

Supplementary Table S1: Proteins involved in Unique metabolic pathways

S. No	Unique Metabolic Pathways	Pathways ID	No. of Proteins	Proteins Names
1	Bacterial secretion system	sty03070	36	<p>outer membrane protein TolC pathogenicity island protein pathogenicity 1 island effector protein outer membrane secretory protein pathogenicity island lipoprotein type III secretion protein ssaS type III secretion protein yscR type III secretion protein ssaT type III secretion protein invA type III secretion ATP synthase type III secretion protein ssaN type III secretion protein ssaQ type III secretion protein ssaV type III secretion protein surface presentation of antigens protein protein-export membrane protein SecD protein-export membrane protein SecF preprotein translocase subunit SecE protein-export membrane protein preprotein translocase subunit hypothetical protein membrane protein insertase preprotein translocase subunit SecA cell division protein FtsY protein-export protein SecB signal recognition particle protein sec-independent protein translocase protein tatA sec-independent protein translocase protein tatB sec-independent protein translocase protein tatC sec-independent protein translocase protein tatE Rhs-family protein hypothetical protein type VI secretion protein HCP lipoprotein type VI secretion protein impK</p>

				ClpB-like protein
2	Two-component system	sty02020	167	<p>phosphate regulon sensor protein PhoR phosphate regulon transcriptional regulatory protein PhoB phosphate ABC transporter substrate-binding protein sensor protein PhoQ transcriptional regulator PhoP outer membrane invasion protein pagC hypothetical protein pagO outer membrane virulence protein pagD outer membrane protease E pgtE nonspecific acid phosphatase phoN two-component sensor kinase EnvZ two-component response regulator OmpR outer membrane protein C outer membrane protein F two component sensor kinase rstB two-component response regulator rstA two-component sensor kinase cpxA two-component response regulatory protein cpxR efflux system protein protease DO two-component sensor kinase creC two-component response regulator creB two-component system sensor kinase baeS two-component system response regulator baeR efflux pump acrD transporter protein mdtD two-component sensor kinase basS RND-family transporter protein dtB efflux pump mdtA two-component response regulator basR two-component system sensor histidine kinase qseC two-component system response regulator qseB flagellar transcriptional activator FlhD flagellar transcriptional activator flhC flagellin fliC motility protein A lipopolysaccharide biosynthesis protein arnB RNA polymerase sigma transcription factor for flagellar operon</p>

			<p> sensor protein KdpD KDP operon transcriptional regulatory protein potassium-transporting ATPase subunit A potassium-transporting ATPase subunit B potassium-transporting ATPase subunit C two-component sensor protein histidine protein kinase trimethylamine-N-oxide reductase chaperone protein TorD aerobic respiration control sensor protein global response regulator two-component system sensor kinase tctE hypothetical proteiN tctA hypothetical proteiN tctB hypothetical proteiN tctC chromosomal replication initiator proteiN dnaA D-alanyl-D-alanine dipeptidase vanX citrate lyase acyl carrier protein citD citrate lyase subunit beta citE citrate lyase subunit alpha apo-citrate lyase phosphoribosyl-dephospho- CoA transferase phosphoribosyl-dephospho-CoA transferase citX 2-(5"-triphosphoribosyl)-3'- dephosphocoenzyme-A synthase triphosphoribosyl-dephospho-CoA transferase CitG citrate carrier citT two-component sensor kinase dcuS two-component response regulator dcuR anaerobic C4-dicarboxylate transporter dcuB NAD-linked malic enzyme; malate oxidoreductase nitrate/nitrite sensor protein NarX nitrate/nitrite sensor protein NarQ respiratory nitrate reductase 1 subunit gamma respiratory nitrate reductase 2 subunit gamma respiratory nitrate reductase 1 subunit delta respiratory nitrate reductase 2 subunit delta fumarate reductase, flavoprotein subunit frdA fumarate reductase, iron-sulfur protein frdB fumarate reductase complex subunit C fumarate reductase complex subunit D </p>
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			<p> regulatory protein uhpC; two-component system sensor histidine kinase uhpB Two-component system response regulator uhpA hexosephosphate transport protein uhpT RcsF protein sensor protein RcsC two-component system sensor kinase rcsD colanic acid capsular biosynthesis activation protein A capsule synthesis protein B regulatory protein sensor protein barA invasion response-regulator uvrY cell-division regulatory protein sdiA carbon storage regulator csrA transcriptional regulator fimZ [protein-PII] uridylyltransferase glnD nitrogen regulatory protein P-II glnB two-component system sensory histidine kinase glnL two-component system response regulator glnG glutamine synthetase glnA two-component system sensor protein zraS transcriptional regulator TonB-dependent outer membrane siderophore receptor protein ferrienterobactin receptor sensor kinase DpiB sensor kinase Cita transcriptional regulator CriR transcriptional regulator Citb [citrate (pro-3S)-lyase] ligase nitrate/nitrite response regulator protein NarL nitrate/nitrite response regulator protein NarP respiratory nitrate reductase 1 subunit alpha respiratory nitrate reductase 2 subunit alpha respiratory nitrate reductase 1 subunit beta respiratory nitrate reductase 2 subunit beta fumarate reductase complex subunit D sensor protein RcsC invasion response-regulator cell-division regulatory protein transcriptional regulator </p>
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			<p> wo-component system sensory histidine kinase transcriptional regulator zraR resistance protein zraP acetyl-CoA acetyltransferase ACAT; phosphoglycerate transport regulatory protein PgtC phosphoglycerate transport system sensor protein PgtB phosphoglycerate transporter protein pgtP C4-dicarboxylate transport protein dctA RNA polymerase sigma-54 factor rpoN sensor kinase protein glrK transcriptional regulator glrR uptake hydrogenase small subunit hyaA hydrogenase-2 small subunit hyaA hydrogenase-2 large subunit hyaB hydrogenase-1 large subunit hyaB Ni/Fe-hydrogenase 1 b-type cytochrome subunit methyl-accepting chemotaxis citrate transducer chemotaxis protein methyltransferase methyl-accepting chemotaxis protein II aerotaxis receptor protein chemotaxis protein CheA chemotaxis protein CheY receptor/regulator protein cheV two-component response regulator ttrR two-component response regulator ttrA two-component response regulator ttrB two-component response regulator ttrC two-component sensor kinase ssrA two-component sensor kinase ssrB glutamate/aspartate transport ATP-binding protein GltL glutamate/aspartate transport ATP-binding protein GltK glutamate/aspartate transport ATP-binding protein GltJ ABC transporter substrate-binding protein gltI protein-glutamate methyltransferase cyclic AMP receptor protein, catabolite gene activator terminal oxidase subunit I </p>
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				<p>cytochrome d ubiquinol oxidase subunit I cytochrome bd-II oxidase subunit I terminal oxidase subunit II cytochrome d ubiquinol oxidase subunit II cytochrome oxidase subunit II hypothetical protein cydX outer membrane protein TolC polysaccharide export protein wza protein-tyrosine phosphatase wzb tyrosine-protein kinase etk-wzc UDP-N-acetyl-D-glucosamine 2-epimerase wecB UDP-ManNAc dehydrogenase wecC Pectinesterase E3.1.1.11 flagellin synthesis negative regulator flgM tetrathionate reductase subunit A tetrathionate reductase subunit B outer membrane protein TolC</p>
3	Quorum sensing	sty0202	57	<p>autoinducer-2 production protein LuxS RNA-binding protein Hfq anthranilate synthase component I 3-deoxy-7-phosphoheptulonate synthase 3-deoxy-D-arabinoheptulosonate 7-phosphate synthase phospho-2-dehydro-3-deoxyheptonate aldolase two-component system sensor histidine kinase two-component system response regulator sensor kinase protein transcriptional regulator flagellar transcriptional activator FlhD flagellar transcriptional activator KDP operon transcriptional regulatory protein cell-division regulatory protein amino acid transporter ABC transporter permease lsrC ABC transporter permease lsrD ABC transporter substrate-binding protein lsrA sugar kinase lsrK regulatory protein lsrR aldolase lsrF autoinducer-2 (AI-2) modifying protein LsrG high-affinity branched-chain amino acid ABC transporter permease livM</p>

				<p>high-affinity branched-chain amino acid ABC transporter permease livH</p> <p>high-affinity branched-chain amino acid ABC transporter substrate-binding protein</p> <p>RNase II stability modulator</p> <p>oligopeptide ABC transporter substrate-binding protein OppA</p> <p>colanic acid capsular biosynthesis activation protein A</p> <p>RNase II stability modulator</p> <p>large repetitive protein</p> <p>long-chain-fatty-acid--CoA ligase</p> <p>cyclic AMP receptor protein,catabolite gene activator</p> <p>zinc uptake regulation protein</p> <p>GTP cyclohydrolase II</p> <p>riboflavin biosynthesis protein RibD</p> <p>hypothetical protein</p> <p>hypothetical protein</p> <p>oligopeptide ABC transporter permease OppB</p> <p>oligopeptide ABC transporter ATP-binding protein OppD</p> <p>oligopeptide ABC transporter ATP-binding protein OppF</p> <p>inner membrane transport protein</p> <p>ABC transporter permease</p> <p>ABC transporter ATP-binding protein ddpD</p> <p>ABC transporter ATP-binding protein ddpF</p> <p>membrane protein insertase yidC</p> <p>preprotein translocase subunit SecE</p> <p>protein-export membrane protein secG</p> <p>preprotein translocase subunit secY</p> <p>hypothetical protein yajC</p> <p>preprotein translocase subunit SecA</p> <p>cell division protein FtsY</p> <p>protein-export protein SecB</p> <p>signal recognition particle protein SRP54</p> <p>periplasmic murein peptide-binding protein MppA</p> <p>substrate-binding transport protein</p>
4	Bacterial chemotaxis	sty02030	19	<p>methyl-accepting chemotaxis citrate transducer</p> <p>methyl-accepting chemotaxis protein II</p> <p>aerotaxis receptor protein</p> <p>maltose/maltodextrin-binding protein MalE</p>

				<p>D-ribose-binding periplasmic protein D-galactose-binding periplasmic protein periplasmic dipeptide transport protein chemotaxis protein CheA purine binding chemotaxis protein chemotaxis protein CheY chemotaxis protein CheZ protein-glutamate methyltransferase receptor/regulator protein chemotaxis protein methyltransferase flagellar motor switch protein FliG flagellar motor switch protein FliM flagellar motor switch protein FliN motility protein A motility protein B</p>
5	Flagellar assembly	sty02040	45	<p>RNA polymerase sigma-70 factor flagellar hook-basal body complex protein FliE flagellar basal-body M-ring protein flagellar motor switch protein FliG flagellar assembly protein FliH flagellum-specific ATP synthase flagellar protein FliJ flagellar hook-length control protein flagellar basal body-associated protein FliL flagellar motor switch protein FliM flagellar motor switch protein FliN flagellar protein FliO flagellar biosynthetic protein FliP flagellar biosynthetic protein FliQ flagellar biosynthetic protein FliR flagellar protein FlhE flagellar biosynthesis protein FlhA flagellar biosynthetic protein FlhB flagellar basal body P-ring protein FlgA flagellar basal-body rod protein FlgB flagellar basal-body rod protein FlgC flagellar hook formation protein FlgD flagellar hook protein FlgE flagellar basal-body rod protein FlgF flagellar basal-body rod protein FlgG flagellar L-ring protein flagellar P-ring protein flagellar protein FlgJ flagellar hook-associated protein 1 flagellar hook-associated protein 3</p>

				<p>flagellin K02406 fliC; flagellin flagellar hook associated protein 2 flagellar protein FliS flagellar protein FliT motility protein B motility protein A flagellin synthesis negative regulator flagella synthesis protein FlgN cystine-binding periplasmic protein flagella biosynthesis regulator FliZ RNA polymerase sigma-54 factor flagellar transcriptional activator FlhD flagellar transcriptional activator RNA polymerase sigma transcription factor for flagellar operon</p>
6	beta-Lactam resistance	sty01501	18	<p>outer membrane protein F outer membrane protein C muropeptide transporter AmpG glycosyl hydrolase oligopeptide ABC transporter substrate-binding protein OppA periplasmic murein peptide-binding protein MppA oligopeptide ABC transporter permease OppB oligopeptide ABC transporter ATP-binding protein OppD oligopeptide ABC transporter ATP-binding protein OppF tRNA-splicing ligase RtcB outer membrane protein TolC beta-lactamase acriflavin resistance protein A acriflavin resistance protein B penicillin-binding protein 1A penicillin-binding protein 2 penicillin-binding protein 3 penicillin-binding protein</p>
7	Vancomycin resistance	sty01502	8	<p>D-alanyl-D-alanine dipeptidase D-alanine:D-alanine ligase B D-alanine:D-alanine ligase A alanine racemase ddIA alanine racemase alr alanine racemase dadX UDP-N-acetylmuramoylalanyl-D-glutamyl-2,6-diaminopimelate--D-alan alanyl ligase</p>

				UDP-N-acetylglucosamine:N-acetylmuramyl-(pentapeptide) pyrophosphoryl-undecaprenol N-acetylglucosamine transferase
8	Cationic antimicrobial peptide (CAMP) resistance	sty01503	15	sensor protein PhoQ transcriptional regulator PhoP KDO phosphoethanolamine transferase antimicrobial peptide resistance and lipid A acylation protein lipopolysaccharide biosynthesis protein arnB lipopolysaccharide modification protein pmrF lipopolysaccharide modification protein arnA two-component sensor kinase peptide ABC transporter substrate-binding protein two-component response regulatory protein thiol:disulfide interchange protein 4-deoxy-4-formamido-L-arabinose-phosphoundecaprenol deformylase 4-amino-4-deoxy-L-arabinose lipid A transferase acyl-[acyl-carrier-protein]-UDP-N-acetylglucosamine O-acyltransferase
9	Phenylalanine, tyrosine and tryptophan biosynthesis	sty00400	17	3-deoxy-7-phosphoheptulonate synthase 3-deoxy-D-arabinoheptulosonate 7-phosphate synthase phospho-2-dehydro-3-deoxyheptonate aldolase 3-dehydroquininate synthase 3-dehydroquinase shikimate dehydrogenase shikimate 5-dehydrogenase 3-phosphoshikimate 1-carboxyvinyltransferase chorismate synthase anthranilate synthase component I tryptophan synthase subunit alpha tryptophan synthase subunit beta bifunctional chorismate mutase/prephenate dehydrogenase decarboxylase catalase 4-hydroxyphenylacetate 3-monooxygenase coupling protein
10	Taurine and hypotaurine metabolism	sty00430	3	gamma-glutamyltranspeptidase phosphate acetyltransferase acetate kinase

11	Lipopolysaccharide biosynthesis	sty00540	46	<p>acyl-[acyl-carrier-protein]-UDP-N-acetylglucosamine O-acyltransferase UDP-3-O-[3-hydroxymyristoyl] N-acetylglucosamine deacetylase lpxC UDP-3-O-[3-hydroxymyristoyl] glucosamine N-acyltransferase lpxC lipid-A-disaccharide synthase lpxB tetraacyldisaccharide 4'-kinase lpxK D-arabinose 5-phosphate isomerase kdsD 2-dehydro-3-deoxyphosphooctonate aldolase kdsA 3-deoxy-D-manno-octulosonate 8-phosphate phosphatase KdsC 3-deoxy-manno-octulosonate cytidyltransferase kdsB 3-deoxy-D-manno-octulosonic acid transferase kdtA lipid A biosynthesis lauroyl acyltransferase htrB lipid A biosynthesis lauroyl acyltransferase ipxM membrane-bound beta-hydroxylase lpxO outer membrane protein lpxR hypothetical protein lpxT lipid A phosphoethanolamine transferase eptA KDO phosphoethanolamine transferase eptB antimicrobial peptide resistance and lipid A pagP 4-amino-4-deoxy-L-arabinose lipid A transferase acyltransferase lpxP phosphoheptose isomerase gmhA ADP-heptose synthase gmhC D,D-heptose 1,7-bisphosphate phosphatase gmhB ADP-L-Glycero-D-mannoheptose-6-epimerase gmhD ADP-heptose--LPS heptosyltransferase waaC; ADP-heptose--LPS heptosyltransferase waaF lipopolysaccharide core biosynthesis protein LPS core phosphoethanolamine transferase eptC lipopolysaccharide core biosynthesis protein glycosyltransferase waaH</p>
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				<p>lipopolysaccharide core biosynthesis protein way</p> <p>3-deoxy-D-manno-oct-2-ulosonate III transferase WaaZ</p> <p>lipopolysaccharide core biosynthesis protein</p> <p>lipopolysaccharide 1,6-galactosyltransferase</p> <p>lipopolysaccharide 1,2-N-acetylglucosaminetransferase</p> <p>lipopolysaccharide 1,3-galactosyltransferase</p> <p>lipopolysaccharide 1,2-glucosyltransferase waaJ</p> <p>O-antigen ligase waaL</p> <p>UDP-2,3-diacetylglucosamine hydrolase lpxH</p> <p>2-dehydro-3-deoxyphosphooctonate aldolase</p> <p>3-deoxy-manno-octulosonate cytidyltransferase</p> <p>antimicrobial peptide resistance</p> <p>phosphoheptose isomerase</p> <p>lipopolysaccharide 1,3-galactosyltransferase</p> <p>lipopolysaccharide 1,2-glucosyltransferase</p>
12	O-Antigen nucleotide sugar biosynthesis	sty00541	14	<p>UTP-glucose-1-phosphate uridylyltransferase</p> <p>glucose-1-phosphate uridylyltransferase</p> <p>UDP-glucose 4-epimerase gale</p> <p>UDP-glucose 6-dehydrogenase UGDH</p> <p>TDP-glucose pyrophosphorylase rfbA</p> <p>glucose-1-phosphate thymidylyltransferase</p> <p>dTDP-glucose 4,6-dehydratase</p> <p>UDP-N-acetylglucosamine epimerase</p> <p>dTDP-4-dehydrorhamnose reductase</p> <p>lipopolysaccharide biosynthesis protein wecE</p> <p>dTDP-4-dehydrorhamnose 3,5-epimerase</p> <p>dehydratase RfbH</p> <p>reductase RfbI</p> <p>phosphomannomutase</p>
13	Peptidoglycan biosynthesis	sty00550	2	<p>Esterase</p> <p>monofunctional biosynthetic peptidoglycan</p> <p>transglycosylase</p>
14	Pantothenate and CoA biosynthesis	sty00770	7	<p>3-methyl-2-oxobutanoate hydroxymethyltransferase</p> <p>pantoate:beta-alanine ligase</p> <p>pantothenate kinase</p> <p>phosphopantetheine adenylyltransferase</p> <p>holo-[acyl-carrier protein] synthase</p> <p>4'-phosphopantetheinyl transferase</p> <p>aspartate 1-decarboxylase</p>

15	Polyketide sugar unit biosynthesis	sty00523	1	dTDP-4-dehydrorhamnose 3,5-epimerase
16	Monobactam biosynthesis	sty00261	2	aspartate-semialdehyde dehydrogenase 4-hydroxy-tetrahydrodipicolinate reductase
17	Streptomycin biosynthesis	sty00521	1	dTDP-4-dehydrorhamnose 3,5-epimerase
18	Benzoate degradation	sty00362	1	n-hydroxybenzoate hydroxylase
19	Aminobenzoate degradation	sty00627	1	flavin prenyltransferase
20	Nitrotoluene degradation	sty00633	2	oxygen-insensitive NAD(P)H nitroreductase N-ethylmaleimide reductase
21	Methane metabolism	sty00680	30	Esterase frmB formate dehydrogenase-O, major subunit formate dehydrogenase-O subunit beta phosphoenolpyruvate carboxylase fructose 1,6-bisphosphate aldolase 6-phosphofructokinase isozyme 1-phosphofructokinase trimethylamine-N-oxide reductase chaperone protein TorD acetate kinase serine hydroxymethyltransferase phosphate acetyltransferase serine hydroxymethyltransferase enolase malate dehydrogenase 6-phosphofructokinase acetyl-coenzyme A synthetase phosphoenolpyruvate synthase 2,3-bisphosphoglycerate-dependent phosphoglycerate mutase phosphoglycerate mutase 2 D-3-phosphoglycerate dehydrogenase 3-phosphoserine/phosphohydroxythreonine aminotransferase phosphoserine phosphatase glycerol metabolic protein phosphoenolpyruvate synthase 2,3-bisphosphoglycerate-independent phosphoglycerate mutase
22	Cyanoamino acid metabolism	sty00460	1	periplasmic beta-glucosidase