

**Table S3**

<b>Unique KEGGs for Gsub when compared with Rmag, Voku, Tcru and Tsul</b>	
ko:K14986	<i>fixL</i> ; two-component system, LuxR family, sensor kinase FixL [EC:2.7.13.3]
ko:K00860	<i>cysC</i> ; adenylylsulfate kinase [EC:2.7.1.25]
ko:K09952	<i>csn1, cas9</i> ; CRISPR-associated endonuclease Csn1 [EC:3.1.-.-]
ko:K07516	<i>fadN</i> ; 3-hydroxyacyl-CoA dehydrogenase [EC:1.1.1.35]
ko:K02028	ABC.PA.A; polar amino acid transport system ATP-binding protein [EC:3.6.3.21]
ko:K09969	<i>aapJ, bztA</i> ; general L-amino acid transport system substrate-binding protein
ko:K02315	<i>dnaC</i> ; DNA replication protein DnaC
ko:K00368	<i>nirK</i> ; nitrite reductase (NO-forming) [EC:1.7.2.1]
ko:K00743	GGTA1; N-acetyllactosaminide 3-alpha-galactosyltransferase [EC:2.4.1.87]
ko:K00590	E2.1.1.113; site-specific DNA-methyltransferase (cytosine-N4-specific) [EC:2.1.1.113]
ko:K00721	DPM1; dolichol-phosphate mannosyltransferase [EC:2.4.1.83]
ko:K09971	<i>aapM, bztC</i> ; general L-amino acid transport system permease protein
ko:K06350	<i>kipA</i> ; antagonist of KipI
ko:K00632	<i>fadA, fadI</i> ; acetyl-CoA acyltransferase [EC:2.3.1.16]
ko:K02305	<i>norC</i> ; nitric oxide reductase subunit C
ko:K07160	K07160; UPF0271 protein
ko:K02843	<i>waaF, rfaF</i> ; heptosyltransferase II [EC:2.4.-.-]
ko:K06445	<i>fadE</i> ; acyl-CoA dehydrogenase [EC:1.3.99.-]
ko:K00571	E2.1.1.72; site-specific DNA-methyltransferase (adenine-specific) [EC:2.1.1.72]
ko:K07638	<i>envZ</i> ; two-component system, OmpR family, osmolarity sensor histidine kinase EnvZ [EC:2.7.13.3]
ko:K01401	<i>aur</i> ; aureolysin [EC:3.4.24.29]

ko:K02196	<i>ccmD</i> ; heme exporter protein D
ko:K07493	K07493; putative transposase
ko:K13444	SUMF1, FGE; sulfatase modifying factor 1
ko:K07146	K07146; UPF0176 protein
ko:K00449	<i>pcaH</i> ; protocatechuate 3,4-dioxygenase, beta subunit [EC:1.13.11.3]
ko:K04561	<i>norB</i> ; nitric oxide reductase subunit B [EC:1.7.2.5]
ko:K00558	DNMT1, dcm; DNA (cytosine-5)-methyltransferase 1 [EC:2.1.1.37]
ko:K03885	<i>ndh</i> ; NADH dehydrogenase [EC:1.6.99.3]
ko:K07319	<i>yhdJ</i> ; adenine-specific DNA-methyltransferase [EC:2.1.1.72]
ko:K09970	<i>aapQ</i> , <i>bztB</i> ; general L-amino acid transport system permease protein
ko:K00113	<i>glpC</i> ; glycerol-3-phosphate dehydrogenase subunit C [EC:1.1.5.3]
ko:K01359	PCSK1; proprotein convertase subtilisin/kexin type 1 [EC:3.4.21.93]
ko:K00718	FUT1_2; galactoside 2-L-fucosyltransferase 1/2 [EC:2.4.1.69]
ko:K12264	<i>norV</i> ; anaerobic nitric oxide reductase flavorubredoxin
ko:K01247	<i>alkA</i> ; DNA-3-methyladenine glycosylase II [EC:3.2.2.21]
ko:K06996	K06996; uncharacterized protein
ko:K09678	HS3ST4; [heparan sulfate]-glucosamine 3-sulfotransferase 4 [EC:2.8.2.-]
ko:K12984	<i>waaE</i> , <i>kdtX</i> ; (heptosyl) LPS beta-1,4-glucosyltransferase [EC:2.4.1.-]
<b>Unique KEGGs for Gsub when compared with Glop, Ghal, Tcru and Tsul</b>	
ko:K14986	<i>fixL</i> ; two-component system, LuxR family, sensor kinase FixL [EC:2.7.13.3]
ko:K09952	<i>csn1</i> , <i>cas9</i> ; CRISPR-associated endonuclease Csn1 [EC:3.1.-.-]
ko:K02315	<i>dnaC</i> ; DNA replication protein DnaC
ko:K00721	DPM1; dolichol-phosphate mannosyltransferase [EC:2.4.1.83]
ko:K01147	<i>rnb</i> ; exoribonuclease II [EC:3.1.13.1]
ko:K07493	K07493; putative transposase
ko:K00449	<i>pcaH</i> ; protocatechuate 3,4-dioxygenase, beta subunit [EC:1.13.11.3]
ko:K01571	<i>oadA</i> ; oxaloacetate decarboxylase, alpha subunit [EC:4.1.1.3]

ko:K13012	<i>wbqP</i> ; O-antigen biosynthesis protein WbqP
ko:K09765	K09765; uncharacterized protein
ko:K04561	<i>norB</i> ; nitric oxide reductase subunit B [EC:1.7.2.5]
ko:K01359	PCSK1; proprotein convertase subtilisin/kexin type 1 [EC:3.4.21.93]
ko:K12984	<i>waaE</i> , <i>kdtX</i> ; (heptosyl) LPS beta-1,4-glucosyltransferase [EC:2.4.1.-]
ko:K00936	E2.7.3.-
ko:K00860	<i>cysC</i> ; adenylylsulfate kinase [EC:2.7.1.25]
ko:K07400	<i>nfuA</i> ; Fe/S biogenesis protein NfuA
ko:K00368	<i>nirK</i> ; nitrite reductase (NO-forming) [EC:1.7.2.1]
ko:K00743	GGTA1; N-acetyllactosaminide 3-alpha-galactosyltransferase [EC:2.4.1.87]
ko:K01141	<i>sbcB</i> , <i>exoI</i> ; exodeoxyribonuclease I [EC:3.1.11.1]
ko:K00632	<i>fadA</i> , <i>fadI</i> ; acetyl-CoA acyltransferase [EC:2.3.1.16]
ko:K02305	<i>norC</i> ; nitric oxide reductase subunit C
ko:K07638	<i>envZ</i> ; two-component system, OmpR family, osmolarity sensor histidine kinase EnvZ [EC:2.7.13.3]
ko:K01802	E5.2.1.8; peptidylprolyl isomerase [EC:5.2.1.8]
ko:K01401	<i>aur</i> ; aureolysin [EC:3.4.24.29]
ko:K02196	<i>ccmD</i> ; heme exporter protein D
ko:K03184	<i>ubiF</i> ; 2-octaprenyl-3-methyl-6-methoxy-1,4-benzoquinol hydroxylase [EC:1.14.13.-]
ko:K01572	<i>oadB</i> ; oxaloacetate decarboxylase, beta subunit [EC:4.1.1.3]
ko:K01676	E4.2.1.2A, <i>fumA</i> , <i>fumB</i> ; fumarate hydratase, class I [EC:4.2.1.2]
ko:K01493	<i>comEB</i> ; dCMP deaminase [EC:3.5.4.12]
ko:K03885	<i>ndh</i> ; NADH dehydrogenase [EC:1.6.99.3]
ko:K14998	SURF1, SHY1; surfeit locus 1 family protein
ko:K06077	<i>slyB</i> ; outer membrane lipoprotein SlyB
ko:K00718	FUT1_2; galactoside 2-L-fucosyltransferase 1/2 [EC:2.4.1.69]

ko:K09678	HS3ST4; [heparan sulfate]-glucosamine 3-sulfotransferase 4 [EC:2.8.2.-]
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