

**Table S3.** Genes of *Thiorhodovibrio* spp. involved in osmotic adaptation.

"Glycine" related genes	Description	Trv. <i>frisius</i> 006511 <sup>T</sup>	Trv. <i>winogradskyi</i> DSM 6702 <sup>T</sup>	Trv. <i>litoralis</i> stain 970 <sup>T</sup>
<i>betL</i>	Glycine betaine-Na(+) symporter	-	-	Thiosp_03236
<i>gbuA</i>	Glycine betaine/carnitine transport ATP-binding	-	-	Thiosp_01381
<i>gbuB</i>	Glycine betaine/carnitine transport permease	-	Thiowin_03044	Thiosp_04329
<i>gbuC 1</i>	Glycine betaine/carnitine transport binding precursor	Thiofri_04750	Thiowin_03045	Thiosp_04328
<i>gbuC 2</i>	Glycine betaine/carnitine transport binding precursor	-	Thiowin_03937	-
<i>gcvH</i>	Glycine cleavage system H protein	Thiofri_02064	Thiowin_03799	Thiosp_02802
<i>gcvPA</i>	putative glycine dehydrogenase [decarboxylating]subunit 1	Thiofri_02063	Thiowin_03800	Thiosp_02803
<i>gcvPB</i>	putative glycine dehydrogenase [decarboxylating]subunit 2	Thiofri_02062	Thiowin_03801	Thiosp_02804
<i>G/S N-methyltransferase</i>	Glycine/sarcosine N-methyltransferase	Thiofri_00397	Thiowin_05092	Thiosp_00206
<i>G/S/D N-methyltransferase</i>	Glycine/sarcosine/dimethylglycine N-methyltransferase	-	Thiowin_02708	-
<i>glyQ</i>	Glycine--tRNA ligase alpha subunit	Thiofri_04609	Thiowin_04789	Thiosp_00297
<i>glyS</i>	Glycine--tRNA ligase beta subunit	Thiofri_04610	Thiowin_04790	Thiosp_00298
<i>opuAB</i>	Glycine betaine transport system permease	Thiofri_04749	-	-
<i>opuCA</i>	Glycine betaine/carnitine/choline transport ATP-binding	-	Thiowin_01936	Thiosp_01005
<i>opuCB</i>	Glycine betaine/carnitine/choline transport system permease	-	Thiowin_01935	Thiosp_01004
<i>opuD 1</i>	Glycine betaine transporter	Thiofri_02247	Thiowin_01524	Thiosp_03115
<i>opuD 2</i>	Glycine betaine transporter	-	Thiowin_03936	Thiosp_03560
<i>proV</i>	Glycine betaine/L-proline transport ATP-binding	Thiofri_04748	Thiowin_03043	Thiosp_04330
<i>purD</i>	Phosphoribosylamine--glycine ligase	Thiofri_03608	Thiowin_01621	Thiosp_01166
<i>N-methyltransferase</i>	Sarcosine/dimethylglycine N-methyltransferase	Thiofri_00398	Thiowin_05093	Thiosp_00205
<i>thiO</i>	Glycine oxidase	Thiofri_00930	Thiowin_04410	-
<b>"Sodium (Na+)" related genes</b>				
<i>Na+ SNF</i>	Na+-dependent transporters of the SNF family protein	Thiofri_01513	Thiowin_03606	Thiosp_02360
<i>NhaD 1</i>	Na+/H+ antiporter, NhaD family	Thiofri_01606	Thiowin_02804	Thiosp_02827
<i>NhaD 2</i>	Na+/H+ antiporter, NhaD family	-	-	Thiosp_02340
<i>DASS 1</i>	transporter, divalent anion:Na+ symporter (DASS)family	Thiofri_01961	Thiowin_01270	Thiosp_02339
<i>DASS 2</i>	transporter, divalent anion:Na+ symporter (DASS)family	Thiofri_02589	Thiowin_01655	Thiosp_01897
<i>mrpF 1</i>	Sodium-cholate efflux protein MrpF	Thiofri_02888	Thiowin_03711	Thiosp_01848
<i>mrpF 2</i>	Sodium-cholate efflux protein MrpF	-	-	Thiosp_03149
<i>nhaK</i>	Sodium, potassium, lithium and rubidium/H(+) antiporter	Thiofri_04950	Thiowin_01384	-
<i>ntpD</i>	V-type sodium pump subunit D	-	-	Thiosp_00061
<i>SSS small</i>	putative solute:sodium symporter small subunit	Thiofri_02774	Thiowin_00883	Thiosp_02403
<i>sodium/calcium exchanger 1</i>	sodium/calcium exchanger 1	-	Thiowin_03917	-
<i>SSS</i>	transporter, solute:sodium symporter (SSS) family	-	Thiowin_03497	-

**Table S4.** Genes of *Trv. frisius* DSM111777<sup>T</sup>, *Trv. winogradskyi* DSM 6702<sup>T</sup>, *Trv. litoralis* 06511<sup>T</sup> potentially involved in the detoxification of oxygen and oxygen radicals.

"Oxidase/ Peroxidase" related genes	Description	<i>Trv. frisius 006511<sup>T</sup></i>	<i>Trv. winogradskyi DSM 6702<sup>T</sup></i>	<i>Trv. litoralis stain 970<sup>T</sup></i>
<i>bsaA</i>	Glutathione peroxidase	Thiofri_01328	Thiowin_03142	Thiosp_01211
<i>cbb3 subunit II</i>	cbb3-type cytochrome c oxidase subunit II	Thiofri_01951	Thiowin_01259	Thiosp_02327
<i>ccpA</i>	Cytochrome c551 peroxidase precursor	Thiofri_04511	-	Thiosp_04559
<i>coproporphyrinogen III oxidase</i>	coproporphyrinogen III oxidase	Thiofri_04847	Thiowin_00940	Thiosp_03571
<i>coproporphyrinogen III oxidase</i>	coproporphyrinogen III oxidase	Thiofri_02232	-	-
<i>coproporphyrinogen III oxidase</i>	coproporphyrinogen III oxidase	Thiofri_04860	-	-
<i>cpo</i>	Non-heme chloroperoxidase	Thiofri_03789	Thiowin_01227	Thiosp_01564
<i>cydA</i>	Cytochrome d ubiquinol oxidase subunit 1	Thiofri_01486	Thiowin_01374	Thiosp_02771
<i>cydB</i>	Cytochrome d ubiquinol oxidase subunit 2	Thiofri_01485	Thiowin_01373	Thiosp_02772
<i>CcoG</i>	cytochrome c oxidase accessory protein CcoG	Thiofri_01954	Thiowin_01262	Thiosp_02330
<i>cytC oxidase, cbb3-type, subunit III</i>	cytochrome c oxidase, cbb3-type, subunit III	Thiofri_01906	Thiowin_04603	Thiosp_02334
<i>Cyt oxidase complex assembly protein 1</i>	Cytochrome oxidase complex assembly protein 1	Thiofri_02898	-	-
<i>Cyt oxidase maturation protein, cbb3-type</i>	cytochrome oxidase maturation protein, cbb3-type	Thiofri_01957	Thiowin_01265	-
<i>fixN</i>	Cytochrome c oxidase subunit 1	Thiofri_01950	Thiowin_01258	Thiosp_02326
<i>fixP</i>	Cytochrome c oxidase subunit III	Thiofri_01953	Thiowin_01261	Thiosp_02329
<i>garA</i>	Glutathione amide-dependent peroxidase	Thiofri_01026	Thiowin_04194	Thiosp_01050
<i>hemF</i>	Coproporphyrinogen-III oxidase, aerobic	Thiofri_02877	Thiowin_03700	Thiosp_01856
<i>hemN 1</i>	Oxygen-independent coproporphyrinogen-III oxidase 1	Thiofri_02216	Thiowin_00485	Thiosp_00537
<i>hemN 2</i>	Oxygen-independent coproporphyrinogen-III oxidase	Thiofri_04147	Thiowin_00568	Thiosp_00723
<i>hemN 3</i>	Oxygen-independent coproporphyrinogen-III oxidase	Thiofri_04572	Thiowin_00766	Thiosp_01551
<i>hemY</i>	Protoporphyrinogen oxidase	Thiofri_01523	-	Thiosp_02467
<i>katG 1</i>	Catalase-peroxidase	-	Thiowin_01079	Thiosp_03123
<i>katG 2</i>	Catalase-peroxidase	-	-	Thiosp_03157
<i>katG 3</i>	Catalase-peroxidase	-	-	Thiosp_03162
<i>livQ 1</i>	6"-hydroxyparomomycin C oxidase	Thiofri_03586	Thiowin_02493	-
<i>livQ 2</i>	6"-hydroxyparomomycin C oxidase	-	Thiowin_04316	-
<i>nadB</i>	L-aspartate oxidase	Thiofri_02565	Thiowin_02216	Thiosp_02585
<i>neoG</i>	Paromamine 6'-oxidase	Thiofri_02821	-	-
<i>nox</i>	NADH oxidase	Thiofri_04519	Thiowin_04469	Thiosp_04602
<i>pdxH</i>	Pyridoxine/pyridoxamine 5'-phosphate oxidase	Thiofri_01096	Thiowin_04023	Thiosp_03618
<i>protoporphyrinogen oxidase 1</i>	protoporphyrinogen oxidase	Thiofri_02110	Thiowin_04300	Thiosp_01920
<i>protoporphyrinogen oxidase 2</i>	protoporphyrinogen oxidase	-	Thiowin_03758	-
<i>protoporphyrinogen oxidase 3</i>	protoporphyrinogen oxidase	-	Thiowin_03595	-
<i>sodB 1</i>	Superoxide dismutase [Fe]	Thiofri_01934	Thiowin_02877	Thiosp_02682
<i>sodB 2</i>	Superoxide dismutase [Fe]	-	Thiowin_03340	Thiosp_03213
<i>sodC 1</i>	Superoxide dismutase [Cu-Zn] precursor	-	Thiowin_03453	Thiosp_03187
<i>sodC 2</i>	Superoxide dismutase [Cu-Zn] precursor	-	Thiowin_03557	-
<i>thiO</i>	Glycine oxidase	Thiofri_00930	Thiowin_04410	-
<i>wbpB 1</i>	UDP-N-acetyl-2-amino-2-deoxy-D-glucuronate oxidase	-	-	Thiosp_00142
<i>wbpB 2</i>	UDP-N-acetyl-2-amino-2-deoxy-D-glucuronate oxidase	-	-	Thiosp_04203

**Table S5.** Motility related genes annotated through KEGG online database for *Trv. frisius* DSM111777<sup>T</sup>, *Trv. winogradskyi* DSM 6702<sup>T</sup>, *Trv. litoralis* 06511<sup>T</sup>.

Gene	Description	KO code	<i>Trv. frisius</i> 006511 <sup>T</sup>	<i>Trv. winogradskyi</i> DSM 6702 <sup>T</sup>	<i>Trv. litoralis</i> stain 970 <sup>T</sup>
<i>flgA</i>	flagellar basal body P-ring formation protein FlgA	K02386	Thiofri_04680	Thiowin_04913	Thiosp_00317
<i>flgB</i>	flagellar basal-body rod protein FlgB, proximal rod	K02387	Thiofri_04683	Thiowin_04910	Thiosp_00314
<i>flgC</i>	flagellar basal-body rod protein FlgC, proximal rod	K02388	Thiofri_04684	Thiowin_04909	Thiosp_00313
<i>flgD</i>	flagellar basal-body rod modification protein FlgD	K02389	Thiofri_04685	Thiowin_04908	Thiosp_00312
<i>flgE</i>	flagellar hook protein FlgE	K02390	Thiofri_04686	Thiowin_04907	Thiosp_00311
<i>flgF</i>	flagellar basal-body rod protein FlgF, proximal rod	K02391	Thiofri_04687	Thiowin_04906	Thiosp_00310
<i>flgG</i>	flagellar basal-body rod protein FlgG, distal rod	K02392	Thiofri_04688	Thiowin_04905	Thiosp_00309
<i>flgH</i>	flagellar L-ring protein FlgH	K02393	Thiofri_04689	Thiowin_04904	Thiosp_00308
<i>flgI</i>	flagellar P-ring protein FlgI	K02394	Thiofri_04690	Thiowin_04903	Thiosp_00307
<i>flgJ</i>	peptidoglycan hydrolase FlgJ	K02395	Thiofri_04691	Thiowin_04902	Thiosp_00306
<i>flgK</i>	flagellar hook-associated protein 1, hook-filament junction	K02396	Thiofri_04692	Thiowin_04901	Thiosp_00305
<i>flgL</i>	flagellar hook-associated protein 3 FlgL, hook-filament junction	K02397	Thiofri_04693	Thiowin_04900	Thiosp_00304
<i>flgM</i>	negative regulator of flagellin synthesis FlgM	K02398	<b>(Thiofri_04678)</b>	Thiowin_04914	Thiosp_00318
-	- unknown gene insertion -	-	<b>Thiofri_04679</b>	-	-
<i>flgN</i>	flagellar biosynthesis protein FlgN	K02399	Thiofri_04677	Thiowin_04915	Thiosp_00319
<i>flhA</i>	flagellar biosynthesis protein FlhA	K02400	Thiofri_04665	Thiowin_04927	Thiosp_00333
<i>flhB</i>	flagellar biosynthesis protein FlhB	K02401	Thiofri_04664	Thiowin_04928	Thiosp_00334
<i>fliA, whiG</i>	RNA polymerase sigma factor FliA	K02405	Thiofri_04668	Thiowin_04924	Thiosp_00330
<i>fliC, hag</i>	Flagellin, filament	K02406	Thiofri_01373, Thiofri_01400	Thiowin_03649	Thiosp_00043, Thiosp_01323, Thiosp_01326, Thiosp_01354
<i>fliD</i>	flagellar hook-associated protein 2, cap	K02407	Thiofri_01375	Thiowin_03647	Thiosp_01328
<i>fliE</i>	flagellar hook-basal body complex protein FliE, proximal rod	K02408	Thiofri_04467	Thiowin_04887	Thiosp_04408
<i>fliF</i>	flagellar M-ring protein FliF	K02409	Thiofri_04466	Thiowin_04886	Thiosp_04407
<i>fliG</i>	flagellar motor switch protein FliG, C-ring	K02410	Thiofri_04465	Thiowin_04885	Thiosp_04406
<i>fliH</i>	flagellar assembly protein FliH	K02411	Thiofri_04464	Thiowin_04884	Thiosp_04405
<i>fliI</i>	flagellum-specific ATP synthase	K02412	Thiofri_04463	Thiowin_04883	Thiosp_04404
<i>fliJ</i>	flagellar protein FliJ	K02413	Thiofri_04462	Thiowin_04882	Thiosp_04403
<i>fliK</i>	flagellar hook-length control protein FliK	K02414	Thiofri_04461	Thiowin_04881	Thiosp_04402
<i>fliL</i>	flagellar protein FliL	K02415	Thiofri_02262	-	Thiosp_03578
<i>fliM</i>	flagellar motor switch protein FliM, C-ring	K02416	Thiofri_04658	Thiowin_04934	Thiosp_00340
<i>fliN</i>	flagellar motor switch protein FliN, C-ring	K02417	Thiofri_04659	Thiowin_04933	Thiosp_00339
<i>fliO, fliZ</i>	flagellar protein FliO/FliZ	K02418	<b>(Thiofri_04660)</b>	Thiowin_04932	Thiosp_00338
<i>fliP</i>	flagellar biosynthesis protein FliP	K02419	Thiofri_04661	Thiowin_04931	Thiosp_00337
<i>fliQ</i>	flagellar biosynthesis protein FliQ	K02420	Thiofri_04662	Thiowin_04930	Thiosp_00336
<i>fliR</i>	flagellar biosynthesis protein FliR	K02421	Thiofri_04663	Thiowin_04929	Thiosp_00335
<i>fliS</i>	flagellar secretion chaperone FliS	K02422	Thiofri_01376	Thiowin_03644	Thiosp_01329
<i>motA</i>	chemotaxis protein MotA, stator	K02556	Thiofri_04378	Thiowin_00702	Thiosp_00325, Thiosp_04621
<i>motB</i>	chemotaxis protein MotB, stator	K02557	Thiofri_04377	Thiowin_00703	Thiosp_00324, Thiosp_04620
<i>rpoD</i>	RNA polymerase primary sigma factor	K03086	Thiofri_02358	Thiowin_02014	Thiosp_02643
<i>rpoN</i>	RNA polymerase sigma-54 factor	K03092	Thiofri_04727	Thiowin_00314	Thiosp_04350
<i>fliA, fleQ, flaK</i>	sigma-54 dependent transcriptional regulator, flagellar regulatory protein	K10941	Thiofri_00976, Thiofri_04469	Thiowin_04859, Thiowin_04888	Thiosp_00860, Thiosp_04410