

Table S8. Summary of genes that gave no clear affiliation to betaproteobacteria in the genomes of *T. princeps* PCVAL, *T. phenacola* PAVE and genes from *T. phenacola* PPER that could not be clearly assigned to any taxonomical level.

Organism	Function	Gene name	GenBank ID	MEGAN	Phylogeny	Taxonomic class	Product	size (aa)	
T. princeps PCVAL	Translation	rpsQ	AEK38455.1	Betaproteobacteria	Gammaproteobacteria	Unknown	30S ribosomal protein S17	76	
		rpsU	AFU55744.1	Proteobacteria	Unknown	Unknown	30S ribosomal protein S21	63	
	Protein processing, folding and secretion	clpP	AEK38487.1	Proteobacteria	Gammaproteobacteria	Gammaproteobacteria	ATP-dependent Clp protease proteolytic subunit precursor	196	
	Biosynthesis of amino acids	argG	AEK38488.1	Betaproteobacteria	Gammaproteobacteria	Unknown	Argininosuccinate synthase	436	
	Metabolism	pflA	AEK38430.1	Betaproteobacteria	Gammaproteobacteria	Unknown	putative radical SAM enzyme, Cfr family	304	
T. phenacola PAVE	DNA replication	dnaX	AGO28316.1	Betaproteobacteria	Gammaproteobacteria	Unknown	DNA polymerase III subunit tau	369	
	Translation	mnmG	AGO28233.1	Betaproteobacteria	Gammaproteobacteria	Unknown	tRNA uridine 5-carboxymethylaminomethyl modification enzyme MnmG	592	
		prfB	AGO28262.1	Betaproteobacteria	Gammaproteobacteria	Unknown	Peptide chain release factor 2	330	
		rplO	AGO28335.1	Betaproteobacteria	Gammaproteobacteria	Unknown	50S ribosomal protein L15	124	
		rpmG	AGO28265.1	Proteobacteria	Gammaproteobacteria	Gammaproteobacteria	50S ribosomal protein L33	54	
		rsmH	AGO28258.1	Betaproteobacteria	Gammaproteobacteria	Unknown	Ribosomal RNA small subunit methyltransferase H	295	
		tsaD	AGO28216.1	Betaproteobacteria	Gammaproteobacteria	Unknown	tRNA N6-adenosine threonylcarbamoyltransferase	336	
	Biosynthesis of amino acids	argG	AGO28220.1	Betaproteobacteria	Gammaproteobacteria	Unknown	Argininosuccinate synthase	439	
		hisI	AGO28319.1	Betaproteobacteria	Gammaproteobacteria	Unknown	Histidine biosynthesis bifunctional protein HisIE	120	
	T. phenacola PPER	Translation	rbfA	TPPER_00154	Unknown	Unknown	Unknown	Ribosome-binding factor A	102
rnpA			TPPER_00163	Unknown	Unknown	Unknown	Ribonuclease P protein component	63	
rplI			TPPER_00159	Alphaproteobacteria	Betaproteobacteria	Unknown	50S ribosomal protein L9	135	
rplJ			TPPER_00217	Proteobacteria	Unknown	Unknown	50S ribosomal protein L10	162	
rpsD			TPPER_00186	Gammaproteobacteria	Betaproteobacteria	Unknown	30S ribosomal protein S4	205	
rpsJ			TPPER_00209	Alphaproteobacteria	Betaproteobacteria	Unknown	30S ribosomal protein S10	109	
rpsO			TPPER_00093	Bacteria	Unknown	Unknown	30S ribosomal protein S15	86	
rsfS			TPPER_00007	Bacteria	Unknown	Unknown	Ribosomal silencing factor RsfS	117	
serS			TPPER_00047	Burkholderia	Gammaproteobacteria	Unknown	Serine-tRNA ligase	418	
Protein processing, folding and secretion			lepB	TPPER_00011	Vibrionaceae	Betaproteobacteria	Unknown	Signal peptidase I	183
		iscA	TPPER_00150	Bacteria	Unknown	Unknown	Iron-sulfur cluster insertion protein IscA	107	
Unknown			TPPER_00169	TPPER_00169	Unknown	Unknown	Unknown	hypothetical protein	91
			TPPER_00206	TPPER_00206	Unknown	Unknown	Unknown	hypothetical protein	97