

Table S4. Genes encoding hydrogenases and formate dehydrogenases in *P. thermopropionicum*

Enzyme	Locus tag	Annotation	Gene	COG category	Size (aa)*	Orientation	Subunit	Putative function	SP**	MP**	TAT**
Hydrogenase 1	PTH_0668	Iron only hydrogenase large subunit containig		COG4624	530	+	Fe-hydrogenase	MQ** ↔ H ₂			+
	PTH_0669	Fe-S-cluster-containing hydrogenase components 1	HybA	COG0437	271	+	Fe-S protein				
	PTH_0670	Hypothetical protein			89	+	NrfD (e ⁻ ↔ MQ)		+	+	
Hydrogenase 2	PTH_1377	Hypothetical hydrogenase subunit			624	-	Fe-hydrogenase	NADH ↔ H ₂			
	PTH_1378	NADH:ubiquinone oxidoreductase, NADH-binding (51 kD) subunit	NuoF	COG1894	650	-	NADH binding protein				
	PTH_1379	NADH:ubiquinone oxidoreductase 24 kD subunit	NuoE	COG1905	192	-	Fe-S protein				
Hydrogenase 3	PTH_2010	Hypothetical hydrogenase subunit			574	-	Fe-hydrogenase	Fd** ↔ H ₂			
	PTH_2011	NADH:ubiquinone oxidoreductase, NADH-binding (51 kD) subunit	NuoF	COG1894	551	-	NADH binding protein				
	PTH_2012	NADH:ubiquinone oxidoreductase 24 kD subunit	NuoE	COG1905	162	-	Fe-S protein				
Hydrogenase 4	PTH_1701	Ni,Fe-hydrogenase I small subunit	HyaA	COG1740	332	+	NiFe-hydrogenase	MQ ↔ H ₂	+		+
	PTH_1702	Ni,Fe-hydrogenase I large subunit	HyaB	COG0374	482	+	NiFe-hydrogenase				
	PTH_1703	Fe-S-cluster-containing hydrogenase components 1	HybA	COG0437	277	+	Fe-S protein				
	PTH_1704	NrfD participates in the transfer of electrons from quinone pool into the terminal complemts			389	+	NrfD (e ⁻ ↔ MQ)		+	+	
Formate dehydrogenase 1	PTH_2645	Hypothetical formate dehydrogenase, containing partial COG3383			526	-	Formate dehydrogenase	Formate ↔ NADH			
	PTH_2646	Hypothetical formate dehydrogenase, containing partial COG3383			354	-	Formate dehydrogenase				
	PTH_2647	Putative NADH dehydrogenase/NADH:ubiquinone oxidoreductase 75 kD subunit containing partial NuoG			309	-	ferredoxin				
	PTH_2648	NADH:ubiquinone oxidoreductase, NADH-binding (51 kD) subunit	NuoF	COG1894	617	-	NADH binding protein				
	PTH_2649	NADH:ubiquinone oxidoreductase 24 kD subunit	NuoE	COG1905	162	-	Fe-S protein				
Formate dehydrogenase 2	PTH_1711	Hypothetical formate dehydrogenase, containing partial COG3383, Uncharacterized anaerobic dehydrogenase			208	+	Formate dehydrogenase	Formate ↔ MQ			+
	PTH_1712	Selenocysteine-containing anaerobic dehydrogenase	BisC	COG0243	799	+	Formate dehydrogenase				
	PTH_1713	Fe-S-cluster-containing hydrogenase components 1	HybA	COG0437	274	+	Fe-S protein				
	PTH_1714	Transmembrane electron transfer subunit, NrfD			389	+	NrfD (e ⁻ ↔ MQ)		+	+	

* amino acids.

**SP, signal peptide; MP, membrane binding region; TAT, twin-arginine translocation signature; MQ, menaquinone; Fd, ferredoxin.