surface polysaccharides, msbB	0.4	
VC0259	rfbV	Biosynthesis/ degradation of surface polysaccharides, rfbV	0.5	0.3
VC0344	amiB	N-acetylmuramoyl-L-alanine amidase, amiB	0.4	
VC0430		Immunogenic protein		2.5
VC0533	nlpD	Lipoprotein NlpD, nlpD		3.0
VC0700	slt	Soluble lytic murein transglycosylase, slt	0.3	
VC0905	yaeC	Lipoprotein YaeC, yaeC		2.3
VC1195		Lipoprotein putative	0.2	
VC1312		Alanine racemase putative		0.3
VC1537	nlpC	Lipoprotein NlpC, nlpC	4.0	
VC2635	mrcA	Penicillin-binding protein 1A, mrcA	0.4	
VC2762	glmU	Biosynthesis/ degradation of surface polysaccharides, glmU	0.2	
VCA0572	ddlA	D-alanine--D-alanine ligase, ddlA	2.0	
VCA0867	ompW	Outer membrane protein OmpW, ompW	2.5	5.0

Chemotaxis and motility

VC0216		Methyl-accepting chemotaxis protein		2.2
VC1313		Methyl-accepting chemotaxis protein		0.3
VC1413		Methyl-accepting chemotaxis protein		8.9
VC1898		Methyl-accepting chemotaxis protein	4.2	
VC2161		Methyl-accepting chemotaxis protein		2.4
VC2187	flaC	Flagellin FlaC, flaC	2.9	3.4
VC2203		Flagellar protein putative		2.6
VCA0658		Methyl-accepting chemotaxis protein	0.3	
VCA0663		Methyl-accepting chemotaxis protein	0.4	
VCA0974		Methyl-accepting chemotaxis protein	0.5	
VCA1031		Methyl-accepting chemotaxis protein		0.1

Central intermediary metabolism

VC0238		Transferase hexapeptide repeat family	0.3	
VC0392		Aminotransferase class V		3.8
VC0454		Glutaminase family protein	0.5	
VC0487	glmS	Aminotransferase (isomerizing), glmS	0.5	
VC0586		Carbonic anhydrase putative	0.4	
VC0667		Oxidoreductase Tas aldo/keto reductase family	2.3	3.6
VC0723	ppk	Phosphorus compounds, polyphosphate kinase, ppk	0.2	
VC0748		Aminotransferase NifS class V	2.0	
VC0979		Oxidoreductase short-chain dehydrogenase/reductase family	2.0	
VC1119		Oxidoreductase short-chain dehydrogenase/reductase family	8.9	
VC1184		NifS-related protein	2.0	
VC2309		Aminotransferase class V	0.4	
VC2545	ppa	Phosphorus compounds, inorganic pyrophosphatase, ppa	0.5	
VC2559	cysN	Sulfur metabolism, sulfate adenylate transferase subunit 1, cysN	0.4	
VCA0102		CbbY family protein	2.0	
VCA0316		Acetyltransferase putative		2.2
VCA0496		Glutathione S-transferase putative	2.2	
VCA0523		Aminotransferase class II	0.5	
VCA0614	fhs	Formate--tetrahydrofolate ligase, fhs	0.6	
VCA0783		Arylesterase	2.0	
VCA0798		CbbY family protein	3.4	
VCA0947	speG	Spermidine n1-acetyltransferase, speG	0.4	0.4

DNA metabolism

VC0167	rep	ATP-dependent DNA helicase Rep, rep	0.3	
VC0215	dfp	DNA/pantothenate metabolism flavoprotein, dfp	0.2	
VC0394	uvrA	Excinuclease ABC subunit A, uvrA	2.1	
VC0535	mutS	DNA mismatch repair protein MutS, mutS	0.4	
VC0971	ligA-1	DNA ligase, ligA-1	0.4	
VC1011	nth	Endonuclease III, nth	0.4	
VC1056	recR	Recombination protein RecR, recR	0.5	
VC1765		Restriction/modification, type I restriction enzyme HsdR putative	0.3	
VC1846	ruvA	Holliday junction DNA helicase RuvA, ruvA		2.3
VC1886	mfd	Transcription-repair coupling factor, mfd	0.4	
VC2360	nfo	Endonuclease IV, nfo	0.2	0.3
VC2430	parC	Topoisomerase IV subunit A, parC	0.5	
VC2431	parE	Topoisomerase IV subunit B, parE	0.5	

VC2435		MutT/nudix family protein	0.3	
VC2459	recO	DNA repair protein RecO, recO	4.6	
VC2502	holC	DNA polymerase III chi subunit, holC	0.4	
Energy metabolism				
VC1242	astE	Succinylglutamate desuccinylase, astE		2.2
VC1284	celF	6-phospho-beta-glucosidase, celF	3.2	3.1
VC1300	sdaA-1	L-serine dehydratase 1, sdaA-1	0.5	
VC1512	fdhB	Formate dehydrogenase iron-sulfur subunit, fdhB	3.6	5.1
VC1513		Formate dehydrogenase alpha subunit putative authentic frameshift	2.0	
VC1558	bglA	6-phospho-beta-glucosidase, bglA		2.2
VC1726	glgA	Glycogen synthase, glgA		3.0
VC1727	glgC-1	Glucose-1-phosphate adenylyltransferase, glgC-1		3.7
VC1905	ald	Alanine dehydrogenase, ald		3.8
VC2616	aruD	Succinylglutamate 5-semialdehyde dehydrogenase, aruD	11.3	
VC2698	aspA	Aspartate ammonia-lyase, aspA		0.3
VCA0014	malQ	4-alpha-glucanotransferase, malQ		7.3
VCA0276	gcvP	Glycine cleavage system P protein, gcvP	4.3	11.7
VCA0277	gcvH	Glycine cleavage system H protein, gcvH	3.1	6.0
VCA0280	gcvT	Glycine cleavage system T protein, gcvT	2.4	2.6
VCA0875	dsdA	D-serine dehydratase, dsdA		2.3
VCA0886	kbl	2-amino-3-ketobutyrate coenzyme A ligase, kbl		3.1
Electron transport				
VC0002	mioc	Electron transport, mioc protein, mioc	0.2	
VC0306	trxA	Thioredoxin, trxA	0.5	0.4
VC1013		RnfG-related protein		0.4
VC1182	trxB	Thioredoxin reductase, trxB	0.4	
VC1254		Iron-sulfur cluster-binding protein putative	0.4	
VC1516		Iron-sulfur cluster-binding protein	4.9	5.3
VC1844	cydA-1	Cytochrome d ubiquinol oxidase subunit I, cydA-1	0.4	
VCA0538		Cytochrome b561 putative	8.5	
VCA0676	napF	Iron-sulfur cluster-binding protein NapF, napF	0.4	
VCA0677	napD	NapD protein, napD	0.4	
VCA0678	napA	Periplasmic nitrate reductase, napA	0.3	
VCA0679	napB	Periplasmic nitrate reductase cytochrome c-type protein, napB	0.3	
VCA0680	napC	Periplasmic nitrate reductase cytochrome c-type protein, napC	0.3	
VCA0752	trxC	Thioredoxin 2, trxC	0.1	0.4
Fatty acid and phospholipid metabolism				
VC0295	accC	Acetyl-CoA carboxylase biotin carboxylase, accC	0.4	
VC0296	accB	Acetyl-CoA carboxylase biotin carboxyl carrier protein, accB	0.5	
VC0745		Inositol monophosphate family protein	0.1	
VC1000	accD	Acetyl-CoA carboxylase carboxyl transferase beta subunit, accD	0.5	
VC1046	hadHB	Degradation, fatty oxidation complex beta subunit, hadHB	2.7	
VC1122	cfa	Cyclopropane-fatty-acyl-phospholipid synthase, cfa	2.9	2.6
VC1483	fabA	3-hydroxydecanoyl-(acyl-carrier-protein) dehydratase, fabA	0.4	
VC2020	acp	Acyl carrier protein, acp	0.4	
VC2109	fabB	3-oxoacyl-(acyl-carrier-protein) synthase I authentic frameshift, fabB	0.5	
VCA0751	fabH-2	3-oxoacyl-(acyl-carrier-protein) synthase III, fabH-2	2.6	
Fermentation				
VC0551	oadB-1	Oxaloacetate decarboxylase beta subunit, oadB-1		3.0
VC0819	aldA-1	Aldehyde dehydrogenase, aldA-1	4.1	
VC1097	pta	Phosphate acetyltransferase, pta	0.2	
VC1098	ackA-1	Acetate kinase, ackA-1	0.1	
VCA0235	ackA-2	Acetate kinase, ackA-2	0.4	
Glycolysis				
VC0336	yibO	Phosphoglycerate mutase 23-bisphosphoglycerate-independent, yibO	0.5	
VC0478	fbaA	Fructose-bisphosphate aldolase class II, fbaA		2.8
VC2544	fbp	Fructose-16-bisphosphatase, fbp		4.3
VC2738	pckA	Phosphoenolpyruvate carboxykinase, pckA		3.1
VCA0843	gapA-2	Glyceraldehyde 3-phosphate dehydrogenase, gapA-2		3.1
VCA0987	ppsA	Phosphoenolpyruvate synthase, ppsA		2.3
TCA cycle				

VC0432	mdh	Malate dehydrogenase, mdh		3.8
VC0604	acnB	Aconitate hydratase 2, acnB		5.1
VC1141	icd	Isocitrate dehydrogenase NADP-dependent monomeric type, icd		2.7
VC2084	sucD	Succinyl-CoA synthase alpha subunit, sucD		6.6
VC2085	sucC	Succinyl-CoA synthase beta subunit, sucC		7.2
VC2086	sucB	2-oxoglutarate dehydrogenase E2 component, sucB		4.3
VC2087	sucA	2-oxoglutarate dehydrogenase E1 component, sucA		4.0
VC2088	sdhB	Succinate dehydrogenase iron-sulfur protein, sdhB		2.6
VC2089	sdhA	Succinate dehydrogenase flavoprotein subunit, sdhA		2.3
VC2091	sdhC	Succinate dehydrogenase cytochrome b556 subunit, sdhC	2.4	2.6
VC2092	gltA	Citrate synthase, gltA	3.5	4.3

Other metabolism

VC0473	tktA-1	Pentose phosphate pathway, transketolase 1, tktA-1		2.6
VC1188	sfcA	Malate oxidoreductase, sfcA	0.3	
VC1725		Beta-ketoadipate enol-lactone hydrolase putative	2.9	
VC2350	deoC	Deoxyribose-phosphate aldolase, deoC	0.4	0.1
VC2413	aceF	Pyruvate dehydrogenase E2 component, aceF	0.2	
VC2414	aceE	Pyruvate dehydrogenase E1 component, aceE	0.2	
VC2613	prkB	Phosphoribulokinase, prkB		2.8
VC2669		5-carboxymethyl-2-hydroxymuconate delta isomerase putative		2.5
VC2681		Malate oxidoreductase putative	0.3	0.2
VCA0007		3-hydroxyisobutyrate dehydrogenase putative		2.7
VCA0623	talB	Transaldolase B, talB	0.4	0.3
VCA0657	glpD	Aerobic glycerol-3-phosphate dehydrogenase, glpD	13.0	
VCA0744	gplK	Glycerol kinase, gplK	5.6	4.9

Pathogenesis

VC0824	tagD	TagD protein, tagD	0.3	
VC0826	tcpP	Toxin co-regulated pilus biosynthesis protein P, tcpP	0.2	0.2
VC0827	tcpH	Toxin co-regulated pilus biosynthesis protein H, tcpH		0.3
VC0828	tcpA	Toxin co-regulated pilin, tcpA	0.3	
VC0838	toxT	TCP pilus virulence regulatory protein, toxT		0.3
VC0839	tcpJ	Leader peptidase TcpJ, tcpJ		0.3
VC0840	acfB	Accessory colonization factor AcfB, acfB		0.4
VC0841	acfC	Accessory colonization factor AcfC, acfC	0.4	0.3
VC0959		Hemolysin putative		0.4
VC1450	rtxC	RTX toxin activating protein, rtxC	0.2	0.2
VC1456	ctxB	Cholera enterotoxin B subunit, ctxB	0.5	
VC1457	ctxA	Cholera enterotoxin A subunit, ctxA	0.4	
VCA0837		Hemolysin putative	2.4	
VCA1043	tagE-2	TagE protein, tagE-2	2.8	

Protein fate

VC0018	ibpA	16 kDa heat shock protein A, ibpA	0.2	
VC0034	tpcG	Thiol:disulfide interchange protein, tpcG	0.3	
VC0046	def-1	Polypeptide deformylase, def-1	0.5	
VC0067		Aminopeptidase P		2.2
VC0157		Alkaline serine protease	2.4	
VC0188	prlC	Oligopeptidase A, prlC	0.3	
VC0566	htrA	Protease DO, htrA	0.5	0.3
VC0711	clpB-1	ClpB protein, clpB-1	0.2	0.3
VC0717		Protease putative	0.4	
VC0854	grpE	Heat shock protein GrpE, grpE	0.2	
VC0855	dnaK	DnaK protein, dnaK	0.0	0.2
VC0856	dnaJ	DnaJ protein, dnaJ	0.1	
VC0985	htpG	Heat shock protein HtpG, htpG	0.1	0.1
VC1039	asmA	AsmA protein, asmA	0.4	
VC1414		Thermostable carboxypeptidase 1		2.7
VC1494	pepN	Aminopeptidase N, pepN	2.3	2.4
VC1735	aat	Leucyl/phenylalanyl-tRNA protein transferase, aat	0.2	
VC1756		Periplasmic linker protein putative	0.2	
VC1920	lon	ATP-dependent protease LA, lon	0.2	
VC1983		Peptidase putative		10.6
VC2445	exeA	General secretion pathway protein A, exeA	2.4	
VC2664	groEL-1	Chaperonin 60 Kd subunit, groEL-1	0.0	0.1
VC2665	groES-1	Chaperonin 10 Kd subunit, groES-1	0.0	0.1

VC2674	hslU	Protease HslVU ATPase subunit HslU, hslU	0.3	
VC2675	hslV	Protease HslVU subunit HslV, hslV	0.3	
VCA0150	def-2	Polypeptide deformylase, def-2	0.1	0.2
VCA0661		Peptidyl-prolyl cis-trans isomerase-related protein	0.4	

Protein synthesis

VC0663		Peptide chain release factor 2 , prfB	0.4	
VC0631	tyrS-2	Tyrosyl-tRNA synthetase, tyrS-2	0.4	
VC0643	infB	Initiation factor IF-2, infB	2.4	
VC0645	truB	tRNA pseudouridine 55 synthase, truB	4.3	
VC0659	prfC	Peptide chain release factor 3, prfC	0.4	
VC0664	lysU	Lysyl-tRNA synthetase heat inducible, lysU	0.4	
VC0875	proS	Prolyl-tRNA synthetase, proS	0.3	
VC0999	truA	tRNA pseudouridine synthase A, truA	0.5	
VC1036	metG	Methionyl-tRNA synthetase, metG	0.4	
VC1110	serS	Seryl-tRNA synthetase, serS	0.4	
VC1209		Elongation factor P family protein	0.2	
VC1220	pheT	Phenylalanyl-tRNA synthetase beta chain, pheT	0.5	
VC1297	asnS	Asparaginyl-tRNA synthetase, asnS	0.5	
VC1374		DnaK-related protein	0.3	
VC1737	infA	Initiation factor IF-1, infA	0.2	0.1
VC1910	miaE	tRNA-(MS[2]IO[6]A)-hydroxylase, miaE		0.4
VC2028	rluC	Ribosomal large subunit pseudouridine synthase C, rluC		0.3
VC2214	gltX	Glutamyl-tRNA synthetase, gltX	0.3	
VC2503	valS	Valyl-tRNA synthetase, valS	0.3	
VC2623	trpS	Tryptophanyl-tRNA synthetase, trpS	0.5	
VC2660	efp	Elongation factor P, efp	0.5	0.4
VCA0287	thrS	Threonyl-tRNA synthetase, thrS	2.7	

Purines, pyrimidines, nucleosides, and nucleotides

VC0052	purE	Purine ribonucleotide biosynthesis, purE	4.3	13.1
VC0275	purD	Glycine ligase, purD		7.9
VC0276	purH	Purine ribonucleotide biosynthesis, purH		11.4
VC0441	apaH	Bis(5-nucleosyl)-tetraphosphatase, apaH	2.7	
VC0585	hpt	Salvage of nucleosides and nucleotides, hpt	0.5	
VC0767	guaB	Inosine-5-monophosphate dehydrogenase, guaB		2.8
VC0768	guaA	GMP synthase, guaA		3.4
VC0869	purL	Purine ribonucleotide biosynthesis, purL		16.4
VC0986	adk	Adenylate kinase, adk	0.3	0.4
VC1004	purF	Amidophosphoribosyltransferase, purF		2.0
VC1126	purB	Adenylosuccinate lyase, purB		2.8
VC1129	gsk-1	Inosine-guanosine kinase, gsk-1	0.2	0.2
VC1167	tdk	Thymidine kinase, tdk	0.3	
VC1228	purT	Purine ribonucleotide biosynthesis, purT		8.0
VC1255	nrdB	2-Deoxyribonucleotide metabolism, nrdB	0.4	
VC1256	nrdA	2-Deoxyribonucleotide metabolism, nrdA	0.4	
VC1992	purU	Formyltetrahydrofolate deformylase, purU	2.6	
VC2016	tmk	Thymidylate kinase, tmk	0.4	
VC2183	prsA	Ribose-phosphate pyrophosphokinase, prsA	0.2	
VC2225	upp	Salvage of nucleosides and nucleotides, upp	0.4	
VC2226	purM	Purine ribonucleotide biosynthesis, purM	3.0	17.7
VC2227	purN	Purine ribonucleotide biosynthesis, purN		26.9
VC2277	gpt	Salvage of nucleosides and nucleotides, gpt	0.5	
VC2347	deoD-1	Purine nucleoside phosphorylase, deoD-1	0.3	0.3
VC2348	deoB	Phosphopentomutase, deoB	0.5	0.3
VC2349	deoA	Thymidine phosphorylase, deoA	0.4	0.3
VC2390	carA	Pyrimidine ribonucleotide biosynthesis, carA		2.7
VC2510	pyrB	Pyrimidine ribonucleotide biosynthesis, pyrB	2.4	14.7
VC2511	pyrI	Pyrimidine ribonucleotide biosynthesis, pyrI		7.6
VCA0053	deoD-2	Purine nucleoside phosphorylase, deoD-2	0.5	0.3
VCA0197	guaC	GMP reductase, guaC	0.4	
VCA0801	gsk-2	Inosine-guanosine kinase, gsk-2		0.3
VCA0925	pyrC	Dihydroorotase, pyrC		2.7

Regulatory functions

VC0290	fis	Factor-for-inversion stimulation protein, fis	0.1	0.1
VC0307	rho	Transcription termination factor Rho, rho	0.4	

VC0328	rpoB	DNA-directed RNA polymerase beta subunit, rpoB	0.4	
VC03291	rpoC	DNA-directed RNA polymerase beta subunit, rpoC	0.3	
VC03292	rpoC	DNA-directed RNA polymerase beta subunit, rpoC	0.4	
VC0330	rsd	Regulator of sigma D, rsd	2.9	2.6
VC0347		RNA-binding protein, hfq	2.3	
VC0594	pcnB	PolyA polymerase, pcnB	0.6	
VC0601	hrpB	ATP-dependent helicase HrpB, hrpB	0.5	
VC0644	rbfA	RNA processing, ribosome-binding factor A, rbfA	4.6	
VC0647	pnp	Polyribonucleotide nucleotidyltransferase, pnp	3.8	
VC0693		Response regulator		2.4
VC0706		Sigma-54 modulation protein putative	0.3	
VC0812		Helicase-related protein	0.6	
VC1021	luxO	LuxO repressor protein, luxO	0.2	
VC1142	cspD	Cold shock-like protein CspD, cspD		11.7
VC1222	himA	Integration host factor alpha subunit, himA	2.2	
VC1320		DNA-binding response regulator	0.5	
VC1796		Middle operon regulator-related protein	2.6	
VC1904	lrp	Leucine-responsive regulatory protein, lrp	2.7	
VC1907	cysB	Cys regulon Transcriptional activator, cysB	2.1	
VC2302		RNA polymerase sigma-70 factor ECF subfamily	2.0	2.2
VC2415	pdhR	Pyruvate dehydrogenase complex repressor, pdhR	0.3	
VC2433	cpdA	Cyclic AMP phosphodiesterase, cpdA	0.4	
VC2466	rseA	Sigma-E factor negative regulatory protein RseA, rseA	2.0	
VC2530		Sigma-54 modulation protein putative		2.4
VC2533	ptsO	Phosphocarrier protein NPr, ptsO	0.2	
VC2709	rpoZ	DNA-directed RNA polymerase omega subunit, rpoZ		0.5
VC2744	typA	GTP-binding protein TypA, typA	0.5	
VCA0166	cspA	Cold shock Transcriptional regulator CspA, cspA	2.9	
VCA0519	fruR	Fructose repressor, fruR	0.4	0.2
VCA0607		Regulator of nucleoside diphosphate kinase	0.6	
VCA0709	torS	Sensor protein TorS, torS	0.4	
VCA0804	deaD	ATP-dependent RNA helicase DeaD, deaD	6.5	
VCA0933	cspV	Cold shock domain family protein	51.2	2.6
VCA0990		ATP-dependent RNA helicase DEAD box family		8.3
VCA1087		Anti-sigma F factor antagonist putative	0.5	

Transcriptional regulators

VC0166		Transcriptional regulator, TetR family	0.3	
VC0278		Transcriptional regulator, CadC putative	0.3	
VC0583	hapR	Transcription factor, hapR	0.2	
VC0649		Transcriptional regulator, MarR family	2.0	
VC0665	vpsR	Transcriptional regulator, sigma-54 dependent vpsR	2.2	
VC0677	nhaR	Transcriptional activator protein NhaR, nhaR	2.0	
VC0701		trp operon repressor putative	0.3	
VC1213		Transcriptional regulator, LuxR family	2.1	
VC1968		Transcriptional regulator, HTH3 family	2.3	
VC2485		Transcriptional regulator, LysR family	0.4	0.3
VC2636		Transcriptional regulator, LysR family	2.0	
VC2647	aphA	Transcriptional regulator, PadR N-terminal-like, aphA	7.3	
VC2702		Transcriptional regulator, LuxR family	2.4	5.3
VCA0542		Transcriptional regulator, LysR family	0.5	
VCA0575		Transcriptional regulator, LysR family	2.2	
VCA0642		Transcriptional regulator, ArsR family		3.0
VCA0888		Transcriptional regulator, LuxR family	2.8	
VCA0952	vpsT	Transcriptional regulator, LuxR family, vpsT	2.4	0.3

Amino Acid transport and binding

VC0171		Peptide ABC transporter periplasmic peptide-binding protein		2.6
VC1091	oppA	Oligopeptide ABC transporter, oppA		4.8
VC1092	oppB	Oligopeptide ABC transporter permease protein, oppB		4.1
VC1093	oppC	Oligopeptide ABC transporter permease protein, oppC		4.4
VC1094	oppD	Oligopeptide ABC transporter ATP-binding protein, oppD		4.4
VC1095	oppF	Oligopeptide ABC transporter ATP-binding protein, oppF		6.6
VC1362		Amino acid ABC transporter periplasmic amino acid-binding protein	5.4	4.5
VC1422		Sodium/alanine symporter	2.8	
VC1658	sdaC-2	Serine transporter, sdaC-2		0.4
VC1680	sapA	Peptide ABC transporter periplasmic peptide-binding protein, sapA	0.4	

VC1863		Amino acid ABC transporter periplasmic amino acid-binding protein	2.7	2.3
VC1864		Amino acid ABC transporter ATP-binding protein	4.7	5.0
VC2537		Thiamine ABC transporter ATP-binding protein putative	0.5	
VC2538		Thiamine ABC transporter permease protein putative	0.4	
VCA0759	artI	Arginine ABC transporter periplasmic arginine-binding protein, artI	3.6	8.8
VCA0978		Amino acid ABC transporter periplasmic amino acid-binding protein	2.0	

Anion/ cation transport and binding

VC0475	irgA	Enterobactin receptor, irgA	0.4	
VC0608		Iron(III) ABC transporter periplasmic iron-compound-binding protein		2.2
VC0724	pstC-1	Phosphate ABC transporter permease protein, pstC-1	0.5	
VC1264		Iron-regulated protein A putative	0.4	
VC1437		Cation transport ATPase E1-E2 family	2.2	
VC1544	tonB2	TonB2 protein, tonB2	0.3	
VC1545	exbD2	TonB system transport protein ExbD2, exbD2	0.3	
VC1546	exbB2	TonB system transport protein ExbB2, exbB2	0.5	
VC1547		Biopolymer transport protein ExbB-related protein	0.3	
VC1627	nhaA	Na ⁺ /H ⁺ antiporter protein, nhaA	2.2	
VC1655	mgE-1	Magnesium transporter, mgE-1	0.3	0.1
VC1757		Transporter AcrB/D/F family	0.5	
VC2082	znuC	Zinc ABC transporter ATP-binding protein, znuC	3.1	
VC2442		pho4 family protein	0.5	
VCA0227	vctP	Vibriobactin and enterobactin ABC transporter, vctP	0.3	
VCA0576	hutA	Heme transport protein HutA, hutA	0.4	

Carbohydrate transport and binding

VC0910	treB	PTS system trehalose-specific IIBC component, treB		2.4
VC1235		sodium/dicarboxylate symporter	0.2	0.1
VC1695		Formate transporter 1 putative	0.2	
VC1779	dctP-1	C4-dicarboxylate-binding periplasmic protein, dctP-1	6.1	
VC1823	frwB	PTS system fructose-specific IIB component, frwB	2.6	4.6
VC2013	ptsG	PTS system glucose-specific IIBC component, ptsG	0.5	
VCA0516	fruA-2	PTS system fructose-specific IIBC component, fruA-2	0.2	0.1
VCA0518	fruB	PTS system fructose-specific IIA/FPR component, fruB	0.3	0.3
VCA0943	malG	Maltose ABC transporter permease protein, malG	0.5	4.3
VCA0945	malE	Maltose ABC transporter, malE	0.4	5.0
VCA0946	malK	Maltose/maltodextrin ABC transporter , malK	0.4	
VCA1028	ompS	Maltoporin, ompS		3.0

Spermidine/putrescine transport and binding

VC1424	potD-1	Spermidine/putrescine ABC transporter, potD-1	0.4	
VC1425	potD-2	Spermidine/putrescine ABC transporter, potD-2	0.1	
VC1426	potC	Spermidine/putrescine ABC transporter permease protein, potC	0.3	
VC1427	potB	Spermidine/putrescine ABC transporter permease protein, potB	0.2	
VC1428	potA	Spermidine/putrescine ABC transporter ATP-binding protein, potA	0.3	

Other transport and binding

VC0589		ABC transporter ATP-binding protein	0.2	
VC0590		Permease putative	0.5	
VC0698		ABC transporter ATP-binding protein	0.4	
VC0972		Porins, porin putative	2.8	
VC1103		ABC transporter ATP-binding protein	3.4	
VC1168	gltP-1	Proton/glutamate symporter, gltP-1	2.0	3.0
VC1180	cydC	Transport ATP-binding protein CydC, cydC	0.5	
VC1447	rtxD	RTX toxin transporter, rtxD	0.4	
VC1630		ABC transporter ATP-binding protein		0.3
VC1660		ABC transporter ATP-binding protein putative		2.6
VC1854	ompT	OmpT protein, ompT		6.1
VC1878	msbA	Transport ATP-binding protein MsbA, msbA	0.5	
VC2162		Permease PerM putative	3.2	
VC2171	uraA	Uracil permease, uraA	0.4	
VC2305	ompK	Outer membrane protein OmpK, ompK	0.5	
VC2761		Multidrug resistance protein		0.4
VCA0179		Nucleosides purines and pyrimidines, NupC family protein	0.4	0.3
VCA0214	emrD-2	Multidrug resistance protein D, emrD-2	5.1	2.6
VCA0782		ABC transporter ATP-binding protein	2.3	
VCA0807		ABC transporter periplasmic substrate-binding protein		4.2

VCA0904		Permease	3.0	
Type VI secretion				
VC1415	hcp-1	Hemolysin-coregulated protein, hcp-1	0.2	
VCA0017	hcp2	Hemolysin-coregulated protein, hcp-2	0.0	
VCA0107	vipA	Hypothetical, vipA	0.3	2.4
VCA0108	vipB	Hypothetical, vipB	0.3	2.6
VCA0109		Hypothetical	0.2	2.9
VCA0112	fha	Hypothetical, fha	0.4	3.4
VCA0114	vasE	Hypothetical, vasE	0.5	2.9
VCA0119	vasJ	Hypothetical, vasJ	0.3	
VCA0120	vasK	Hypothetical, vasK	0.5	
Other functions				
VC0003	thdF	Thiophene and furan oxidation protein ThdF, thdF	0.6	
VC0036		FixG-related protein		2.2
VC0039		SpoOM-related protein	2.0	
VC0049	smg	Smg protein, smg	2.0	
VC0255		rfbT-related protein	2.8	
VC0258	rfbT	rfbT protein, rfbT	3.1	
VC0291		NifR3/Smm1 family protein	0.3	0.3
VC0348	hflX	GTP-binding protein HflX, hflX	2.0	
VC0437		GTP1/Obg family protein	3.1	
VC0446	imp	Organic solvent tolerance protein, imp	0.2	
VC0627		HesB family protein	0.5	
VC0687		Carbon starvation protein A putative	4.1	
VC0731		Detoxification, antioxidant AhpC/Tsa family	0.2	
VC0750		HesB family protein	2.5	
VC0763		GTP-binding protein	2.9	
VC0851	smpA	Small protein A, smpA	3.1	
VC0864	yfhC	YfhC protein, yfhC	0.5	
VC0870	tnpA	IS1004 transposase, tnpA	2.7	
VC1003		Bacteriocin production protein		4.6
VC1022	luxU	Phosphorelay protein, luxU	0.2	
VC1037	mrp	Mrp protein, mrp	0.4	
VC1455	rstR-1	Transcriptional repressor RstR, rstR-1	3.3	
VC1470	tlcR-1	TlcR protein, tlcR-1	0.4	
VC1532		ROK family protein		2.2
VC1579		Enterobactin synthetase component F-related protein	0.2	0.3
VC1599		GGDEF family protein		5.2
VC1676	pspC	Phage shock protein C, pspC	0.3	
VC1677	pspB	Phage shock protein B, pspB	0.5	
VC1696		DNA-binding protein inhibitor Id-2-related protein		2.9
VC1736		Arginyl-tRNA-protein transferase-related protein	0.4	
VC1998		PilB-related protein	0.3	
VC2153		DD-carboxypeptidase-related protein		3.7
VC2160	bcp	Dactinoferritin comigratory protein, bcp	0.4	
VC2361		Formate acetyl transferase-related protein	0.3	
VC2774	gidB	Glucose inhibited division protein B, gidB	0.5	
VCA0175		MoxR-related protein	0.4	
VCA0308		Eeoxyguanosinetriphosphate triphosphohydrolase-related protein	0.5	
VCA0324	dinJ	DNA-damage-inducible protein J, dinJ	0.5	
VCA0337	mccF-1	Microcin immunity protein MccF, mccF-1	2.3	
VCA0387		Toxin resistance protein	2.0	
VCA0439	mccF-2	Microcin immunity protein MccF, mccF-2	2.0	
VCA0493	tnpA	IS1004 transposase, tnpA	2.7	
VCA0549	phnA	PhnA protein, phnA	0.4	
VCA0628		SecA-related protein		2.3
VCA0633	glpM	GlpM protein glpM		7.2
VCA1006		Organic hydroperoxide resistance protein putative	3.8	
Hypothetical				
VC0025		Hypothetical protein	14.7	3.9
VC0038		Hypothetical protein	2.2	2.6
VC0184		Hypothetical protein	3.3	
VC0292		Hypothetical protein	0.5	
VC0343		Hypothetical protein	0.4	

VC0491	Hypothetical protein	0.4	
VC0549	Hypothetical protein		4.6
VC0600	Hypothetical protein	0.5	
VC0712	Hypothetical protein	2.1	
VC0714	Hypothetical protein	2.8	
VC0764	Hypothetical protein	4.4	
VC0823	Hypothetical protein	2.0	
VC0862	Hypothetical protein	0.5	
VC0886	Hypothetical protein	0.2	
VC0901	Hypothetical protein	0.5	
VC0922	Hypothetical protein	7.2	
VC0926	Hypothetical protein	6.8	
VC0928	Hypothetical protein	5.6	
VC0933	Hypothetical protein	3.9	
VC0935	Hypothetical protein	6.0	
VC1077	Hypothetical protein	0.4	
VC1078	Hypothetical protein	0.4	
VC1125	Hypothetical protein	3.4	3.1
VC1158	Hypothetical protein	2.6	3.9
VC1183	Hypothetical protein	2.0	
VC1191	Hypothetical protein	3.1	
VC1224	Hypothetical protein	3.0	
VC1246	Hypothetical protein	0.5	
VC1247	Hypothetical protein	2.2	
VC1266	Hypothetical protein	0.4	
VC1272	Hypothetical protein	0.1	0.3
VC1368	Hypothetical protein	2.4	
VC1371	Hypothetical protein	3.6	
VC1380	Hypothetical protein	0.5	
VC1438	Hypothetical protein	2.0	
VC1449	Hypothetical protein	0.2	0.2
VC1471	Hypothetical protein	5.8	
VC1479	Hypothetical protein	2.8	
VC1480	Hypothetical protein	2.4	
VC1493	Hypothetical protein	6.5	
VC1510	Hypothetical protein	2.1	
VC1514	Hypothetical protein	3.1	
VC1517	Hypothetical protein	6.1	3.1
VC1518	Hypothetical protein	6.2	
VC1543	Hypothetical protein	0.2	
VC1548	Hypothetical protein	0.2	
VC1559	Hypothetical protein	0.5	
VC1564	Hypothetical protein	0.4	
VC1577	Hypothetical protein	0.2	0.3
VC1578	Hypothetical protein	0.1	0.3
VC1642	Hypothetical protein	0.2	
VC1654	Hypothetical protein	0.3	
VC1738	Hypothetical protein	0.4	
VC1743	Hypothetical protein	2.0	
VC1780	Hypothetical protein	3.4	
VC1808	Hypothetical protein		2.2
VC1810	Hypothetical protein	2.6	
VC1943	Hypothetical protein		11.0
VC1964	Hypothetical protein	4.9	
VC1999	Hypothetical protein	0.2	
VC2002	Hypothetical protein		8.3
VC2010	Hypothetical protein	2.0	
VC2011	Hypothetical protein		5.4
VC2149	Hypothetical protein	0.3	
VC2154	Hypothetical protein	2.1	3.1
VC2155	Hypothetical protein	5.6	
VC2221	Hypothetical protein	0.3	
VC2357	Hypothetical protein		3.0
VC2388	Hypothetical protein	3.2	
VC2395	Hypothetical protein	2.0	
VC2486	Hypothetical protein	0.4	
VC2509	Hypothetical protein		5.5

VC2543	Hypothetical protein		3.4
VC2605	Hypothetical protein	2.2	
VC2663	Hypothetical protein	0.3	0.3
VC2737	Hypothetical protein	0.4	
VCA0005	Hypothetical protein	0.2	0.2
VCA0052	Hypothetical protein	0.4	
VCA0078	Hypothetical protein		3.5
VCA0125	Hypothetical protein	2.7	
VCA0139	Hypothetical protein	2.8	0.5
VCA0169	Hypothetical protein	0.6	
VCA0170	Hypothetical protein	0.3	
VCA0190	Hypothetical protein	2.1	
VCA0236	Hypothetical protein	0.2	
VCA0240	Hypothetical protein	2.1	
VCA0252	Hypothetical protein		0.4
VCA0259	Hypothetical protein	2.1	
VCA0260	Hypothetical protein	2.2	2.5
VCA0261	Hypothetical protein	5.0	5.9
VCA0271	Hypothetical protein	2.4	
VCA0285	Hypothetical protein	2.0	
VCA0297	Hypothetical protein	2.5	
VCA0303	Hypothetical protein	2.0	2.2
VCA0312	Hypothetical protein	2.4	
VCA0331	Hypothetical protein	4.7	5.5
VCA0333	Hypothetical protein	2.9	
VCA0358	Hypothetical protein	2.2	2.4
VCA0375	Hypothetical protein	2.5	
VCA0390	Hypothetical protein	2.2	
VCA0408	Hypothetical protein	2.3	
VCA0425	Hypothetical protein	2.0	
VCA0448	Hypothetical protein	2.4	2.3
VCA0450	Hypothetical protein	6.2	
VCA0452	Hypothetical protein	3.2	
VCA0457	Hypothetical protein	2.1	
VCA0458	Hypothetical protein	2.6	2.5
VCA0460	Hypothetical protein	2.3	
VCA0462	Hypothetical protein	2.6	
VCA0465	Hypothetical protein		3.0
VCA0486	Hypothetical protein	0.5	
VCA0535	Hypothetical protein	5.3	
VCA0537	Hypothetical protein		2.3
VCA0556	Hypothetical protein	0.4	
VCA0593	Hypothetical protein	3.2	
VCA0652	Hypothetical protein	0.4	
VCA0670	Hypothetical protein		2.6
VCA0721	Hypothetical protein	0.2	
VCA0722	Hypothetical protein		0.4
VCA0742	Hypothetical protein	2.2	
VCA0770	Hypothetical protein	9.0	
VCA0771	Hypothetical protein	8.6	
VCA0796	Hypothetical protein	0.5	
VCA0799	Hypothetical protein	2.5	
VCA0806	Hypothetical protein	2.1	
VCA0821	Hypothetical protein	0.2	0.1
VCA0842	Hypothetical protein		2.8
VCA0849_1	Hypothetical protein	3.8	
VCA0849_2	Hypothetical protein	3.6	
VCA0849_3	Hypothetical protein	3.7	
VCA0874	Hypothetical protein	43.1	5.5
VCA0881	Hypothetical protein	0.5	
VCA0882	Hypothetical protein	0.5	
VCA0883	Hypothetical protein	0.4	2.4
VCA0920	Hypothetical protein	4.1	
VCA0921	Hypothetical protein	0.4	
VCA0997	Hypothetical protein	0.3	
VCA1035	Hypothetical protein	0.5	

Hypothetical conserved

VC0131	Hypothetical protein, conserved	0.3	
VC0134	Hypothetical protein, conserved	0.3	
VC0153	Hypothetical protein, conserved		2.9
VC0163	Hypothetical protein, conserved	0.3	
VC0239	Hypothetical protein, conserved	0.4	
VC0254	Hypothetical protein, conserved	2.9	
VC0264	Hypothetical protein, conserved	2.7	
VC0265	Hypothetical protein, conserved	0.4	
VC0428	Hypothetical protein, conserved	0.4	
VC0438	Hypothetical protein, conserved	2.9	
VC0519	Hypothetical protein, conserved		0.4
VC0648	Hypothetical protein, conserved	2.4	
VC0661	Hypothetical protein, conserved	0.6	
VC0708	Hypothetical protein, conserved	2.2	
VC0710	Hypothetical protein, conserved	2.5	
VC0718	Hypothetical protein, conserved		2.9
VC0747	Hypothetical protein, conserved	2.8	
VC0757	Hypothetical protein, conserved	0.4	
VC0765	Hypothetical protein, conserved	2.3	
VC0770	Hypothetical protein, conserved	0.1	0.3
VC0845	Hypothetical protein, conserved	2.4	
VC0876	Hypothetical protein, conserved	2.0	
VC0882	Hypothetical protein, conserved	2.0	
VC0902	Hypothetical protein, conserved	0.4	
VC0913	Hypothetical protein, conserved	2.1	
VC0945	Hypothetical protein, conserved	0.2	
VC0962	Hypothetical protein, conserved	0.4	
VC0975	Hypothetical protein, conserved		3.4
VC0976	Hypothetical protein, conserved		2.5
VC0977	Hypothetical protein, conserved	0.2	
VC0981	Hypothetical protein, conserved	0.6	
VC1048	Hypothetical protein, conserved	2.2	
VC1055	Hypothetical protein, conserved	0.2	
VC1101	Hypothetical protein, conserved	2.2	
VC1121	Hypothetical protein, conserved	2.1	
VC1151	Hypothetical protein, conserved	2.9	
VC1153	Hypothetical protein, conserved	2.2	
VC1163	Hypothetical protein, conserved	0.5	
VC1198	Hypothetical protein, conserved	2.0	3.7
VC1208	Hypothetical protein, conserved	0.3	
VC1217	Hypothetical protein, conserved	0.5	
VC1249	Hypothetical protein, conserved	0.3	
VC1259	Hypothetical protein, conserved	0.2	
VC1317	Hypothetical protein, conserved	0.5	
VC1364	Hypothetical protein, conserved	2.1	
VC1432	Hypothetical protein, conserved	0.3	
VC1433	Hypothetical protein, conserved	2.8	2.2
VC1498	Hypothetical protein, conserved	0.4	
VC1523	Hypothetical protein, conserved		3.5
VC1606	Hypothetical protein, conserved	0.4	
VC1628	Hypothetical protein, conserved		0.3
VC1645	Hypothetical protein, conserved		3.5
VC1647	Hypothetical protein, conserved	0.4	
VC1722	Hypothetical protein, conserved	3.1	
VC1731	Hypothetical protein, conserved	2.9	
VC1755	Hypothetical protein, conserved	0.4	
VC1766	Hypothetical protein, conserved	0.4	
VC1767	Hypothetical protein, conserved	0.6	
VC1811	Hypothetical protein, conserved	2.4	
VC1841	Hypothetical protein, conserved	0.4	
VC1842	Hypothetical protein, conserved	0.4	
VC1871	Hypothetical protein, conserved	0.1	
VC1893	Hypothetical protein, conserved	2.1	2.4
VC1931	Hypothetical protein, conserved	4.4	3.6
VC1938	Hypothetical protein, conserved	2.9	
VC1939	Hypothetical protein, conserved	5.3	4.7

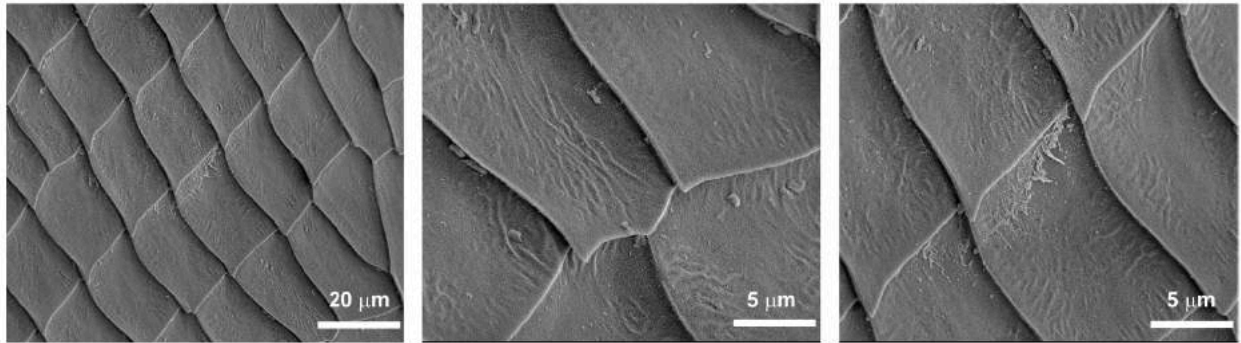
VC1989	Hypothetical protein, conserved	0.3	
VC2001	Hypothetical protein, conserved		2.5
VC2014	Hypothetical protein, conserved	0.3	0.3
VC2017	Hypothetical protein, conserved	0.5	
VC2039	Hypothetical protein, conserved	0.5	
VC2110	Hypothetical protein, conserved	0.2	
VC2112	Hypothetical protein, conserved	0.4	
VC2113	Hypothetical protein, conserved	0.5	
VC2146	Hypothetical protein, conserved	2.6	
VC2163	Hypothetical protein, conserved	2.2	
VC2172	Hypothetical protein, conserved	0.5	
VC2303	Hypothetical protein, conserved	0.5	
VC2378	Hypothetical protein, conserved	3.1	
VC2429	Hypothetical protein, conserved	0.5	
VC2434	Hypothetical protein, conserved	0.4	
VC2443	Hypothetical protein, conserved	0.4	
VC2498	Hypothetical protein, conserved	0.6	
VC2507	Hypothetical protein, conserved	3.3	
VC2512	Hypothetical protein, conserved	0.4	
VC2527	Hypothetical protein, conserved	0.5	
VC2546	Hypothetical protein, conserved	2.1	2.2
VC2615	Hypothetical protein, conserved	10.0	5.9
VC2620	Hypothetical protein, conserved	0.4	
VC2647	Hypothetical protein, conserved	7.3	
VC2686	Hypothetical protein, conserved		0.3
VC2720	Hypothetical protein, conserved	2.0	
VCA0006	Hypothetical protein, conserved	0.2	0.3
VCA0037	Hypothetical protein, conserved		2.4
VCA0040	Hypothetical protein, conserved	0.5	
VCA0048	Hypothetical protein, conserved	0.3	
VCA0076	Hypothetical protein, conserved	0.3	
VCA0079	Hypothetical protein, conserved	0.5	
VCA0097	Hypothetical protein, conserved	0.4	
VCA0159	Hypothetical protein, conserved	2.7	
VCA0163	Hypothetical protein, conserved	2.8	
VCA0171	Hypothetical protein, conserved	0.2	
VCA0172	Hypothetical protein, conserved	0.3	0.3
VCA0323	Hypothetical protein, conserved	0.5	
VCA0338	Hypothetical protein, conserved	2.0	2.6
VCA0345	Hypothetical protein, conserved		2.5
VCA0487	Hypothetical protein, conserved	0.3	
VCA0488	Hypothetical protein, conserved	0.5	
VCA0527	Hypothetical protein, conserved		2.4
VCA0544	Hypothetical protein, conserved	2.0	
VCA0569	Hypothetical protein, conserved		3.0
VCA0586	Hypothetical protein, conserved	2.5	
VCA0689	Hypothetical protein, conserved		15.0
VCA0732	Hypothetical protein, conserved	0.3	
VCA0743	Hypothetical protein, conserved		0.3
VCA0763	Hypothetical protein, conserved	0.3	
VCA0769	Hypothetical protein, conserved	9.7	
VCA0789	Hypothetical protein, conserved	2.2	
VCA0838	Hypothetical protein, conserved	2.3	
VCA0903	Hypothetical protein, conserved	6.2	
VCA0907	Hypothetical protein, conserved	0.5	
VCA0931	Hypothetical protein, conserved	2.4	
VCA0986	Hypothetical protein, conserved		6.2
VCA1004	Hypothetical protein, conserved	2.4	
VCA1042	Hypothetical protein, conserved	2.3	
VCA1072	Hypothetical protein, conserved	2.2	
VCA1085	Hypothetical protein, conserved		2.6

Supplemental Table 2. Bacterial strains and plasmids used in this study.

Vibrio cholerae strains		References
FY_Vc_1	<i>Vibrio cholerae</i> O1 El Tor A1552, smooth variant, Rif	1
FY_Vc_0099	Δ VCA0952 (<i>vpsT</i>)	2
FY_Vc_2272	Δ VCO665 (<i>vpsR</i>)	1
FY_Vc_2641	Δ VCA0184	This study
FY_Vc_2647	Δ VCA0933 (<i>cspV</i>)	This study
FY_Vc_283	Δ mshA	3
FY_Vc_3380	Δ VCO934 (<i>vpsL</i>)	4
FY_Vc_4450	Δ VOC1142	This study
FY_Vc_4455	Δ VCA0166 (<i>cspA</i>)	This study
FY_Vc_9569	Δ VOC1415 Δ VCA0017 (Δ <i>hcp1</i> Δ <i>hcp2</i>)	this study
FY_Vc_9735	Δ <i>hcp1</i> Δ <i>hcp2</i> -Tn7- <i>hcp1</i>	5
FY_Vc_9904	Δ <i>cspV</i> - Tn7- <i>cspV</i>	This study
FY_Vc_9903	Δ VOC2647 (<i>aphA</i>)	This study
Other strains		
<i>E. coli</i> S17-1 λ pir	Tpr Smr <i>rec, thi, pro, rK-mK+ RP4:2-Tc:MuKm</i> Tn7 λ pir	6
<i>E. coli</i> CC118 λ pir	Δ (<i>ara-leu</i>) <i>araD</i> Δ <i>lacX74 galE galK phoA</i> 20 <i>thi-1 rpoB argE</i> (Am) <i>recA1 pir</i>	7
<i>E. coli</i> MC4100	F' <i>araD139</i> Δ (<i>argF-lac</i>)U169 <i>rpsL150</i> (<i>str^r</i>) <i>relA1 deoC1 rbsR fthD5301 fruA25</i> I'	Ottemann lab, UCSC
<i>Aeromonas</i> sp.	<i>Aeromonas</i> sp.	Sison-Mangus lab, UCSC
FY_Ye_71	<i>Aeromonas</i> sp. Strepr	
Plasmids		
pMCM11	pGP704::mTn7- <i>gfp</i> , Gmr Ampr	
pUX-BF13	oriR6K helper plasmid, <i>mobI oriT</i> , provides the Tn7 transposition function <i>in trans</i> , Ampr 7	
pGP704- sacB28	pGP704 derivative; <i>mobI oriT sacB</i> , Ampr	9
pGP704- sacB29	pGP704- <i>sacB28:: VCA0184</i>	This study
pGP704- sacB30	pGP704- <i>sacB28:: cspV</i>	This study
pGP704- sacB31	pGP704- <i>sacB28:: VC1142</i>	This study
pGP704- sacB32	pGP704- <i>sacB28:: cspV</i>	This study
pGP704- sacB33	pGP704- <i>sacB28:: aphA</i>	This study
pGP704- sacB34	pGP704- <i>sacB28:: hcp1</i>	This study
pGP704- sacB35	pGP704- <i>sacB28:: hcp2</i>	This study
Reference number	Reference cited	
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Supplementary Figure 1. SEM images showing *mshA* attached to *D. magna*.



Supplementary Figure 2. Growth curve of wild-type *V. cholerae* grown at 37°C then shifted to 25°C (gray squares) or 15°C (white circles) or maintained at 37°C (black triangles) for comparison. Closed arrow indicates time point at which cultures were shifted. Open arrow indicates time point at which samples were taken for microarray analysis.

