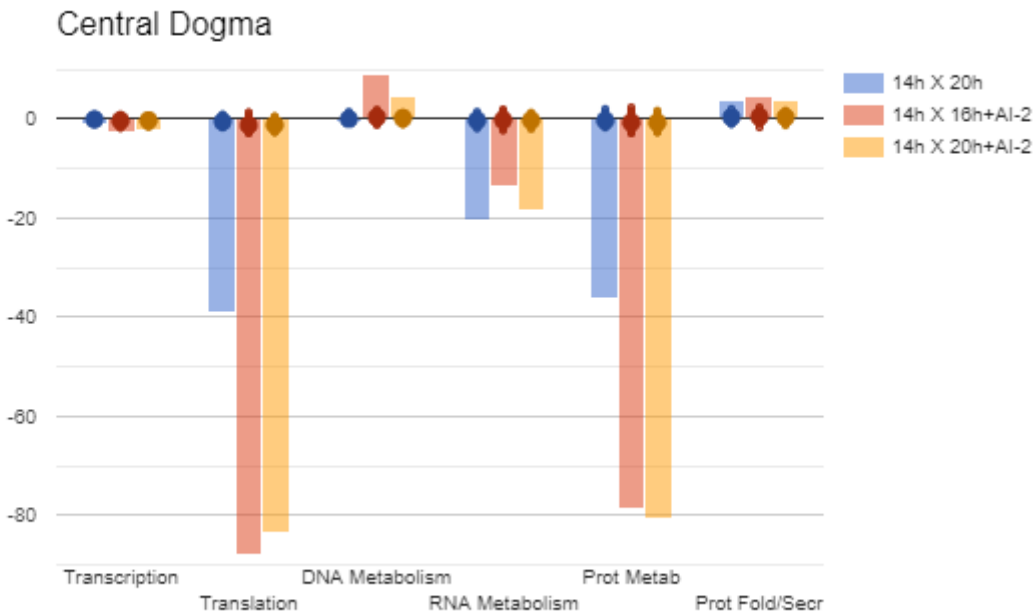


Supplementary Material S3 – Expression patterns of the 724 *Z. mobilis* genes identified as modulated in response to AI-2, distributed into different categories/subcategories, as defined by the *OMICS Dashboard* tool, available from the *Pathway Tools* software package. The total modulation in each category is shown as the sum of expression ratios (Log-transformed) involving all genes present in the category in question.

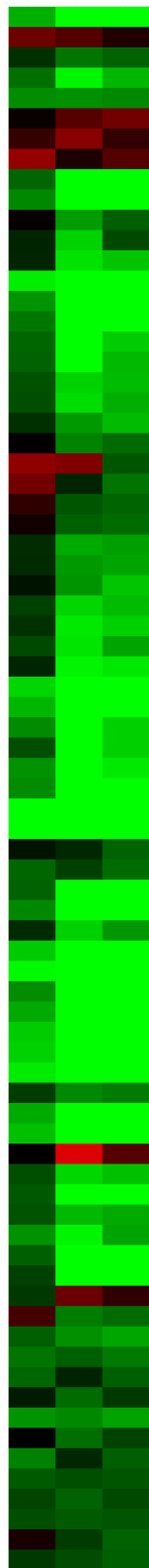
Alencar *et al.* (2021). The quorum sensing auto-inducer 2 (AI-2) stimulates nitrogen fixation and favors ethanol production over biomass accumulation in *Zymomonas mobilis*. *Int. J. Mol. Sci.* Submitted.

Supplementary Material S3A –Central Dogma



-1.5 0.0 1.5

14h X 20h
14h X 16h+AI-2
14h X 20h+AI-2



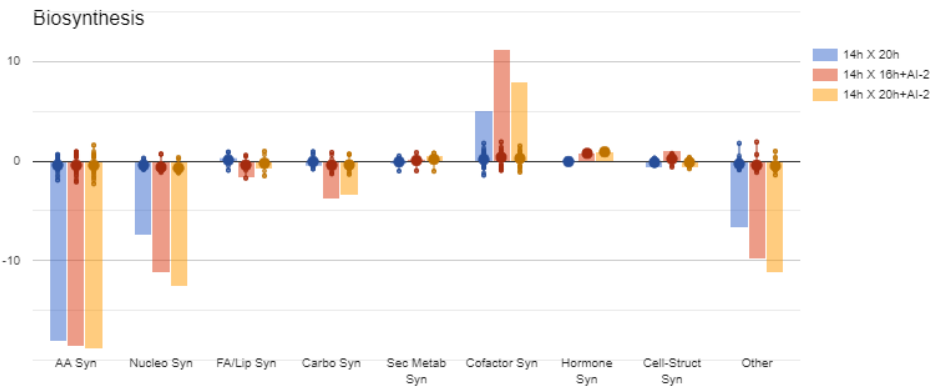
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 Transcription Proteins / DNA-directed RNA polymerase subunit beta' (ZMO_RS03270)
 Transcription Proteins / DNA-directed RNA polymerase subunit omega (ZMO_RS07745)
 Transcription Proteins / transcription termination/antitermination factor NusG (ZMO_RS03235)
 Transcription Proteins / transcription termination factor Rho (ZMO_RS09085)
 Transcription Proteins / RNA polymerase sigma-54 factor (ZMO_RS01195)
 Transcription Proteins / RNA polymerase sigma factor RpoD (ZMO_RS07275)
 Transcription Proteins / RNA polymerase sigma factor RpoH (ZMO_RS03350)
 Translation Proteins / 30S ribosomal protein S20 (ZMO_RS06075)
 Translation Proteins / 30S ribosomal protein S4 (ZMO_RS06110)
 Translation Proteins / 30S ribosomal protein S2 (ZMO_RS05180)
 Translation Proteins / 50S ribosomal protein L28 (ZMO_RS01270)
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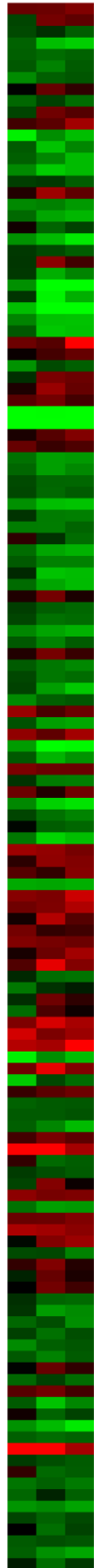
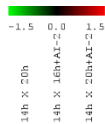
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Supplementary Material S3B – Biosynthesis of biomolecules



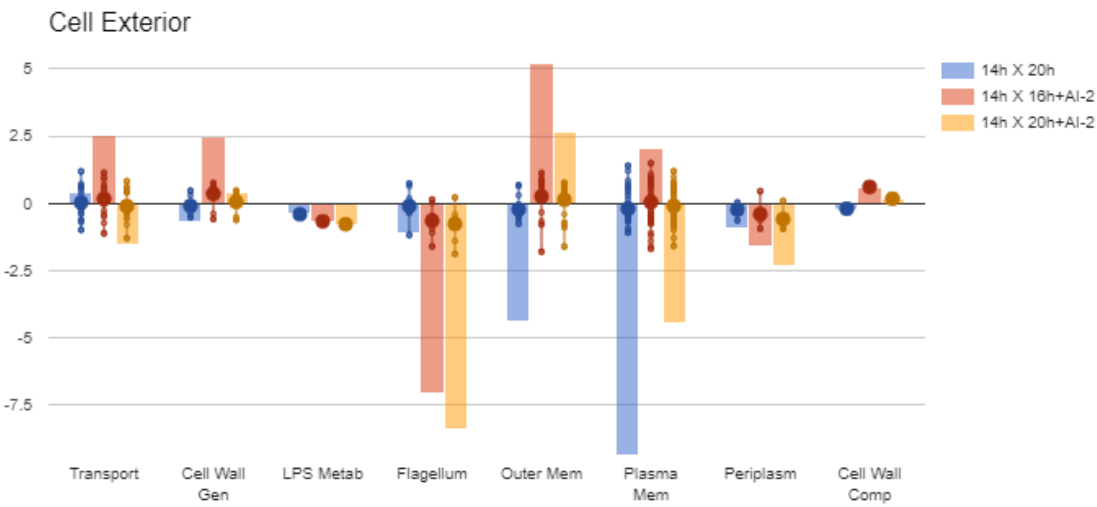


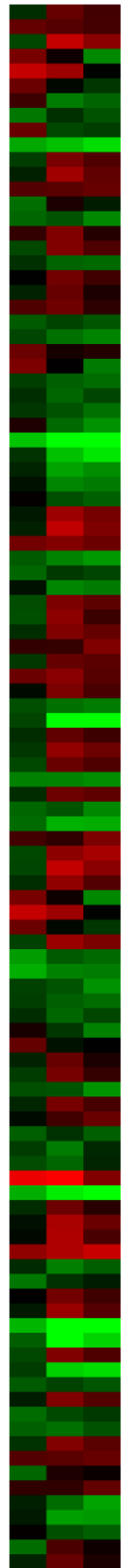
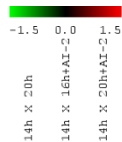
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Amino Acid Biosynthesis	/	acetylglutamate kinase (ZMO_RS06695)
Amino Acid Biosynthesis	/	carbamoyl-phosphate synthase small subunit (ZMO_RS07260)
Amino Acid Biosynthesis	/	CTP synthetase (ZMO_RS01990)
Amino Acid Biosynthesis	/	imidazole glycerol phosphate synthase cyclase subunit (ZMO_RS06725)
Amino Acid Biosynthesis	/	Asp-tRNA(Asn)/Glu-tRNA(Gln) amidotransferase subunit GatC (ZMO_RS03495)
Amino Acid Biosynthesis	/	aspartate amidotransferase (ZMO_RS00010)
Amino Acid Biosynthesis	/	serine acetyltransferase (ZMO_RS07795)
Amino Acid Biosynthesis	/	S-adenosylmethionine synthase (ZMO_RS01190)
Amino Acid Biosynthesis	/	aminotransferase class V-fold PLP-dependent enzyme (ZMO_RS03010)
Amino Acid Biosynthesis	/	serine hydroxymethyltransferase (ZMO_RS05390)
Amino Acid Biosynthesis	/	histidinol phosphate phosphatase (ZMO_RS06805)
Amino Acid Biosynthesis	/	imidazoleglycerol-phosphate dehydratase HisB (ZMO_RS06740)
Amino Acid Biosynthesis	/	1-(5-phosphoribosyl)-5-((5-phosphoribosylamino)methylideneamino)imidazole-4- carboxamide (ZMO_RS06730)
Amino Acid Biosynthesis	/	phosphoribosyl-ATP pyrophosphatase (ZMO_RS06720)
Amino Acid Biosynthesis	/	ATP phosphoribosyltransferase regulatory subunit (ZMO_RS07580)
Amino Acid Biosynthesis	/	2-isopropylmalate synthase (ZMO_RS06290)
Amino Acid Biosynthesis	/	aspartate-semialdehyde dehydrogenase (ZMO_RS06290)
Amino Acid Biosynthesis	/	homoserine dehydrogenase (ZMO_RS02080)
Amino Acid Biosynthesis	/	homoserine kinase (ZMO_RS07180)
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Amino Acid Biosynthesis	/	threonine synthase (ZMO_RS08575)
Amino Acid Biosynthesis	/	ketol-acid reductoisomerase (ZMO_RS05105)
Amino Acid Biosynthesis	/	acetylacetyl synthase, large subunit, biosynthetic type (ZMO_RS05095)
Amino Acid Biosynthesis	/	acetylacetyl synthase small subunit (ZMO_RS05100)
Amino Acid Biosynthesis	/	acetylacetyl synthase large subunit (ZMO_RS03060)
Amino Acid Biosynthesis	/	3-isopropylmalate dehydrogenase (ZMO_RS03015)
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Amino Acid Biosynthesis	/	3-isopropylmalate dehydratase Large subunit (ZMO_RS00435)
Amino Acid Biosynthesis	/	succinyl-diaminopimelate desuccinylase (ZMO_RS07320)
Amino Acid Biosynthesis	/	sulfate adenylyltransferase subunit CysN (ZMO_RS00020)
Amino Acid Biosynthesis	/	adenylyl-sulfate kinase (ZMO_RS00015)
Amino Acid Biosynthesis	/	homoserine O-acetyltransferase (ZMO_RS00965)
Amino Acid Biosynthesis	/	5-methyltetrahydropteroylglutamate-- homocysteine S-methyltransferase (ZMO_RS04470)
Amino Acid Biosynthesis	/	chorismate mutase (ZMO_RS02500)
Amino Acid Biosynthesis	/	pyrroline-5-carboxylate reductase (ZMO_RS01335)
Amino Acid Biosynthesis	/	glutamate 5-kinase (ZMO_RS00890)
Amino Acid Biosynthesis	/	phosphoserine transaminase (ZMO_RS07570)
Amino Acid Biosynthesis	/	N-(5'-phosphoribosyl)anthranilate isomerase (ZMO_RS02605)
Amino Acid Biosynthesis	/	tryptophan synthase subunit alpha (ZMO_RS02595)
Amino Acid Biosynthesis	/	tryptophan synthase subunit beta (ZMO_RS02600)
Nucleoside and Nucleotide Biosynthesis	/	adenosine kinase (ZMO_RS08590)
Nucleoside and Nucleotide Biosynthesis	/	IMP dehydrogenase (ZMO_RS05620)
Nucleoside and Nucleotide Biosynthesis	/	guanylate kinase (ZMO_RS01870)
Nucleoside and Nucleotide Biosynthesis	/	amidophosphoribosyltransferase (ZMO_RS06965)
Nucleoside and Nucleotide Biosynthesis	/	adenylosuccinate synthetase (ZMO_RS07585)
Nucleoside and Nucleotide Biosynthesis	/	adenylylate kinase (ZMO_RS02365)
Nucleoside and Nucleotide Biosynthesis	/	phosphoribosylaminoimidazolecarboxamide synthase (ZMO_RS04710)
Nucleoside and Nucleotide Biosynthesis	/	adenylosuccinate lyase (ZMO_RS02940)
Nucleoside and Nucleotide Biosynthesis	/	bifunctional phosphoribosylaminoimidazolecarboxamide formyltransferase/IMP cyclohydrolase PurH (ZMO_RS00130)
Nucleoside and Nucleotide Biosynthesis	/	5-(carboxyamino)imidazole ribonucleotide mutase (ZMO_RS06355)
Nucleoside and Nucleotide Biosynthesis	/	5-(carboxyamino)imidazole ribonucleotide synthase (ZMO_RS06360)
Nucleoside and Nucleotide Biosynthesis	/	ribonucleotide-diphosphate reductase subunit alpha (ZMO_RS04645)
Nucleoside and Nucleotide Biosynthesis	/	carbamoyl-phosphate synthase small subunit (ZMO_RS07260)
Nucleoside and Nucleotide Biosynthesis	/	dihydroorotase (ZMO_RS07595)
Nucleoside and Nucleotide Biosynthesis	/	orotidine-5'-phosphate decarboxylase (ZMO_RS02610)
Nucleoside and Nucleotide Biosynthesis	/	(d)CMP kinase (ZMO_RS08085)
Nucleoside and Nucleotide Biosynthesis	/	UMP kinase (ZMO_RS05170)
Nucleoside and Nucleotide Biosynthesis	/	CTP synthetase (ZMO_RS01990)
Fatty Acid and Lipid Biosynthesis	/	class I SAM-dependent methyltransferase (ZMO_RS04625)
Fatty Acid and Lipid Biosynthesis	/	beta-ketoacyl-(acyl-carrier-protein) synthase II (ZMO_RS05725)
Fatty Acid and Lipid Biosynthesis	/	3-oxoacyl-ACP reductase FabG (ZMO_RS05495)
Fatty Acid and Lipid Biosynthesis	/	beta-hydroxyacyl-ACP dehydratase (ZMO_RS05130)
Carbohydrate Biosynthesis	/	fructose-bisphosphate class II (ZMO_RS02075)
Carbohydrate Biosynthesis	/	fructose-bisphosphate aldolase (ZMO_RS00765)
Carbohydrate Biosynthesis	/	IMP dehydrogenase (ZMO_RS05920)
Carbohydrate Biosynthesis	/	glucose-6-phosphate isomerase (ZMO_RS05445)
Carbohydrate Biosynthesis	/	glucose-phosphate pyrophosphokinase (ZMO_RS06810)
Carbohydrate Biosynthesis	/	3-deoxy-8-phosphooctulonate synthase (ZMO_RS06665)
Carbohydrate Biosynthesis	/	mannose-1-phosphate guanylyltransferase/mannose-6-phosphate isomerase (ZMO_RS05545)
Carbohydrate Biosynthesis	/	UTP--glucose-1-phosphate uridylyltransferase (ZMO_RS07950)
Carbohydrate Biosynthesis	/	UDP-glucose/GDP-mannose dehydrogenase family protein (ZMO_RS03650)
Secondary Metabolite Biosynthesis	/	SMP-30/gluconolactonase/LRE family protein (ZMO_RS09050)
Secondary Metabolite Biosynthesis	/	gluconate kinase (ZMO_RS07950)
Secondary Metabolite Biosynthesis	/	inositol monophosphatase (ZMO_RS01415)
Cofactor, Carrier, and Vitamin Biosynthesis	/	pantoate--beta-alanine ligase (ZMO_RS09000)
Cofactor, Carrier, and Vitamin Biosynthesis	/	3-methyl-2-oxobutanoate hydroxymethyltransferase (ZMO_RS08995)
Cofactor, Carrier, and Vitamin Biosynthesis	/	3-methyl-2-oxobutanoate hydroxymethyltransferase (ZMO_RS08905)
Cofactor, Carrier, and Vitamin Biosynthesis	/	6,7-dimethyl-8-ribitylmazine synthase (ZMO_RS02030)
Cofactor, Carrier, and Vitamin Biosynthesis	/	3,4-dihydroxy-2-butanone-4-phosphate synthase (ZMO_RS02035)
Cofactor, Carrier, and Vitamin Biosynthesis	/	glutathione-disulfide reductase (ZMO_RS05440)
Cofactor, Carrier, and Vitamin Biosynthesis	/	demethylmenaquinone methyltransferase (ZMO_RS08900)
Cofactor, Carrier, and Vitamin Biosynthesis	/	thioredoxin-disulfide reductase (ZMO_RS05110)
Cofactor, Carrier, and Vitamin Biosynthesis	/	signal peptide peptidase SppA (ZMO_RS08750)
Cofactor, Carrier, and Vitamin Biosynthesis	/	low molecular weight phosphotyrosine protein phosphatase (ZMO_RS00590)
Cofactor, Carrier, and Vitamin Biosynthesis	/	acid phosphatase (ZMO_RS00545)
Cofactor, Carrier, and Vitamin Biosynthesis	/	L-aspartate oxidase (ZMO_RS00610)
Cofactor, Carrier, and Vitamin Biosynthesis	/	glutaredoxin 3 (ZMO_RS03370)
Cofactor, Carrier, and Vitamin Biosynthesis	/	glutaredoxin 2 (ZMO_RS00290)
Cofactor, Carrier, and Vitamin Biosynthesis	/	S-adenosylmethionine synthase (ZMO_RS01190)
Cofactor, Carrier, and Vitamin Biosynthesis	/	5-formyltetrahydrofolate cyclo-ligase (ZMO_RS00925)
Cofactor, Carrier, and Vitamin Biosynthesis	/	methylene tetrahydrofolate reductase [NAD(P)H] (ZMO_RS07855)
Cofactor, Carrier, and Vitamin Biosynthesis	/	type I glutamine amidotransferase (ZMO_RS08965)
Cofactor, Carrier, and Vitamin Biosynthesis	/	bifunctional folylpolyglutamate synthase/dihydrofolate synthase (ZMO_RS02585)
Cofactor, Carrier, and Vitamin Biosynthesis	/	formate--tetrahydrofolate ligase (ZMO_RS01960)
Cofactor, Carrier, and Vitamin Biosynthesis	/	serine hydroxymethyltransferase (ZMO_RS05390)
Cofactor, Carrier, and Vitamin Biosynthesis	/	cobaltochelate subunit CobT (ZMO_RS06905)
Cofactor, Carrier, and Vitamin Biosynthesis	/	uroporphyrinogen-III C-methyltransferase (ZMO_RS05690)
Cofactor, Carrier, and Vitamin Biosynthesis	/	5-aminolevulinate synthase (ZMO_RS05380)
Cofactor, Carrier, and Vitamin Biosynthesis	/	porphobilinogen synthase (ZMO_RS08515)
Cofactor, Carrier, and Vitamin Biosynthesis	/	radical SAM protein (ZMO_RS00060)
Cofactor, Carrier, and Vitamin Biosynthesis	/	pyridoxine 5'-phosphate synthase (ZMO_RS07685)
Cofactor, Carrier, and Vitamin Biosynthesis	/	phosphoserine transaminase (ZMO_RS07570)
Cofactor, Carrier, and Vitamin Biosynthesis	/	cysteine desulfurase (ZMO_RS01840)
Cofactor, Carrier, and Vitamin Biosynthesis	/	molecular chaperone DnaK (ZMO_RS02930)
Hormone Biosynthesis	/	nitrilase (ZMO_RS05415)
Cell Structure Biosynthesis	/	penicillin-binding protein 2 (ZMO_RS03685)
Cell Structure Biosynthesis	/	penicillin-binding protein 2 (ZMO_RS01535)
Cell Structure Biosynthesis	/	monofunctional biosynthetic peptidoglycan transglycosylase (ZMO_RS04290)
Cell Structure Biosynthesis	/	phospho-N-acetylmuramoyl-pentapeptide- transferase (ZMO_RS03700)
Cell Structure Biosynthesis	/	UDP-N-acetylmuramoyl-L-alanyl-D-glutamate--2, 6-diaminopimelate ligase (ZMO_RS03690)
Other Biosynthesis	/	3-deoxy-7-phosphoheptulonate synthase (ZMO_RS00795)
Other Biosynthesis	/	shikimate kinase (ZMO_RS02645)
Other Biosynthesis	/	type II 3-dehydroquinate dehydratase (ZMO_RS03295)
Other Biosynthesis	/	CTP synthetase (ZMO_RS01990)
Other Biosynthesis	/	carbamoyl-phosphate synthase small subunit (ZMO_RS07260)
Other Biosynthesis	/	imidazole glycerol phosphate synthase cyclase subunit (ZMO_RS06725)
Other Biosynthesis	/	Asp-tRNA(Asn)/Glu-tRNA(Gln) amidotransferase subunit GatC (ZMO_RS03495)
Other Biosynthesis	/	homoserine O-acetyltransferase (ZMO_RS00965)
Other Biosynthesis	/	aminotransferase class V-fold PLP-dependent enzyme (ZMO_RS03010)
Other Biosynthesis	/	aspartate-semialdehyde dehydrogenase (ZMO_RS06290)
Other Biosynthesis	/	homoserine dehydrogenase (ZMO_RS02080)
Other Biosynthesis	/	acetylglutamate kinase (ZMO_RS06695)
Other Biosynthesis	/	uroporphyrinogen-III C-methyltransferase (ZMO_RS05690)
Other Biosynthesis	/	porphobilinogen synthase (ZMO_RS08515)
Other Biosynthesis	/	5-aminolevulinate synthase (ZMO_RS05380)
Other Biosynthesis	/	glycine--tRNA ligase subunit beta (ZMO_RS06470)
Other Biosynthesis	/	glycine--tRNA ligase subunit alpha (ZMO_RS06475)
Other Biosynthesis	/	proline--tRNA ligase (ZMO_RS01955)
Other Biosynthesis	/	threonine--tRNA ligase (ZMO_RS03415)
Other Biosynthesis	/	alanine--tRNA ligase (ZMO_RS03775)
Other Biosynthesis	/	valine--tRNA ligase (ZMO_RS08510)
Other Biosynthesis	/	leucine--tRNA ligase (ZMO_RS06425)
Other Biosynthesis	/	cysteine--tRNA ligase (ZMO_RS00790)

Supplementary Material S3C – Degradation of biomolecules



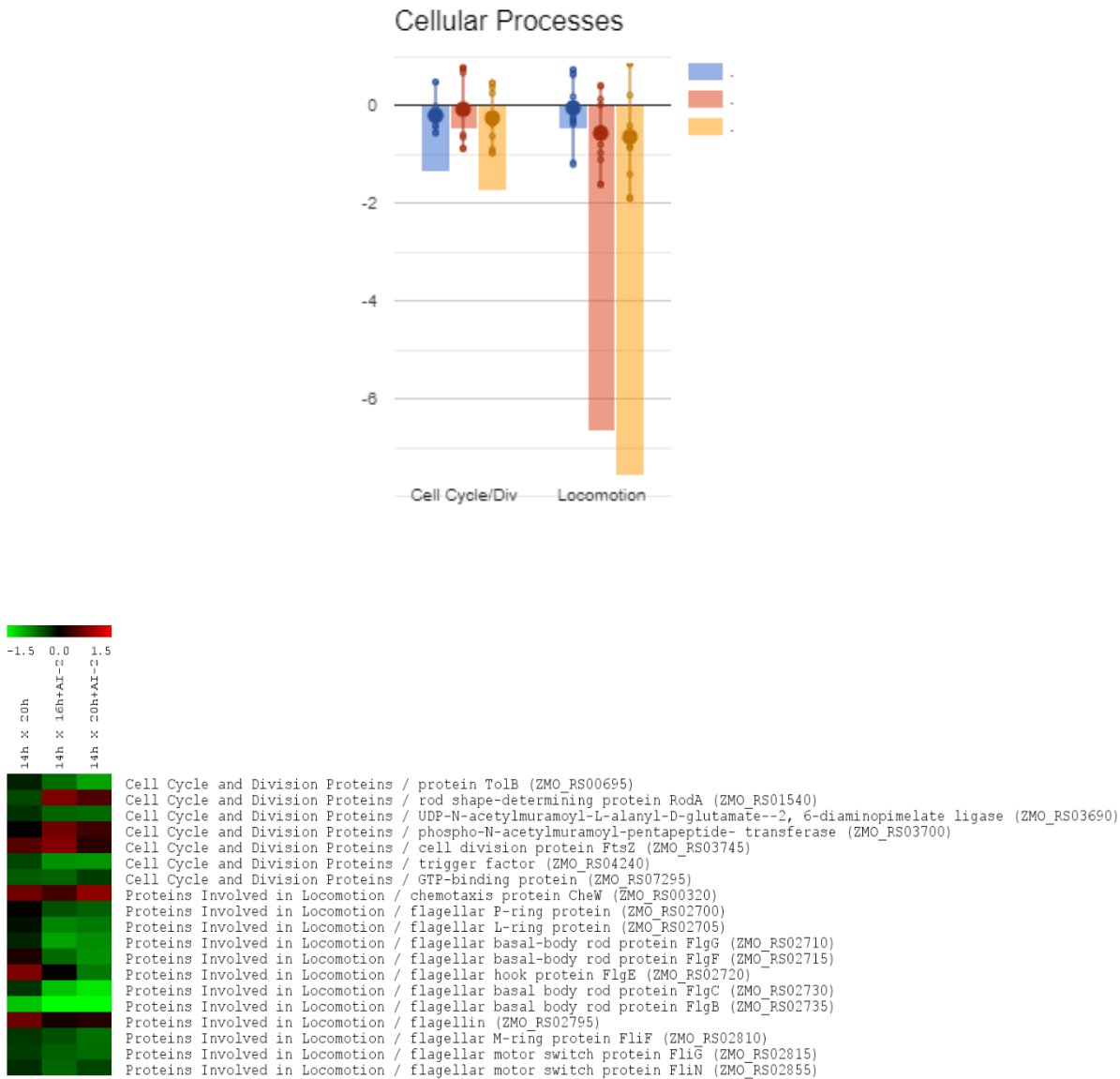
Supplementary Material S3D – Cell Exterior Structures



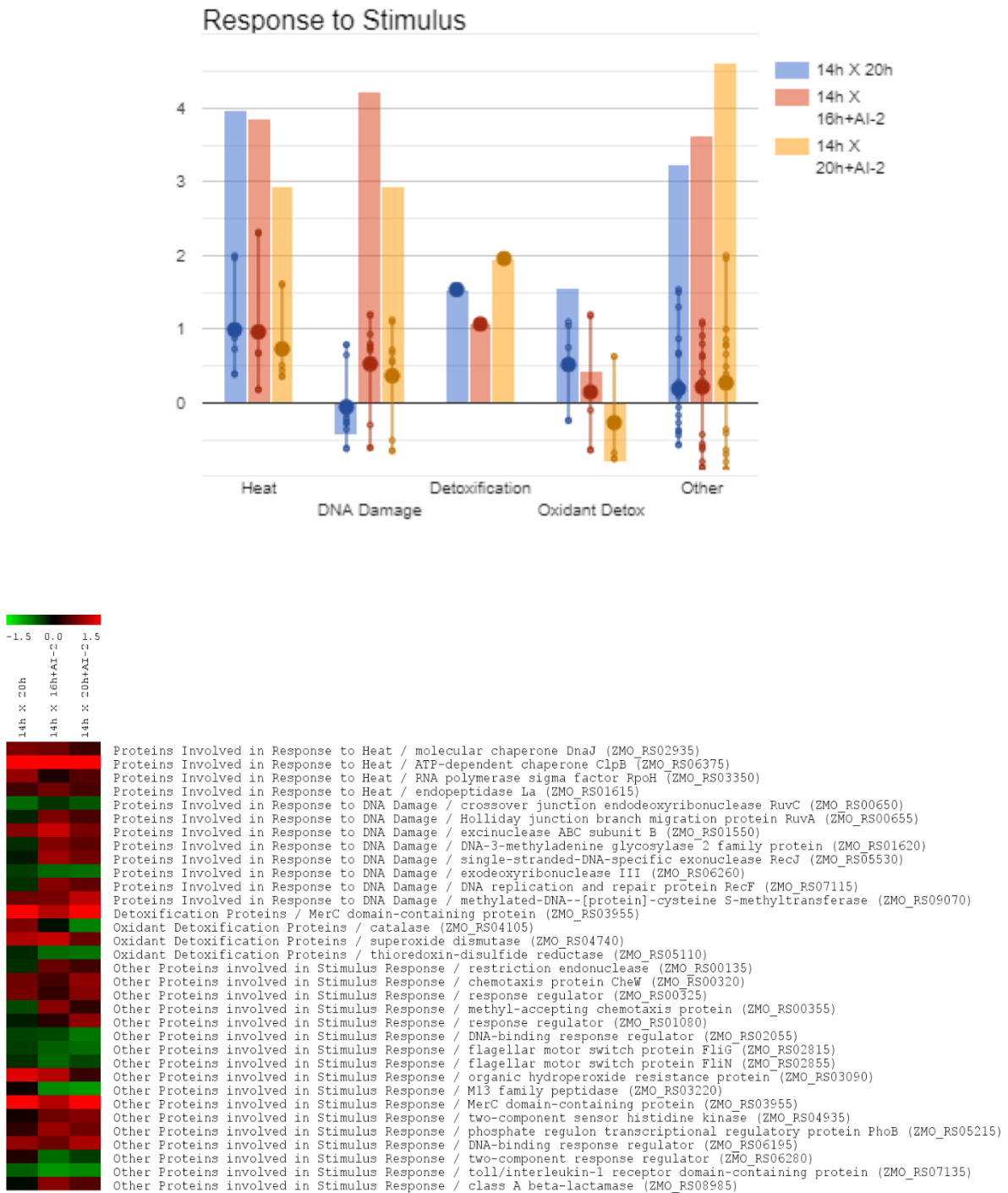


Transport Proteins / sugar porter family MFS transporter (ZMO_RS01265)
 Transport Proteins / PTS fructose transporter subunit IIA (ZMO_RS05945)
 Transport Proteins / sulfite exporter TauE/SafE family protein (ZMO_RS00230)
 Transport Proteins / FOF1 ATP synthase subunit delta (ZMO_RS01030)
 Transport Proteins / ATP synthase subunit alpha (ZMO_RS01035)
 Transport Proteins / ATP synthase subunit gamma (ZMO_RS01040)
 Transport Proteins / FOF1 ATP synthase subunit epsilon (ZMO_RS01050)
 Transport Proteins / ammonium transporter (ZMO_RS01475)
 Transport Proteins / FOF1 ATP synthase subunit C (ZMO_RS02975)
 Transport Proteins / MotA/TolQ/ExbB proton channel family protein (ZMO_RS07725)
 Transport Proteins / nucleoside transporter (ZMO_RS04325)
 Transport Proteins / ethanolamine permease (ZMO_RS06160)
 Transport Proteins / LPS export ABC transporter permease LptF (ZMO_RS06225)
 Transport Proteins / purine nucleoside permease (ZMO_RS06505)
 Transport Proteins / 2-keto-3-deoxygluconate permease (ZMO_RS07900)
 Cell Wall Biogenesis/Organization Proteins / penicillin-binding protein 2 (ZMO_RS01535)
 Cell Wall Biogenesis/Organization Proteins / rod shape-determining protein RodA (ZMO_RS01540)
 Cell Wall Biogenesis/Organization Proteins / UDP-N-acetylmuramoyl-L-alanyl-D-glutamate--2, 6-diaminopimelate ligase (ZMO_RS03690)
 Cell Wall Biogenesis/Organization Proteins / phospho-N-acetylmuramoyl-pentapeptide- transferase (ZMO_RS03700)
 Cell Wall Biogenesis/Organization Proteins / monofunctional biosynthetic peptidoglycan transglycosylase (ZMO_RS04290)
 Cell Wall Biogenesis/Organization Proteins / septal ring lytic transglycosylase RlpA family protein (ZMO_RS04865)
 Cell Wall Biogenesis/Organization Proteins / endolytic transglycosylase MltG (ZMO_RS05720)
 Lipopolysaccharide Metabolism Proteins / 3-deoxy-8-phosphooctulonate synthase (ZMO_RS06665)
 Flagellar Proteins / flagellin (ZMO_RS02795)
 Flagellar Proteins / flagellar hook protein FlgE (ZMO_RS02720)
 Flagellar Proteins / flagellar motor switch protein FlgM (ZMO_RS02815)
 Flagellar Proteins / flagellar motor switch protein FlhN (ZMO_RS02855)
 Flagellar Proteins / flagellar M-ring protein FlhF (ZMO_RS02810)
 Flagellar Proteins / flagellar basal-body rod protein FlgF (ZMO_RS02715)
 Flagellar Proteins / flagellar basal body rod protein FlgB (ZMO_RS02735)
 Flagellar Proteins / flagellar basal body rod protein FlgC (ZMO_RS02730)
 Flagellar Proteins / flagellar basal-body rod protein FlgG (ZMO_RS02710)
 Flagellar Proteins / flagellar L-ring protein (ZMO_RS02705)
 Flagellar Proteins / flagellar P-ring protein (ZMO_RS02700)
 Outer Membrane Proteins / outer membrane autotransporter barrel domain-containing protein (ZMO_RS00915)
 Outer Membrane Proteins / channel protein TolC (ZMO_RS01095)
 Outer Membrane Proteins / glycine zipper 2TM domain-containing protein (ZMO_RS01875)
 Outer Membrane Proteins / hypothetical protein (ZMO_RS06420)
 Outer Membrane Proteins / transglycosylase (ZMO_RS07335)
 Outer Membrane Proteins / flagellar L-ring protein (ZMO_RS02705)
 Outer Membrane Proteins / TonB-dependent receptor (ZMO_RS00005)
 Outer Membrane Proteins / carbohydrate porin (ZMO_RS00270)
 Outer Membrane Proteins / TonB-dependent receptor (ZMO_RS00540)
 Outer Membrane Proteins / TonB-dependent receptor (ZMO_RS03520)
 Outer Membrane Proteins / TonB-dependent receptor (ZMO_RS03545)
 Outer Membrane Proteins / carbohydrate porin (ZMO_RS03785)
 Outer Membrane Proteins / TonB-dependent receptor (ZMO_RS04025)
 Outer Membrane Proteins / outer membrane protein assembly factor BamA (ZMO_RS05140)
 Outer Membrane Proteins / flagellar motor protein MotB (ZMO_RS06055)
 Outer Membrane Proteins / TonB-dependent receptor (ZMO_RS06000)
 Outer Membrane Proteins / TonB-dependent siderophore receptor (ZMO_RS07315)
 Outer Membrane Proteins / TonB-dependent receptor (ZMO_RS08160)
 Outer Membrane Proteins / outer membrane protein assembly factor BamD (ZMO_RS07910)
 Outer Membrane Proteins / carbohydrate porin (ZMO_RS08390)
 Plasma Membrane Proteins / 2-keto-3-deoxygluconate permease (ZMO_RS07900)
 Plasma Membrane Proteins / membrane protein insertase YidC (ZMO_RS07290)
 Plasma Membrane Proteins / YnfA family protein (ZMO_RS06995)
 Plasma Membrane Proteins / LytE family translocator (ZMO_RS00205)
 Plasma Membrane Proteins / sulfite exporter TauE/SafE family protein (ZMO_RS00230)
 Plasma Membrane Proteins / iron ABC transporter permease (ZMO_RS00985)
 Plasma Membrane Proteins / FOF1 ATP synthase subunit delta (ZMO_RS01030)
 Plasma Membrane Proteins / ATP synthase subunit alpha (ZMO_RS01035)
 Plasma Membrane Proteins / ATP synthase subunit gamma (ZMO_RS01040)
 Plasma Membrane Proteins / cytochrome c biogenesis ATP-binding export protein CcmA (ZMO_RS01125)
 Plasma Membrane Proteins / MarC family protein (ZMO_RS01775)
 Plasma Membrane Proteins / preprotein translocase subunit SecG (ZMO_RS01995)
 Plasma Membrane Proteins / preprotein translocase subunit SecY (ZMO_RS02360)
 Plasma Membrane Proteins / flagellar motor switch protein FlhG (ZMO_RS02815)
 Plasma Membrane Proteins / flagellar motor switch protein FlhN (ZMO_RS02855)
 Plasma Membrane Proteins / ATPase (ZMO_RS02985)
 Plasma Membrane Proteins / copper-translocating P-type ATPase (ZMO_RS04090)
 Plasma Membrane Proteins / monofunctional biosynthetic peptidoglycan transglycosylase (ZMO_RS04290)
 Plasma Membrane Proteins / ABC transporter permease (ZMO_RS04490)
 Plasma Membrane Proteins / RFP metalloprotease Reep (ZMO_RS05145)
 Plasma Membrane Proteins / cytochrome c-type biogenesis protein CcmE (ZMO_RS05630)
 Plasma Membrane Proteins / LytE family translocator (ZMO_RS05990)
 Plasma Membrane Proteins / GTPase Era (ZMO_RS06180)
 Plasma Membrane Proteins / disulfide bond formation protein B (ZMO_RS07495)
 Plasma Membrane Proteins / ubiquinone biosynthesis protein UbiB (ZMO_RS07500)
 Plasma Membrane Proteins / transporter (ZMO_RS07555)
 Plasma Membrane Proteins / biopolymer transporter ExbD (ZMO_RS07720)
 Plasma Membrane Proteins / electron transport complex subunit RxxG (ZMO_RS08135)
 Plasma Membrane Proteins / electron transport complex subunit RxxC (ZMO_RS08145)
 Plasma Membrane Proteins / 4Fe-4S dicluster domain-containing protein (ZMO_RS08150)
 Plasma Membrane Proteins / FAD:protein FMN transferase (ZMO_RS08290)
 Plasma Membrane Proteins / protein translocase subunit SecF (ZMO_RS08595)
 Plasma Membrane Proteins / signal peptide peptidase SppA (ZMO_RS08750)
 Plasma Membrane Proteins / phospho-N-acetylmuramoyl-pentapeptide- transferase (ZMO_RS03700)
 Plasma Membrane Proteins / iron ABC transporter permease (ZMO_RS08310)
 Plasma Membrane Proteins / biopolymer transporter ExbD (ZMO_RS07715)
 Plasma Membrane Proteins / preprotein translocase subunit SecE (ZMO_RS03230)
 Plasma Membrane Proteins / rod shape-determining protein RodA (ZMO_RS01540)
 Plasma Membrane Proteins / large conductance mechanosensitive channel protein MscL (ZMO_RS04675)
 Plasma Membrane Proteins / endolytic transglycosylase MltG (ZMO_RS05720)
 Plasma Membrane Proteins / MFS transporter (ZMO_RS08350)
 Plasma Membrane Proteins / ribonuclease E/G (ZMO_RS00830)
 Plasma Membrane Proteins / multidrug ABC transporter permease (ZMO_RS01745)
 Plasma Membrane Proteins / ABC transporter ATP-binding protein/permease (ZMO_RS03565)
 Plasma Membrane Proteins / LPS export ABC transporter permease LptF (ZMO_RS06225)
 Plasma Membrane Proteins / ABC transporter permease (ZMO_RS07145)
 Plasma Membrane Proteins / twin-arginine translocase subunit TatB (ZMO_RS05480)
 Periplasmic Proteins / protein TolB (ZMO_RS00655)
 Periplasmic Proteins / PDZ domain-containing protein (ZMO_RS01015)
 Periplasmic Proteins / flagellar P-ring protein (ZMO_RS02700)
 Periplasmic Proteins / acid phosphatase (ZMO_RS00545)
 Cell Wall Component Proteins / monofunctional biosynthetic peptidoglycan transglycosylase (ZMO_RS04290)

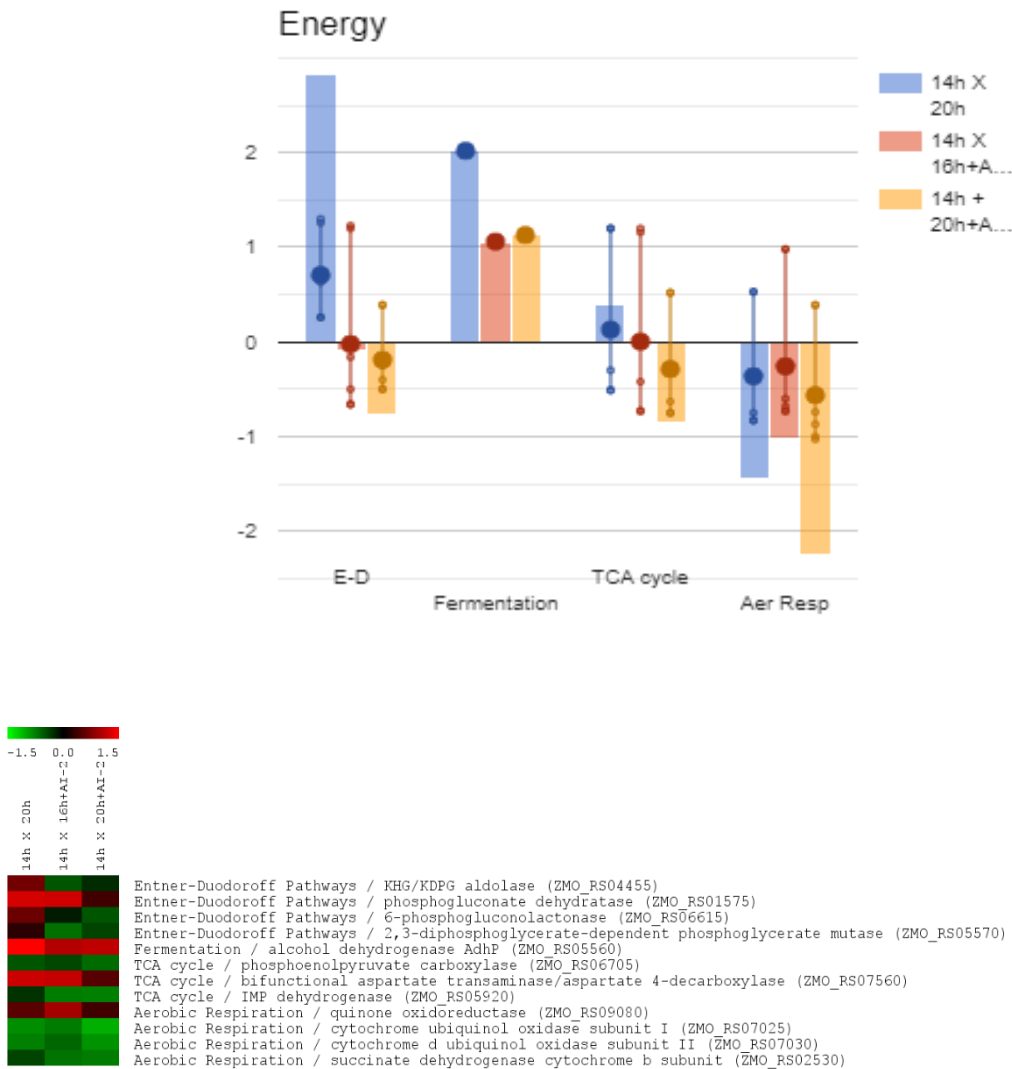
Supplementary Material S3E – Cellular Processes



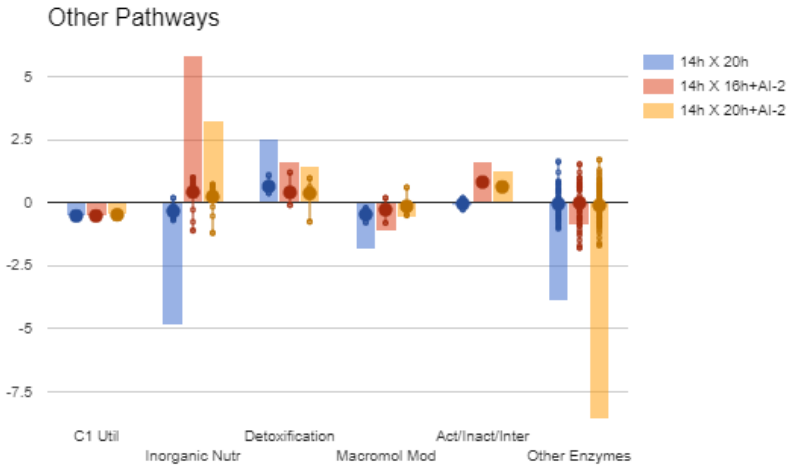
Supplementary Material S3F – Response to Stimulus

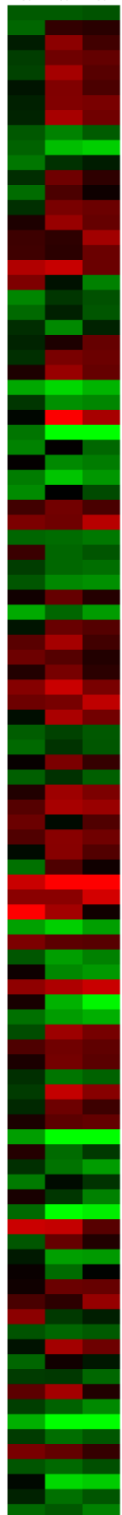
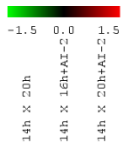


Supplementary Material S3G – Energy Metabolism



Supplementary Material S2H – Other Metabolic Pathways





Cl Compound Utilization and Assimilation / formate--tetrahydrofolate ligase (ZMO_RS01960)
Inorganic Nutrient Metabolism / ammonia monooxygenase (ZMO_RS08530)
Inorganic Nutrient Metabolism / ammonia monooxygenase (ZMO_RS08550)
Inorganic Nutrient Metabolism / nitrogenase iron-molybdenum cofactor biosynthesis protein NifN (ZMO_RS08220)
Inorganic Nutrient Metabolism / nitrogenase iron-molybdenum cofactor biosynthesis protein NifE (ZMO_RS08215)
Inorganic Nutrient Metabolism / nitrogenase molybdenum-iron protein subunit beta (ZMO_RS08210)
Inorganic Nutrient Metabolism / nitrogenase molybdenum-iron protein alpha chain (ZMO_RS08205)
Inorganic Nutrient Metabolism / nitrogenase iron protein (ZMO_RS08200)
Inorganic Nutrient Metabolism / carbamoyl-phosphate synthase small subunit (ZMO_RS07260)
Inorganic Nutrient Metabolism / argininosuccinate synthase (ZMO_RS04635)
Inorganic Nutrient Metabolism / signal peptide peptidase SppA (ZMO_RS08750)
Inorganic Nutrient Metabolism / low molecular weight phosphotyrosine protein phosphatase (ZMO_RS00590)
Inorganic Nutrient Metabolism / acid phosphatase (ZMO_RS00545)
Inorganic Nutrient Metabolism / sulfate adenylyltransferase subunit CysN (ZMO_RS00020)
Inorganic Nutrient Metabolism / adenylyl-sulfate kinase (ZMO_RS00015)
Detoxification / lactoylglutathione lyase (ZMO_RS03400)
Detoxification / hydroxyacylglutathione hydrolase (ZMO_RS03395)
Detoxification / superoxide dismutase (ZMO_RS04740)
Detoxification / catalase (ZMO_RS04105)
Macromolecule Modification / ribonuclease D (ZMO_RS03185)
Macromolecule Modification / ribonuclease PH (ZMO_RS00070)
Macromolecule Modification / tRNA preQ1(34) S-adenosylmethionine ribosyltransferase-isomerase QueA (ZMO_RS03805)
Macromolecule Modification / leucyl/phenylalanyl-tRNA--protein transferase (ZMO_RS04150)
Activation/Inactivation/Interconversion / sulfate adenylyltransferase subunit CysN (ZMO_RS00020)
Activation/Inactivation/Interconversion / adenylyl-sulfate kinase (ZMO_RS00015)
Enzymes not in Pathways / inorganic diphosphatase (ZMO_RS06760)
Enzymes not in Pathways / DNA polymerase III subunit beta (ZMO_RS04390)
Enzymes not in Pathways / flavodoxin family protein (ZMO_RS08880)
Enzymes not in Pathways / acyl carrier protein (ZMO_RS05730)
Enzymes not in Pathways / tRNA (guanosine(46)-N7)-methyltransferase TrmB (ZMO_RS00625)
Enzymes not in Pathways / anaerobic ribonucleoside-triphosphate reductase activating protein (ZMO_RS04605)
Enzymes not in Pathways / ribonucleoside triphosphate reductase (ZMO_RS04595)
Enzymes not in Pathways / ribulose-phosphate 3-epimerase (ZMO_RS00090)
Enzymes not in Pathways / endopeptidase La (ZMO_RS01615)
Enzymes not in Pathways / aldo/keto reductase (ZMO_RS07980)
Enzymes not in Pathways / dCTP deaminase (ZMO_RS03855)
Enzymes not in Pathways / acyl carrier protein (ZMO_RS05680)
Enzymes not in Pathways / exodeoxyribonuclease III (ZMO_RS06260)
Enzymes not in Pathways / peptidyl-prolyl cis-trans isomerase (ZMO_RS02005)
Enzymes not in Pathways / DNA topoisomerase (ATP-hydrolyzing) subunit B (ZMO_RS07110)
Enzymes not in Pathways / peptidylprolyl isomerase (ZMO_RS03445)
Enzymes not in Pathways / leucyl aminopeptidase family protein (ZMO_RS03595)
Enzymes not in Pathways / quinone oxidoreductase (ZMO_RS09080)
Enzymes not in Pathways / DNA-directed RNA polymerase subunit beta' (ZMO_RS03270)
Enzymes not in Pathways / diene lactone hydrolase family protein (ZMO_RS09075)
Enzymes not in Pathways / excinuclease ABC subunit B (ZMO_RS01550)
Enzymes not in Pathways / methylated-DNA--[protein]-cysteine S-methyltransferase (ZMO_RS09070)
Enzymes not in Pathways / type I secretion system permease/ATPase (ZMO_RS01100)
Enzymes not in Pathways / DNA topoisomerase I (ZMO_RS05355)
Enzymes not in Pathways / crossover junction endodeoxyribonuclease RuvC (ZMO_RS00650)
Enzymes not in Pathways / DNA primase (ZMO_RS07270)
Enzymes not in Pathways / GTPase Era (ZMO_RS06180)
Enzymes not in Pathways / helicase (ZMO_RS00935)
Enzymes not in Pathways / aldo/keto reductase (ZMO_RS09055)
Enzymes not in Pathways / ribosomal large subunit pseudouridine synthase D (ZMO_RS03355)
Enzymes not in Pathways / pyruvate formate-lyase 1-activating enzyme (ZMO_RS07010)
Enzymes not in Pathways / class A beta-lactamase (ZMO_RS08985)
Enzymes not in Pathways / alkaline phosphatase family protein (ZMO_RS07200)
Enzymes not in Pathways / nitronate monooxygenase (ZMO_RS08400)
Enzymes not in Pathways / amidohydrolase (ZMO_RS01340)
Enzymes not in Pathways / NAD-dependent succinate-semialdehyde dehydrogenase (ZMO_RS07890)
Enzymes not in Pathways / ferredoxin--NADP reductase (ZMO_RS07885)
Enzymes not in Pathways / GTPase ObgE (ZMO_RS00810)
Enzymes not in Pathways / acetyl-CoA carboxylase biotin carboxyl carrier protein (ZMO_RS03290)
Enzymes not in Pathways / M13 family peptidase (ZMO_RS03220)
Enzymes not in Pathways / FAD:protein FMN transferase (ZMO_RS08290)
Enzymes not in Pathways / aldo/keto reductase (ZMO_RS06010)
Enzymes not in Pathways / ribose 5-phosphate isomerase B (ZMO_RS05385)
Enzymes not in Pathways / homocitrate synthase (ZMO_RS08260)
Enzymes not in Pathways / lytic murein transglycosylase (ZMO_RS04860)
Enzymes not in Pathways / glyoxylate/hydroxypyruvate reductase A (ZMO_RS08535)
Enzymes not in Pathways / DNA-directed RNA polymerase subunit omega (ZMO_RS07745)
Enzymes not in Pathways / glycerate kinase (ZMO_RS00250)
Enzymes not in Pathways / 16S rRNA (uracil(1498)-N(3))-methyltransferase (ZMO_RS06955)
Enzymes not in Pathways / DNA topoisomerase IV subunit B (ZMO_RS01770)
Enzymes not in Pathways / tRNA (guanosine(37)-N1)-methyltransferase TrmD (ZMO_RS04820)
Enzymes not in Pathways / uracil-DNA glycosylase (ZMO_RS05310)
Enzymes not in Pathways / ribosomal RNA small subunit methyltransferase H (ZMO_RS03675)
Enzymes not in Pathways / FKBP-type peptidyl-prolyl cis-trans isomerase (ZMO_RS07705)
Enzymes not in Pathways / ATPase (ZMO_RS02985)
Enzymes not in Pathways / polyribonucleotide nucleotidyltransferase (ZMO_RS02430)
Enzymes not in Pathways / aspartate 4-decarboxylase (ZMO_RS07560)
Enzymes not in Pathways / aryl-sulfate sulfotransferase (ZMO_RS01305)
Enzymes not in Pathways / PDZ domain-containing protein (ZMO_RS01015)
Enzymes not in Pathways / histidine kinase (ZMO_RS03055)
Enzymes not in Pathways / DNA polymerase III subunit chi (ZMO_RS05860)
Enzymes not in Pathways / HD domain-containing protein (ZMO_RS06650)
Enzymes not in Pathways / aldo/keto reductase (ZMO_RS04375)
Enzymes not in Pathways / ATPase (ZMO_RS02425)
Enzymes not in Pathways / ubiquinol-cytochrome c reductase iron-sulfur subunit (ZMO_RS04275)
Enzymes not in Pathways / 16S rRNA (guanine(966)-N(2))-methyltransferase RsmD (ZMO_RS02565)
Enzymes not in Pathways / 23S rRNA (guanosine(2251)-2'-O)-methyltransferase RlmB (ZMO_RS01000)
Enzymes not in Pathways / leucyl aminopeptidase (ZMO_RS05865)
Enzymes not in Pathways / DNA polymerase III subunit delta (ZMO_RS06415)
Enzymes not in Pathways / DNA-directed RNA polymerase subunit alpha (ZMO_RS02380)
Enzymes not in Pathways / S41 family peptidase (ZMO_RS07490)
Enzymes not in Pathways / ATP-dependent Clp protease proteolytic subunit (ZMO_RS04250)
Enzymes not in Pathways / 23S rRNA (pseudouridine(1915)-N(3))-methyltransferase RlmH (ZMO_RS07480)
Enzymes not in Pathways / carbonic anhydrase (ZMO_RS05065)
Enzymes not in Pathways / 4-hydroxy-3-methylbut-2-enyl diphosphate reductase (ZMO_RS03915)
Enzymes not in Pathways / ribonuclease H (ZMO_RS07185)