

Table S1
Eubacterial Hits (E value $<10^{-4}$) on the GOS Myovirus Scaffolds

Genus	Protein	Hits ^a
Proteobacteria		79
<i>Acidiphilum</i>	ORFan	
<i>Acidovorax</i>	ORFan	
<i>Acidovorax</i>	glycosyltransferase	
<i>Acinetobacter</i>	cytidyltransferase	
<i>Agrobacterium</i>	30S protein	
alpha-proteobacterium	ORFans	6
<i>Arcobacter</i>	S6 modifying enzyme	
<i>Aurantimonas</i>	ORFan	
<i>Bdellovibrio</i>	ORFan	
<i>Bordatella</i>	ORFan	
<i>Bradyrhizobium</i>	A/G cyclase	
<i>Bradyrhizobium</i>	phycocyanobilin:ferredoxin oxidoreductase (PcyA)	
<i>Burkholderia</i>	ORFans	2
<i>Burkholderia</i>	outer membrane barrel proteins	2
Candidatus Pelagibacter	ORFans	4
Candidatus Pelagibacter	permease	
Candidatus Vesicomysocius	nuclease	
<i>Caulobacter</i>	tryptophan halogenase	
<i>Cellvibrio</i>	halogenase	
<i>Comamonas</i>	ORFans	2
<i>Desulfococcus</i>	adhesin protein (YadA)	2
<i>Erythrobacter</i>	ferredoxin	
<i>Escherichia</i>	endonuclease	
<i>Francisella</i>	epimerase	
gamma-proteobacterium	Hsp70 chaperone (DnaK)	
gamma-proteobacterium	O-antigen biosynthesis protein (RbfC)	
<i>Geobacter</i>	LamG domain protein	
<i>Gluconacteobacter</i>	ORFans	2
<i>Haemophilus</i>	methylase	
<i>Haemophilus</i>	phage protein	
<i>Hyphomonas</i>	FeS protein	
<i>Leptothrix</i>	Mn-oxidizing protein (MofA)	
<i>Magnetococcus</i>	ORFans	2
<i>Magnetospirillum</i>	ORFan	
<i>Mariprofundus</i>	ORFan	
<i>Neisseria</i>	methylase	
<i>Nitrobacter</i>	ORFans	2
<i>Oceanicaulis</i>	ORFan	
<i>Phaeobacter</i>	ORFans	2
<i>Polynucleobacter</i>	exonuclease	
<i>Pseudoalteromonas</i>	ORFan	
<i>Ralstonia</i>	glycosyltransferase	
<i>Rhodobacter</i>	ORFan	
<i>Rhodobacter</i>	carboxyl transferase	
<i>Rhodobacter</i>	FeS binding protein	
<i>Rhodopseudomonas</i>	ORFan	

<i>Rhodopseudomonas</i>	isomerase	
<i>Roseobacter</i>	glycosyltransferase	
<i>Roseovarius</i>	ORFans	3
<i>Sagittula</i>	outer membrane barrel proteins	2
<i>Salmonella</i>	ORFan	
<i>Silicibacter</i>	ORFans	2
<i>Sinorhizobium</i>	ORFan	
<i>Stenotrophomonas</i>	ORFan	
<i>Stigmatella</i>	methylase	
<i>Syntrophobacter</i>	ORFan	
<i>Syntrophus</i>	ORFan	
<i>Vibrio</i>	ORFan	
<i>Vibrio</i>	S6 modifying enzyme	
Cyanobacteria		35
<i>Aphanizomenon</i>	ferredoxin	
<i>Cyanothece</i>	ORFan	
<i>Cyanothece</i>	ferredoxin	
<i>Cylindrospermopsis</i>	S-PM2 ORF077	
<i>Microcystis</i>	ORFan	
<i>Nostoc</i>	thymidylate synthase	
<i>Nostoc</i>	transferase	
<i>Prochlorococcus</i>	ORFans	5
<i>Prochlorococcus</i>	carboxyl esterase	
<i>Prochlorococcus</i>	fructose-1,6-P aldolase	
<i>Prochlorococcus</i>	high light-inducible protein	3
<i>Prochlorococcus</i>	OH methylase	
<i>Prochlorococcus</i>	P-heptose isomerase	2
<i>Prochlorococcus</i>	photosystem II D1 protein (PsbA)	
<i>Prochlorococcus</i>	phosphatase	
<i>Prochlorococcus</i>	plastoquinol terminal oxidase	
<i>Prochlorococcus</i>	thymidylate synthase	
<i>Synechococcus</i>	ORFans	5
<i>Synechococcus</i>	ABC transporter	
<i>Synechococcus</i>	decarboxylase	
<i>Synechococcus</i>	epimerase	
<i>Synechococcus</i>	outer membrane barrel protein	
<i>Synechococcus</i>	quinol reductase	2
Firmicutes		16
<i>Anaerotruncus</i>	Na symporter	
<i>Bacillus</i>	ORFan	
<i>Bacillus</i>	UDP galactopyranose mutase	
<i>Brevibacillus</i>	recombinase	
<i>Clostridium</i>	ORFans	2
<i>Clostridium</i>	CDP dehydrogenase	
<i>Clostridium</i>	glycosyltransferase	
<i>Clostridium</i>	primase	
<i>Coprococcus</i>	methylase	
<i>Desulfotomaculum</i>	S-PM2 ORF173 virion protein	2
<i>Heliobacterium</i>	ORFan	
<i>Paenibacillus</i>	ORFan	
<i>Paenibacillus</i>	phage methylase	
<i>Pelotomaculum</i>	ORFan	

Bacteroidetes (CFB)		9
<i>Bacteroides</i>	ORFan	
<i>Flavobacterium</i>	transmembrane protein	
<i>Kordia</i>	phage fiber	2
<i>Microscilla</i>	ORFan	
<i>Parabacteroides</i>	ORFans	2
<i>Polaribacter</i>	nucleotidyltransferase (TagD)	
<i>Psychroflexus</i>	isomerase	
Green-S/Non-S		6
<i>Chlorobium</i>	outer membrane barrel protein	
<i>Dehalococcoides</i>	ORFans	2
<i>Herpetosiphon</i>	ORFan	
<i>Prosthecochloris</i>	ORFan	
<i>Roseiflexus</i>	endonuclease	
Actinobacteria (high G+C)		5
<i>Frankia</i>	ORFan	
<i>Nocardia</i>	ORFan	
<i>Rubrobacter</i>	ORFan	
<i>Salinispora</i>	peptidase	
<i>Streptomyces</i>	carboxyl transferase	
Planctomycetes		4
<i>Blastopirellula</i>	ORFan	
<i>Blastopirellula</i>	glycosyltransferase	
Candidatus Kuenenia	ORFan	
<i>Gemmata</i>	ORFan	
Deinococcus-Thermus		3
<i>Deinococcus</i>	ORFan	
<i>Thermus</i>	ORFans	2
Verrucomicrobia		3
<i>Opitutus</i>	ORFan	
<i>Verrucomicrobium</i>	Immunoglobulin domain	
<i>Verrucomicrobium</i>	phage collar protein	
Tenericutes (Mycoplasmas)		1
<i>Mycoplasma</i>	UDP dehydrogenase	
Spirochaetes		1
<i>Spirochaeta</i>	heptose-7-P kinase (HddA)	
Thermotogae		1
<i>Thermotoga</i>	peptide deformylase	
Unclassified		4
termite bacterium	ORFan	
uncultured bacterium	ORFans	3

^aThe number of hits was 1 unless specified otherwise.