

Table S1. Predicted amino acids synthetic pathways in lactic acid bacteria.

Gene	Other name(s)	<i>Lh. brevis</i> ATCC 367	<i>Lh. buchneri</i> CD034	<i>Lh. casei</i> ATCC 393	<i>Lh. curvatus</i> MRS6	<i>Lh. fermentum</i> IFO 3956	<i>Lh. plantarum</i> WCFS1	<i>L. lactis</i> IL1403	<i>Leu. mesenteroides</i> ATCC 8293	KEGG ID	Enzyme full name
Histidine											
<i>tktA tktB</i>		LVIS_RS18460				LAF_RS09780	lp_0489 lp_1083 lp_3135 lp_3538	L0043	LEUM_RS05705	K00615 K00615 K00615 K00615	Transketolase Transketolase Transketolase Transketolase
<i>tktA tktB</i>		LVIS_RS13875	LBUCD034_RS08065	LBCZ_RS12200	CG419_RS01975	LAF_RS01120	lp_0471 lp_2166	L25614	LEUM_RS03400	K00948 K00948	Ribose-phosphate pyrophosphokinase Ribose-phosphate pyrophosphokinase
<i>PRPS prsA</i>			LBUCD034_RS03655			LAF_RS04455	lp_2560	L0066	LEUM_RS10520	K00765	ATP phosphoribosyltransferase
<i>PRPS prsA</i>			LBUCD034_RS03650			LAF_RS04450		L0341	LEUM_RS10520	K02502	ATP phosphoribosyltransferase regulatory subunit
<i>hisG</i>										K02502	ATP phosphoribosyltransferase regulatory subunit
<i>hisZ</i>							lp_2561		LEUM_RS07575	K01523	Phosphoribosyl-ATP pyrophosphohydrolase
<i>hisZ</i>			LBUCD034_RS03685	LBCZ_RS06665		LAF_RS04490	lp_2552				Phosphoribosyl-ATP pyrophosphohydrolase
<i>hisE</i>				LBCZ_RS06670					L0072	K11755	Phosphoribosyl-AMP cyclohydrolase
<i>hisI</i>			LBUCD034_RS03680			LAF_RS04485	lp_2553		LEUM_RS07580	K01496	Phosphoribosyl-AMP cyclohydrolase
<i>hisA</i>			LBUCD034_RS03670	LBCZ_RS06680		LAF_RS04475	lp_2556	L0070	LEUM_RS07590	K01814	Phosphoribosylformimino-5-aminoimidazole carboxamide ribotide isomerase
<i>hisH</i>			LBUCD034_RS03665	LBCZ_RS06685		LAF_RS04435	lp_2557	L0069	LEUM_RS07595	K02501	Imidazole glycerol-phosphate synthase subunit HisH
<i>hisH</i>						LAF_RS04470				K02501	Imidazole glycerol-phosphate synthase subunit HisH
<i>hisF</i>			LBUCD034_RS03675	LBCZ_RS06675		LAF_RS04480	lp_2554	L0071	LEUM_RS07585	K02500	Imidazole glycerol-phosphate synthase subunit HisF
<i>hisF</i>						LAF_RS04440				K02500	Imidazole glycerol-phosphate synthase subunit HisF
<i>hisB</i>			LBUCD034_RS03660	LBCZ_RS06690		LAF_RS04465	lp_2558	L0068	LEUM_RS07600	K01693	Imidazoleglycerol-phosphate dehydratase
<i>hisC</i>			LBUCD034_RS03690	LBCZ_RS06710	CG419_RS06545	LAF_RS04495	lp_2551	L0065	LEUM_RS07570	K00817	Histidinol-phosphate aminotransferase
<i>hisC</i>			LBUCD034_RS09100							K00817	Histidinol-phosphate aminotransferase
-	histidinol-phosphatase			LBCZ_RS05625		LAF_RS04445	lp_2563	L37351	LEUM_RS07625	K04486	Histidinol-phosphatase (PHP family)
<i>hisD</i>			LBUCD034_RS03225			LAF_RS04460	lp_2559	L0067	LEUM_RS07605	K00013	Histidinol dehydrogenase
Serine											
<i>serA PHGDH</i>		LVIS_RS12240	LBUCD034_RS00295	LBCZ_RS06870	CG419_RS05575	LAF_RS00915	lp_0203	L0084	LEUM_RS02170	K00058	D-3-phosphoglycerate dehydrogenase / 2-oxoglutarate reductase
<i>serA PHGDH</i>		LVIS_RS19555	LBUCD034_RS00330			LAF_RS04525	lp_2790	L51032	LEUM_RS02455	K00058	D-3-phosphoglycerate dehydrogenase / 2-oxoglutarate reductase
<i>serA PHGDH</i>			LBUCD034_RS01495			LAF_RS05185			LEUM_RS06020	K00058	D-3-phosphoglycerate dehydrogenase / 2-oxoglutarate reductase
<i>serA PHGDH</i>			LBUCD034_RS04220			LAF_RS10280			LEUM_RS06435	K00058	D-3-phosphoglycerate dehydrogenase / 2-oxoglutarate reductase
<i>serA PHGDH</i>			LBUCD034_RS08150						LEUM_RS07150	K00058	D-3-phosphoglycerate dehydrogenase / 2-oxoglutarate reductase
<i>serA PHGDH</i>			LBUCD034_RS10685							K00058	D-3-phosphoglycerate dehydrogenase / 2-oxoglutarate reductase
<i>serC PSAT1</i>			LBUCD034_RS01500			LAF_RS04520	lp_0204	L0083 L0085	LEUM_RS07155	K00831 K01079	Phosphoserine aminotransferase Phosphoserine phosphatase
<i>serB PSPH</i>										K01079	Phosphoserine phosphatase
Glycine											
<i>serA PHGDH</i>		LVIS_RS12240	LBUCD034_RS00295	LBCZ_RS06870	CG419_RS05575	LAF_RS00915	lp_0203	L0084	LEUM_RS02170	K00058	D-3-phosphoglycerate dehydrogenase / 2-oxoglutarate reductase
<i>serA PHGDH</i>		LVIS_RS19555	LBUCD034_RS00330			LAF_RS04525	lp_2790	L51032	LEUM_RS02455	K00058	D-3-phosphoglycerate dehydrogenase / 2-oxoglutarate reductase
<i>serA PHGDH</i>			LBUCD034_RS01495			LAF_RS05185			LEUM_RS06020	K00058	D-3-phosphoglycerate dehydrogenase / 2-oxoglutarate reductase
<i>serA PHGDH</i>			LBUCD034_RS04220			LAF_RS10280			LEUM_RS06435	K00058	D-3-phosphoglycerate dehydrogenase / 2-oxoglutarate reductase
<i>serA PHGDH</i>			LBUCD034_RS08150						LEUM_RS07150	K00058	D-3-phosphoglycerate dehydrogenase / 2-oxoglutarate reductase
<i>serA PHGDH</i>			LBUCD034_RS10685							K00058	D-3-phosphoglycerate dehydrogenase / 2-oxoglutarate reductase
<i>serC PSAT1</i>			LBUCD034_RS01500			LAF_RS04520	lp_0204	L0083 L0085	LEUM_RS07155	K00831 K01079	Phosphoserine aminotransferase Phosphoserine phosphatase
<i>serB PSPH</i>										K00600	Glycine hydroxymethyltransferase
<i>glyA SHMT</i>		LVIS_RS17810	LBUCD034_RS01500	LBCZ_RS05405	CG419_RS04760	LAF_RS02470	lp_2375	L0082	LEUM_RS03840	K00600	Glycine hydroxymethyltransferase
Threonine											
<i>ppc</i>			LBUCD034_RS04290						LEUM_RS08250	K01595	Phosphoenolpyruvate carboxylase
<i>pckA</i>				LBCZ_RS08740			lp_3418			K01610	Phosphoenolpyruvate carboxylase (ATP)
<i>aspB</i>		LVIS_RS15700	LBUCD034_RS05885	LBCZ_RS06920		LAF_RS06085	lp_1739	L0098		K00812	Aspartate aminotransferase
<i>aspB</i>										K00812	Aspartate aminotransferase
<i>lysC</i>			LBUCD034_RS10075	LBCZ_RS00195		LAF_RS04995	lp_0979	L0097	LEUM_RS03820	K00928	Aspartate kinase
<i>lysC</i>			LBUCD034_RS11660	LBCZ_RS09995		LAF_RS04995	lp_2308			K00928	Aspartate kinase
<i>asd</i>			LBUCD034_RS10040	LBCZ_RS00205		LAF_RS05030	lp_1346	L66199	LEUM_RS09445	K00133	Aspartate-semialdehyde dehydrogenase
<i>hom</i>			LBUCD034_RS11665	LBCZ_RS09990		LAF_RS04845	lp_0571	L0090	LEUM_RS03830	K00003	Homoserine dehydrogenase
<i>thrB1</i>		LVIS_RS14215	LBUCD034_RS07540	LBCZ_RS09980		LAF_RS06570	lp_0572	L0091	LEUM_RS03825	K00872	Homoserine kinase
<i>thrC</i>			LBUCD034_RS11670	LBCZ_RS09985		LAF_RS06560	lp_2758	L0092	LEUM_RS03835	K01733	Threonine synthase
Cysteine											
<i>serA PHGDH</i>		LVIS_RS12240	LBUCD034_RS00295	LBCZ_RS06870	CG419_RS05575	LAF_RS00915	lp_0203	L0084	LEUM_RS02170	K00058	D-3-phosphoglycerate dehydrogenase / 2-oxoglutarate reductase
<i>serA PHGDH</i>		LVIS_RS19555	LBUCD034_RS00330			LAF_RS04525	lp_2790	L51032	LEUM_RS02455	K00058	D-3-phosphoglycerate dehydrogenase / 2-oxoglutarate reductase

Gene	Other name(s)	<i>Lb. brevis</i> ATCC 367	<i>Lb. buchneri</i> CD034	<i>Lb. casei</i> ATCC 393	<i>Lb. curvatus</i> MRS6	<i>Lb. fermentum</i> IFO 3956	<i>Lb. plantarum</i> WCFS1	<i>L. lactis</i> IL1403	<i>Leu. mesenteroides</i> ATCC 8293	KEGG ID	Enzyme full name
<i>serA PHGDH</i>			LBUCD034_RS01495			LAF_RS05185			LEUM_RS06020	K00058	reductase D-3-phosphoglycerate dehydrogenase / 2-oxoglutarate reductase
<i>serA PHGDH</i>			LBUCD034_RS04220			LAF_RS10280			LEUM_RS06435	K00058	D-3-phosphoglycerate dehydrogenase / 2-oxoglutarate reductase
<i>serA PHGDH</i>			LBUCD034_RS08150						LEUM_RS07150	K00058	D-3-phosphoglycerate dehydrogenase / 2-oxoglutarate reductase
<i>serA PHGDH</i>			LBUCD034_RS10685							K00058	D-3-phosphoglycerate dehydrogenase / 2-oxoglutarate reductase
<i>serC PSAT1</i> <i>serB PSPH</i> <i>cysE</i> <i>cysE</i> <i>cysE</i> <i>cysK</i> <i>cysK</i> <i>CBS</i> Methionine			LBUCD034_RS01500			LAF_RS04520	lp_0204	L0083 L0085 L0087	LEUM_RS07155	K00831 K01079 K00640 K00640 K00640 K01738 K01738 K01697	Phosphoserine aminotransferase Phosphoserine phosphatase Serine O-acetyltransferase Serine O-acetyltransferase Serine O-acetyltransferase Cysteine synthase Cysteine synthase Cystathionine beta-synthase
<i>serA PHGDH</i>	LVIS_RS12240	LBUCD034_RS00295	LBCZ_RS06870	CG419_RS05575	LAF_RS00915	lp_0203	L0084		LEUM_RS02170	K00058	D-3-phosphoglycerate dehydrogenase / 2-oxoglutarate reductase
<i>serA PHGDH</i>	LVIS_RS19555	LBUCD034_RS00330			LAF_RS04525	lp_2790	L51032		LEUM_RS02455	K00058	D-3-phosphoglycerate dehydrogenase / 2-oxoglutarate reductase
<i>serA PHGDH</i>		LBUCD034_RS01495			LAF_RS05185				LEUM_RS06020	K00058	D-3-phosphoglycerate dehydrogenase / 2-oxoglutarate reductase
<i>serA PHGDH</i>		LBUCD034_RS04220			LAF_RS10280				LEUM_RS06435	K00058	D-3-phosphoglycerate dehydrogenase / 2-oxoglutarate reductase
<i>serA PHGDH</i>		LBUCD034_RS08150							LEUM_RS07150	K00058	D-3-phosphoglycerate dehydrogenase / 2-oxoglutarate reductase
<i>serA PHGDH</i>		LBUCD034_RS10685								K00058	D-3-phosphoglycerate dehydrogenase / 2-oxoglutarate reductase
<i>serC PSAT1</i> <i>serB PSPH</i> <i>cysE</i> <i>cysE</i> <i>cysE</i> <i>cysK</i> <i>cysK</i> <i>CBS</i> <i>CTH</i> <i>patB malY</i> <i>patB malY</i> <i>patB malY</i> <i>mmuM</i> <i>metH MTR</i>			LBUCD034_RS01500			LAF_RS04520	lp_0204	L0083 L0085 L0087	LEUM_RS07155	K00831 K01079 K00640 K00640 K00640 K01738 K01738 K01697 K01758 K14155 K14155 K14155 K00547 K00548	Phosphoserine aminotransferase Phosphoserine phosphatase Serine O-acetyltransferase Serine O-acetyltransferase Serine O-acetyltransferase Cysteine synthase Cysteine synthase Cystathionine beta-synthase Cystathionine gamma-lyase Cysteine-S-conjugate beta-lyase Cysteine-S-conjugate beta-lyase Cysteine-S-conjugate beta-lyase Homocysteine S-methyltransferase 5-methyltetrahydrofolate--homocysteine methyltransferase
<i>metE</i>	LVIS_RS12800	LBUCD034_RS01745	LBCZ_RS02080	CG419_RS03550 CG419_RS02850	LAF_RS05465	lp_2751 lp_2888 lp_3517 lp_1298	L0102 L177593				5-methyltetrahydropteroyltryglutamate--homocysteine methyltransferase
<i>metE</i>		LBUCD034_RS11390	LBCZ_RS02790		LAF_RS09130	lp_1856	L124252		LEUM_RS08770	K00549	5-methyltetrahydropteroyltryglutamate--homocysteine methyltransferase
<i>metE</i>						lp_3283			LEUM_RS08780	K00549	5-methyltetrahydropteroyltryglutamate--homocysteine methyltransferase
Alanine <i>alaA</i> <i>alaA</i>								L162604 L38687		K14260 K14260	Alanine-synthesizing transaminase Alanine-synthesizing transaminase
Aspartate <i>ppc</i> <i>pckA</i> <i>aspB</i> <i>aspB</i>			LBUCD034_RS04290	LBCZ_RS08740 LBCZ_RS06920		lp_3418 lp_1739			LEUM_RS08250	K01595 K01610 K00812 K00812	Phosphoenolpyruvate carboxylase Phosphoenolpyruvate carboxykinase (ATP) Aspartate aminotransferase Aspartate aminotransferase
Asparagine <i>ppc</i> <i>pckA</i> <i>aspB</i> <i>aspB</i> <i>asnB ASNS</i> <i>asnB ASNS</i> <i>asnB ASNS</i>			LBUCD034_RS04290	LBCZ_RS08740 LBCZ_RS06920		lp_3418 lp_1739			LEUM_RS08250	K01595 K01610 K00812 K00812 K01953 K01953 K01953	Phosphoenolpyruvate carboxylase Phosphoenolpyruvate carboxykinase (ATP) Aspartate aminotransferase Aspartate aminotransferase Asparagine synthase (glutamine-hydrolysing) Asparagine synthase (glutamine-hydrolysing) Asparagine synthase (glutamine-hydrolysing)
Lysine <i>ppc</i> <i>pckA</i> <i>aspB</i> <i>aspB</i> <i>lysC</i> <i>lysC</i> <i>asd</i> <i>dapA</i>			LBUCD034_RS04290	LBCZ_RS08740 LBCZ_RS06920		lp_3418 lp_1739			LEUM_RS08250	K01595 K01610 K00812 K00812 K00928 K00928 K00133 K01714	Phosphoenolpyruvate carboxylase Phosphoenolpyruvate carboxykinase (ATP) Aspartate aminotransferase Aspartate aminotransferase Aspartate kinase Aspartate kinase Aspartate-semialdehyde dehydrogenase 4-hydroxy-tetrahydrodipicolinate synthase
	LVIS_RS15700	LBUCD034_RS05885	LBCZ_RS08740 LBCZ_RS06920		LAF_RS06085	lp_0979 lp_2308 lp_1346 lp_2685	L0098 L0098 L66199 L0093		LEUM_RS03820 LEUM_RS09445 LEUM_RS03265	K00928 K00928 K00133 K01714	Aspartate kinase Aspartate kinase Aspartate-semialdehyde dehydrogenase 4-hydroxy-tetrahydrodipicolinate synthase
	LVIS_RS14280 LVIS_RS15030 LVIS_RS18860	LBUCD034_RS06670	LBCZ_RS10055	CG419_RS07250	LAF_RS03755 LAF_RS10455	lp_0980 lp_3085	L00396 L0095				
	LVIS_RS15700	LBUCD034_RS05885	LBCZ_RS08740 LBCZ_RS06920		LAF_RS06085	lp_3418 lp_1739	L0098				

Gene	Other name(s)	<i>Lb. brevis</i> ATCC 367	<i>Lb. buchneri</i> CD034	<i>Lb. casei</i> ATCC 393	<i>Lb. curvatus</i> MRS6	<i>Lb. fermentum</i> IFO 3956	<i>Lb. plantarum</i> WCFS1	<i>L. lactis</i> IL1403	<i>Leu. mesenteroides</i> ATCC 8293	KEGG ID	Enzyme full name
<i>dapB</i>			LBUCD034_RS10050	LBCZ_RS00170		LAF_RS05020	lp_1874	L0094	LEUM_RS03265	K00215	4-hydroxy-tetrahydrodipicolinate reductase
<i>dapB</i>										K00215	4-hydroxy-tetrahydrodipicolinate reductase
<i>dapH dapD</i>			LBUCD034_RS10065			LAF_RS05005				K05822	Tetrahydrodipicolinate N-acetyltransferase
<i>patA</i>			LBUCD034_RS00995	LBCZ_RS03615		LAF_RS00160	lp_2684	L56488	LEUM_RS06015	K00841	Aminotransferase
<i>patA</i>			LBUCD034_RS01545			LAF_RS00730			LEUM_RS06600	K00841	Aminotransferase
<i>patA</i>			LBUCD034_RS10045			LAF_RS05025			LEUM_RS06720	K00841	Aminotransferase
<i>patA</i>									LEUM_RS08960	K00841	Aminotransferase
<i>dapL</i>			LBUCD034_RS10060			LAF_RS05010	lp_2263	L80177	LEUM_RS03260	K05823	N-acetyldiaminopimelate deacetylase
<i>dapF</i>			LBUCD034_RS10080	LBCZ_RS00200		LAF_RS04990	lp_2185			K01778	Diaminopimelate epimerase
<i>lysA</i>			LBUCD034_RS10070	LBCZ_RS00190		LAF_RS05000	lp_1713	L0121	LEUM_RS03250	K01586	Diaminopimelate decarboxylase
Tryptophan											
<i>aroF aroG aroH</i>								L0063		K01626	3-deoxy-7-phosphoheptulonate synthase
<i>aroF aroG aroH</i>								L0064		K01626	3-deoxy-7-phosphoheptulonate synthase
<i>ARO12 aroA</i>			LBUCD034_RS11855		CG419_RS05415		lp_1085		LEUM_RS05695	K03856	3-deoxy-7-phosphoheptulonate synthase
<i>aroB</i>			LBUCD034_RS11850		CG419_RS05420		lp_1086	L0060	LEUM_RS05690	K01735	3-dehydroquininate synthase
<i>aroKB</i>										K13829	Shikimate kinase / 3-dehydroquininate synthase
<i>aroD</i>			LBUCD034_RS01315		CG419_RS05380		lp_3493	L0062	LEUM_RS05660	K03785	3-dehydroquininate dehydratase I
<i>aroE</i>			LBUCD034_RS01360	LBCZ_RS01660	CG419_RS05410		lp_3494	L0061	LEUM_RS05700	K00014	Shikimate dehydrogenase
<i>aroE</i>				LBCZ_RS01670			lp_3499			K00014	Shikimate dehydrogenase
<i>aroE</i>							lp_3499			K00014	Shikimate dehydrogenase
<i>aroK aroL</i>			LBUCD034_RS01355		CG419_RS05425	LAF_RS06345	lp_2033	L0056	LEUM_RS05670	K00891	Shikimate kinase
<i>aroA</i>			LBUCD034_RS01345			LAF_RS06355	lp_2035	L0057	LEUM_RS05680	K00800	3-phosphoshikimate 1-carboxyvinyltransferase
<i>aroC</i>			LBUCD034_RS01340			LAF_RS06365	lp_2037	L0059	LEUM_RS05685	K01736	Chorismate synthase
<i>trpE</i>			LBUCD034_RS11860				lp_1652	L0054	LEUM_RS05715	K01657	Anthranilate synthase component I
<i>trpG</i>			LBUCD034_RS11865				lp_1718	L0178	LEUM_RS05710	K01658	Anthranilate synthase component II
<i>trpD</i>			LBUCD034_RS11195				lp_1654	L0052	LEUM_RS05735	K00766	Anthranilate phosphoribosyltransferase
<i>trpF</i>			LBUCD034_RS11205				lp_1656	L0050	LEUM_RS05725	K01817	Phosphoribosylanthranilate isomerase
<i>trpF</i>									LEUM_RS09800	K01817	Phosphoribosylanthranilate isomerase
<i>trpC</i>			LBUCD034_RS11200				lp_1655	L0051	LEUM_RS05730	K01609	Indole-3-glycerol phosphate synthase
<i>trpA</i>			LBUCD034_RS11215				lp_1658	L0048	LEUM_RS05720	K01695	Tryptophan synthase alpha chain
<i>trpB</i>			LBUCD034_RS11210				lp_1657	L0049	LEUM_RS05740	K01696	Tryptophan synthase beta chain
Phenylalanine											
<i>aroF aroG aroH</i>								L0063		K01626	3-deoxy-7-phosphoheptulonate synthase
<i>aroF aroG aroH</i>								L0064		K01626	3-deoxy-7-phosphoheptulonate synthase
<i>ARO12 aroA</i>			LBUCD034_RS11855		CG419_RS05415		lp_1085		LEUM_RS05695	K03856	3-deoxy-7-phosphoheptulonate synthase
<i>aroB</i>			LBUCD034_RS11850		CG419_RS05420		lp_1086	L0060	LEUM_RS05690	K01735	3-dehydroquininate synthase
<i>aroD</i>			LBUCD034_RS01315		CG419_RS05380		lp_3493	L0062	LEUM_RS05660	K03785	3-dehydroquininate dehydratase I
<i>aroE</i>			LBUCD034_RS01360	LBCZ_RS01660	CG419_RS05410		lp_3494	L0061	LEUM_RS05700	K00014	Shikimate dehydrogenase
<i>aroE</i>				LBCZ_RS01670			lp_3498			K00014	Shikimate dehydrogenase
<i>aroE</i>							lp_3499			K00014	Shikimate dehydrogenase
<i>aroK aroL</i>			LBUCD034_RS01355		CG419_RS05425	LAF_RS06345	lp_2033	L0056	LEUM_RS05670	K00891	Shikimate kinase
<i>aroA</i>			LBUCD034_RS01345			LAF_RS06355	lp_2035	L0057	LEUM_RS05680	K00800	3-phosphoshikimate 1-carboxyvinyltransferase
<i>aroC</i>			LBUCD034_RS01340			LAF_RS06365	lp_2037	L0059	LEUM_RS05685	K01736	Chorismate synthase
<i>pheA</i>						LAF_RS06370				K14170	Chorismate mutase / prephenate dehydratase
<i>ARO11 aroA</i>			LBUCD034_RS01335		CG419_RS01860			L64445		K04516	Chorismate mutase
<i>pheB</i>			LBUCD034_RS11680							K06209	Chorismate mutase
<i>pheA2</i>			LBUCD034_RS01065							K04518	Prephenate dehydratase
<i>pheA</i>										K14170	Chorismate mutase / prephenate dehydratase
<i>aspB</i>						LAF_RS06370				K04518	Prephenate dehydratase
<i>aspB</i>		LVIS_RS15700	LBUCD034_RS05885	LBCZ_RS06920		LAF_RS06085	lp_1739	L0098		K00812	Aspartate aminotransferase
<i>hisC</i>										K00812	Aspartate aminotransferase
<i>tyrB</i>			LBUCD034_RS03690	LBCZ_RS06660	CG419_RS06545	LAF_RS04495	lp_2551	L0065	LEUM_RS07570	K00817	Histidinol-phosphate aminotransferase
<i>tyrB</i>				LBCZ_RS10030						K00832	Aromatic-amino-acid transaminase
Tyrosine											
<i>aroF aroG aroH</i>								L0063		K01626	3-deoxy-7-phosphoheptulonate synthase
<i>aroF aroG aroH</i>								L0064		K01626	3-deoxy-7-phosphoheptulonate synthase
<i>ARO12 aroA</i>			LBUCD034_RS11855		CG419_RS05415		lp_1085		LEUM_RS05695	K03856	3-deoxy-7-phosphoheptulonate synthase
<i>aroB</i>			LBUCD034_RS11850		CG419_RS05420		lp_1086	L0060	LEUM_RS05690	K01735	3-dehydroquininate synthase
<i>aroD</i>			LBUCD034_RS01315		CG419_RS05380		lp_3493	L0062	LEUM_RS05660	K03785	3-dehydroquininate dehydratase I
<i>aroE</i>			LBUCD034_RS01360	LBCZ_RS01660	CG419_RS05410		lp_3494	L0061	LEUM_RS05700	K00014	Shikimate dehydrogenase
<i>aroE</i>				LBCZ_RS01670			lp_3498			K00014	Shikimate dehydrogenase
<i>aroE</i>							lp_3499			K00014	Shikimate dehydrogenase
<i>aroK aroL</i>			LBUCD034_RS01355		CG419_RS05425	LAF_RS06345	lp_2033	L0056	LEUM_RS05670	K00891	Shikimate kinase
<i>aroKB</i>										K13829	Shikimate kinase / 3-dehydroquininate synthase
<i>aroA</i>			LBUCD034_RS01345			LAF_RS06355	lp_2035	L0057	LEUM_RS05680	K00800	3-phosphoshikimate 1-carboxyvinyltransferase
<i>aroC</i>			LBUCD034_RS01340			LAF_RS06365	lp_2037	L0059	LEUM_RS05685	K01736	Chorismate synthase
<i>pheA</i>						LAF_RS06370				K14170	Chorismate mutase / prephenate dehydratase
<i>ARO11 aroA</i>			LBUCD034_RS01335		CG419_RS01860			L64445		K04516	Chorismate mutase
<i>pheB</i>			LBUCD034_RS11680							K06209	Chorismate mutase
<i>tyrA2</i>			LBUCD034_RS01350			LAF_RS06350	lp_2034	L0058	LEUM_RS05675	K04517	Prephenate dehydrogenase
<i>aspB</i>		LVIS_RS15700	LBUCD034_RS05885	LBCZ_RS06920		LAF_RS06085	lp_1739	L0098		K00812	Aspartate aminotransferase
<i>aspB</i>										K00812	Aspartate aminotransferase
<i>hisC</i>			LBUCD034_RS03690	LBCZ_RS06660	CG419_RS06545	LAF_RS04495	lp_2551	L0065	LEUM_RS07570	K00817	Histidinol-phosphate aminotransferase
<i>tyrB</i>				LBCZ_RS10030						K00832	Aromatic-amino-acid transaminase
Isoleucine											
<i>ilvB ilvG ilvI</i>		LVIS_RS13945	LBUCD034_RS00260	LBCZ_RS08845	CG419_RS05895	LAF_RS05895	lp_3587	L210	LEUM_RS02545	K01652	Acetolactate synthase I/II/III large subunit
<i>ilvB ilvG ilvI</i>			LBUCD034_RS11775					L0078	LEUM_RS09540	K01652	Acetolactate synthase I/II/III large subunit

Gene	Other name(s)	<i>Lb. brevis</i> ATCC 367	<i>Lb. buchneri</i> CD034	<i>Lb. casei</i> ATCC 393	<i>Lb. curvatus</i> MRS6	<i>Lb. fermentum</i> IFO 3956	<i>Lb. plantarum</i> WCFS1	<i>L. lactis</i> IL1403	<i>Leu. mesenteroides</i> ATCC 8293	KEGG ID	Enzyme full name
<i>ihvH ivN</i>								L0079	LEUM_RS09535	K01653	Acetolactate synthase I/II small subunit
<i>ihvC</i>								L0080	LEUM_RS09530	K00053	Ketol-acid reductoisomerase
<i>ihvD</i>								L0077	LEUM_RS09930	K01687	Dihydroxy-acid dehydratase
<i>ihvE</i>			LBUCD034_RS03635	LBCZ_RS09375		LAF_RS02015	lp_2390	L0086	LEUM_RS06440	K00826	Branched-chain amino acid aminotransferase
<i>ihvE</i>			LBUCD034_RS03640			LAF_RS05355				K00826	Branched-chain amino acid aminotransferase
Valine											
<i>ihvB ihvG ihvI</i>	LVIS_RS13945		LBUCD034_RS00260	LBCZ_RS08845	CG419_RS05895	LAF_RS05895	lp_3587	L210	LEUM_RS02545	K01652	Acetolactate synthase I/II/III large subunit
<i>ihvB ihvG ihvI</i>			LBUCD034_RS11775					L0078	LEUM_RS09540	K01652	Acetolactate synthase I/II/III large subunit
<i>ihvH ivN</i>								L0079	LEUM_RS09535	K01653	Acetolactate synthase I/II small subunit
<i>ihvC</i>								L0080	LEUM_RS09530	K00053	Ketol-acid reductoisomerase
<i>ihvC</i>										K00053	Ketol-acid reductoisomerase
<i>ihvD</i>								L0077	LEUM_RS09930	K01687	Dihydroxy-acid dehydratase
<i>ihvE</i>			LBUCD034_RS03635	LBCZ_RS09375		LAF_RS02015	lp_2390	L0086	LEUM_RS06440	K00826	Branched-chain amino acid aminotransferase
<i>ihvE</i>			LBUCD034_RS03640			LAF_RS05355				K00826	Branched-chain amino acid aminotransferase
Leucine											
<i>ihvB ihvG ihvI</i>	LVIS_RS13945		LBUCD034_RS00260	LBCZ_RS08845	CG419_RS05895	LAF_RS05895	lp_3587	L210	LEUM_RS02545	K01652	Acetolactate synthase I/II/III large subunit
<i>ihvB ihvG ihvI</i>			LBUCD034_RS11775					L0078	LEUM_RS09540	K01652	Acetolactate synthase I/II/III large subunit
<i>ihvH ivN</i>								L0079	LEUM_RS09535	K01653	Acetolactate synthase I/II small subunit
<i>ihvC</i>								L0080	LEUM_RS09530	K00053	Ketol-acid reductoisomerase
<i>ihvC</i>										K00053	Ketol-acid reductoisomerase
<i>ihvD</i>								L0077	LEUM_RS09930	K01687	Dihydroxy-acid dehydratase
<i>leuA</i>			LBUCD034_RS00335		CG419_RS09190		lp_3476	L0077	LEUM_RS09890	K01649	2-isopropylmalate synthase
<i>leuC</i>						LAF_RS05585		L0075	LEUM_RS09880	K01703	3-isopropylmalate/(R)-2-methylmalate dehydratase large subunit
<i>leuD</i>						LAF_RS05580		L0076	LEUM_RS09875	K01704	3-isopropylmalate/(R)-2-methylmalate dehydratase small subunit
<i>leuB</i>						LAF_RS05590		L0074	LEUM_RS09885	K00052	3-isopropylmalate dehydrogenase
<i>ihvE</i>			LBUCD034_RS03635	LBCZ_RS09375		LAF_RS02015	lp_2390	L0086	LEUM_RS06440	K00826	Branched-chain amino acid aminotransferase
<i>ihvE</i>			LBUCD034_RS03640			LAF_RS05355				K00826	Branched-chain amino acid aminotransferase
Glutamate											
<i>gltB</i>								L0119	LEUM_RS03985	K00265	Glutamate synthase (NADPH) large chain
<i>gltD</i>								L114827	LEUM_RS03990	K00266	Glutamate synthase (NADPH) small chain
<i>glnA GLUL</i>	LVIS_RS16370		LBUCD034_RS06320	LBCZ_RS07845	CG419_RS03570	LAF_RS07240	lp_1581	L0118	LEUM_RS03495	K01915	Glutamine synthetase
<i>glnA GLUL</i>				LBCZ_RS02945						K01915	Glutamine synthetase
Proline											
<i>argJ</i>			LBUCD034_RS09000					L0105	LEUM_RS00300	K00620	Glutamate N-acetyltransferase / amino-acid N-acetyltransferase
<i>argB</i>			LBUCD034_RS08995			LAF_RS04255	lp_0530	L0107	LEUM_RS00295	K00930	Acetylglutamate kinase
<i>argC</i>			LBUCD034_RS09005			LAF_RS04265	lp_0487	L0104	LEUM_RS00305	K00145	N-acetyl-gamma-glutamyl-phosphate reductase
<i>argD</i>			LBUCD034_RS08990			LAF_RS04250	lp_0531	L0106	LEUM_RS00290	K00818	Acetylmethionine aminotransferase
<i>argE</i>			LBUCD034_RS00425					L0115		K01438	Acetylmethionine deacetylase
<i>argE</i>			LBUCD034_RS11875			LAF_RS05385		L01438		K01438	Acetylmethionine deacetylase
<i>ocd</i>						LAF_RS07660	lp_0016	K01750		K01750	Ornithine cyclodeaminase
<i>proB</i>			LBUCD034_RS10125	LBCZ_RS10930		LAF_RS07660	lp_0016	L0117	LEUM_RS01420	K00931	Glutamate 5-kinase
<i>proA</i>			LBUCD034_RS10130	LBCZ_RS10925		LAF_RS07655	lp_0017	L0116	LEUM_RS01425	K00147	Glutamate-5-semialdehyde dehydrogenase
<i>proC</i>	LVIS_RS14165		LBUCD034_RS07595	LBCZ_RS08665	CG419_RS02240	LAF_RS07910	lp_0561	L135991	LEUM_RS09075	K00286	Pyroline-5-carboxylate reductase
Arginine											
<i>argJ</i>			LBUCD034_RS09000					L0105	LEUM_RS00300	K00620	Glutamate N-acetyltransferase / amino-acid N-acetyltransferase
<i>argB</i>			LBUCD034_RS08995			LAF_RS04255	lp_0530	L0107	LEUM_RS00295	K00930	Acetylglutamate kinase
<i>argC</i>			LBUCD034_RS09005			LAF_RS04265	lp_0487	L0104	LEUM_RS00305	K00145	N-acetyl-gamma-glutamyl-phosphate reductase
<i>argD</i>			LBUCD034_RS08990			LAF_RS04250	lp_0531	L0106	LEUM_RS00290	K00818	Acetylmethionine aminotransferase
<i>argE</i>			LBUCD034_RS00425					L0115		K01438	Acetylmethionine deacetylase
<i>argE</i>			LBUCD034_RS11875			LAF_RS05385		L01438		K01438	Acetylmethionine deacetylase
<i>OTC argF argI</i>	LVIS_RS21430		LBUCD034_RS02395			LAF_RS01760	lp_0532	L0108	LEUM_RS07120	K00611	Ornithine carbamoyltransferase
<i>OTC argF argI</i>								L0109		K00611	Ornithine carbamoyltransferase
<i>argG ASS1</i>			LBUCD034_RS03905	LBCZ_RS13220		LAF_RS09265	lp_0775	L126739	LEUM_RS07130	K01940	Argininosuccinate synthase
<i>argH ASL</i>			LBUCD034_RS03910	LBCZ_RS13225		LAF_RS09260	lp_0776	L0114	LEUM_RS07125	K01755	Argininosuccinate lyase
<i>rocF arg</i>						LAF_RS09330				K01476	Arginase
<i>arcA</i>	LVIS_RS21435		LBUCD034_RS02390			LAF_RS01770		L0329		K01478	Arginine deiminase
Putrescine											
<i>argJ</i>			LBUCD034_RS09000					L0105	LEUM_RS00300	K00620	Glutamate N-acetyltransferase / amino-acid N-acetyltransferase
<i>argB</i>			LBUCD034_RS08995			LAF_RS04255	lp_0530	L0107	LEUM_RS00295	K00930	Acetylglutamate kinase
<i>argC</i>			LBUCD034_RS09005			LAF_RS04265	lp_0487	L0104	LEUM_RS00305	K00145	N-acetyl-gamma-glutamyl-phosphate reductase
<i>argD</i>			LBUCD034_RS08990			LAF_RS04250	lp_0531	L0106	LEUM_RS00290	K00818	Acetylmethionine aminotransferase
<i>argE</i>			LBUCD034_RS00425					L0115		K01438	Acetylmethionine deacetylase
<i>argE</i>			LBUCD034_RS11875			LAF_RS05385		L01438		K01438	Acetylmethionine deacetylase
<i>ODC1 speC speF</i>				LBCZ_RS07855						K01581	Ornithine decarboxylase
4-Aminobutanoate (GABA)											
<i>gadB gadA GAD</i>	LVIS_RS11930						lp_3420	L123581		K01580	Glutamate decarboxylase
<i>gadB gadA GAD</i>	LVIS_RS20565									K01580	Glutamate decarboxylase
Inosine monophosphate (IMP)											
<i>iktA iktB</i>	LVIS_RS18460					LAF_RS09780	lp_0489 lp_1083	L0043	LEUM_RS05705	K00615 K00615	Transketolase Transketolase

Gene	Other name(s)	<i>Lb. brevis</i> ATCC 367	<i>Lb. buchneri</i> CD034	<i>Lb. casei</i> ATCC 393	<i>Lb. curvatus</i> MRS6	<i>Lb. fermentum</i> IFO 3956	<i>Lb. plantarum</i> WCFS1	<i>L. lactis</i> IL1403	<i>Leu. mesenteroides</i> ATCC 8293	KEGG ID	Enzyme full name
<i>tkiA/ktb</i>							lp_3135			K00615	Transketolase
<i>tkiA/ktb</i>							lp_3538			K00615	Transketolase
<i>PRPS/prsA</i>	LVIS_RS13875	LBUCD034_RS08065	LBCZ_RS12200	CG419_RS01975	LAF_RS01120		lp_0471	L25614	LEUM_RS03400	K00948	Ribose-phosphate pyrophosphokinase
<i>PRPS/prsA</i>							lp_2166			K00948	Ribose-phosphate pyrophosphokinase
<i>purF/PPAT</i>		LBUCD034_RS01940	LBCZ_RS08420	CG419_RS07140	LAF_RS00690		lp_2723	L171350	LEUM_RS03530	K00764	Amidophosphoribosyltransferase
<i>purD</i>		LBUCD034_RS01960	LBCZ_RS08400	CG419_RS07120	LAF_RS00710		lp_2719	L153005	LEUM_RS03415	K01945	Phosphoribosylamine--glycine ligase
<i>purN</i>		LBUCD034_RS01950	LBCZ_RS08410	CG419_RS07130	LAF_RS00700		lp_2721	L164626	LEUM_RS03540	K11175	Phosphoribosylglycinamide formyltransferase 1
<i>purT</i>										K08289	Phosphoribosylglycinamide formyltransferase 2
<i>purL/PEAS</i>		LBUCD034_RS01925	LBCZ_RS08435	CG419_RS07155	LAF_RS00675		lp_2726	L177031	LEUM_RS03515	K01952	Phosphoribosylformylglycinamide synthase
<i>purL/PEAS</i>		LBUCD034_RS01930	LBCZ_RS08430	CG419_RS07150	LAF_RS00680				LEUM_RS03520	K01952	Phosphoribosylformylglycinamide synthase
<i>purL/PEAS</i>		LBUCD034_RS01935	LBCZ_RS08425	CG419_RS07145	LAF_RS00685				LEUM_RS03525	K01952	Phosphoribosylformylglycinamide synthase
<i>purL/PEAS</i>							lp_2725	L176360		K01952	Phosphoribosylformylglycinamide synthase
<i>purL/PEAS</i>							lp_2724	L173921		K01952	Phosphoribosylformylglycinamide synthase
<i>purM</i>	LVIS_RS21965	LBUCD034_RS01945	LBCZ_RS08415	CG419_RS07135	LAF_RS00695		lp_2722	L165202	LEUM_RS03545	K01933	Phosphoribosylformylglycinamide cyclase
<i>purM</i>		LBUCD034_RS11510								K01933	Phosphoribosylformylglycinamide cyclase
<i>purM</i>		LBUCD034_RS11590								K01933	Phosphoribosylformylglycinamide cyclase
<i>purM</i>									LEUM_RS03535	K01933	Phosphoribosylformylglycinamide cyclase
<i>purM</i>									LEUM_RS09635	K01933	Phosphoribosylformylglycinamide cyclase
<i>purK</i>	LVIS_RS19515	LBUCD034_RS01915	LBCZ_RS08445	CG419_RS02420	LAF_RS00645		lp_2728	L151330	LEUM_RS03505	K01589	5-(carboxyamino)imidazole ribonucleotide synthase
<i>purK</i>		LBUCD034_RS08570	LBCZ_RS05220		LAF_RS08420					K01589	5-(carboxyamino)imidazole ribonucleotide synthase
<i>purK</i>		LBUCD034_RS01910	LBCZ_RS08450	CG419_RS07170	LAF_RS00640		lp_1141	L152487	LEUM_RS03500	K01589	5-(carboxyamino)imidazole ribonucleotide synthase
<i>purE</i>		LBUCD034_RS01920	LBCZ_RS08440	CG419_RS07160	LAF_RS00670		lp_2727	L177350	LEUM_RS03510	K01588	5-(carboxyamino)imidazole ribonucleotide mutase
<i>purC</i>										K01923	Phosphoribosylaminoimidazole-succinocarboxamide synthase
<i>purB/ADL/</i>	LVIS_RS12650	LBUCD034_RS02605	LBCZ_RS05225	CG419_RS02425	LAF_RS00650		lp_3269	L88187	LEUM_RS06785	K01756	Adenylosuccinate lyase
<i>purH</i>		LBUCD034_RS01955	LBCZ_RS08405	CG419_RS07125	LAF_RS00705		lp_2720	L158710	LEUM_RS03545	K00602	Phosphoribosylaminoimidazolecarboxamide formyltransferase / IMP cyclohydrolase
Guanosine monophosphate (GMP)	LVIS_RS18460						LAF_RS09780	L0043	LEUM_RS05705	K00615	Transketolase
<i>tkiA/ktb</i>							lp_1083			K00615	Transketolase
<i>tkiA/ktb</i>							lp_3135			K00615	Transketolase
<i>tkiA/ktb</i>							lp_3538			K00615	Transketolase
<i>PRPS/prsA</i>	LVIS_RS13875	LBUCD034_RS08065	LBCZ_RS12200	CG419_RS01975	LAF_RS01120		lp_0471	L25614	LEUM_RS03400	K00948	Ribose-phosphate pyrophosphokinase
<i>PRPS/prsA</i>							lp_2166			K00948	Ribose-phosphate pyrophosphokinase
<i>purF/PPAT</i>		LBUCD034_RS01940	LBCZ_RS08420	CG419_RS07140	LAF_RS00690		lp_2723	L171350	LEUM_RS03530	K00764	Amidophosphoribosyltransferase
<i>purD</i>		LBUCD034_RS01960	LBCZ_RS08400	CG419_RS07120	LAF_RS00710		lp_2719	L153005	LEUM_RS03415	K01945	Phosphoribosylamine--glycine ligase
<i>purN</i>		LBUCD034_RS01950	LBCZ_RS08410	CG419_RS07130	LAF_RS00700		lp_2721	L164626	LEUM_RS03540	K11175	Phosphoribosylglycinamide formyltransferase 1
<i>purT</i>										K08289	Phosphoribosylglycinamide formyltransferase 2
<i>purL/PEAS</i>		LBUCD034_RS01925	LBCZ_RS08435	CG419_RS07155	LAF_RS00675		lp_2726	L177031	LEUM_RS03515	K01952	Phosphoribosylformylglycinamide synthase
<i>purL/PEAS</i>		LBUCD034_RS01930	LBCZ_RS08430	CG419_RS07150	LAF_RS00680				LEUM_RS03520	K01952	Phosphoribosylformylglycinamide synthase
<i>purL/PEAS</i>		LBUCD034_RS01935	LBCZ_RS08425	CG419_RS07145	LAF_RS00685				LEUM_RS03525	K01952	Phosphoribosylformylglycinamide synthase
<i>purL/PEAS</i>							lp_2725	L176360		K01952	Phosphoribosylformylglycinamide synthase
<i>purL/PEAS</i>							lp_2724	L173921		K01952	Phosphoribosylformylglycinamide synthase
<i>purM</i>	LVIS_RS21965	LBUCD034_RS01945	LBCZ_RS08415	CG419_RS07135	LAF_RS00695		lp_2722	L165202	LEUM_RS03545	K01933	Phosphoribosylformylglycinamide cyclase
<i>purM</i>		LBUCD034_RS11510								K01933	Phosphoribosylformylglycinamide cyclase
<i>purM</i>		LBUCD034_RS11590								K01933	Phosphoribosylformylglycinamide cyclase
<i>purM</i>									LEUM_RS03535	K01933	Phosphoribosylformylglycinamide cyclase
<i>purM</i>									LEUM_RS09635	K01933	Phosphoribosylformylglycinamide cyclase
<i>purK</i>	LVIS_RS19515	LBUCD034_RS01915	LBCZ_RS08445	CG419_RS02420	LAF_RS00645		lp_2728	L151330	LEUM_RS03505	K01589	5-(carboxyamino)imidazole ribonucleotide synthase
<i>purK</i>		LBUCD034_RS08570	LBCZ_RS05220		LAF_RS08420					K01589	5-(carboxyamino)imidazole ribonucleotide synthase
<i>purK</i>		LBUCD034_RS01910	LBCZ_RS08450	CG419_RS07170	LAF_RS00640		lp_1141	L152487	LEUM_RS03500	K01589	5-(carboxyamino)imidazole ribonucleotide synthase
<i>purE</i>		LBUCD034_RS01920	LBCZ_RS08440	CG419_RS07160	LAF_RS00670		lp_2727	L177350	LEUM_RS03510	K01588	5-(carboxyamino)imidazole ribonucleotide mutase
<i>purC</i>										K01923	Phosphoribosylaminoimidazole-succinocarboxamide synthase
<i>purB/ADSL</i>	LVIS_RS12650	LBUCD034_RS02605	LBCZ_RS05225	CG419_RS02425	LAF_RS00650		lp_3269	L88187	LEUM_RS06785	K01756	Adenylosuccinate lyase
<i>purH</i>		LBUCD034_RS01955	LBCZ_RS08405	CG419_RS07125	LAF_RS00705		lp_2720	L158710	LEUM_RS03545	K00602	Phosphoribosylaminoimidazolecarboxamide formyltransferase / IMP cyclohydrolase
<i>guaB</i>			LBCZ_RS00770	CG419_RS08905			lp_3194	L21264	LEUM_RS03155	K00088	IMP dehydrogenase
<i>guaB</i>	LVIS_RS21590	LBUCD034_RS02930			LAF_RS00435				LEUM_RS03160	K00088	IMP dehydrogenase
<i>guaA</i>	LVIS_RS20130	LBUCD034_RS09200	LBCZ_RS09055	CG419_RS09980			lp_0914	L115968		K00088	IMP dehydrogenase
<i>guaA</i>										K01951	GMP synthase (glutamine-hydrolyzing)
<i>guaA</i>	LVIS_RS22460	LBUCD034_RS09335	LBCZ_RS10310		LAF_RS04890		lp_0073		LEUM_RS03165	K01951	GMP synthase (glutamine-hydrolyzing)
<i>guaA</i>										K01951	GMP synthase (glutamine-hydrolyzing)
Adenosine monophosphate (AMP)	LVIS_RS18460						LAF_RS09780	L0043	LEUM_RS05705	K00615	Transketolase
<i>tkiA/ktb</i>							lp_1083			K00615	Transketolase
<i>tkiA/ktb</i>							lp_3135			K00615	Transketolase
<i>tkiA/ktb</i>							lp_3538			K00615	Transketolase
<i>PRPS/prsA</i>	LVIS_RS13875	LBUCD034_RS08065	LBCZ_RS12200	CG419_RS01975	LAF_RS01120		lp_0471	L25614	LEUM_RS03400	K00948	Ribose-phosphate pyrophosphokinase
<i>PRPS/prsA</i>							lp_2166			K00948	Ribose-phosphate pyrophosphokinase
<i>purF/PPAT</i>		LBUCD034_RS01940	LBCZ_RS08420	CG419_RS07140	LAF_RS00690		lp_2723	L171350	LEUM_RS03530	K00764	Amidophosphoribosyltransferase

Gene	Other name(s)	<i>Lb. brevis</i> ATCC 367	<i>Lb. buchneri</i> CD034	<i>Lb. casei</i> ATCC 393	<i>Lb. curvatus</i> MRS6	<i>Lb. fermentum</i> IFO 3956	<i>Lb. plantarum</i> WCFS1	<i>L. lactis</i> IL1403	<i>Leu. mesenteroides</i> ATCC 8293	KEGG ID	Enzyme full name
<i>purD</i>			LBUCD034_RS01960	LBCZ_RS08400	CG419_RS07120	LAF_RS00710	lp_2719	L153005	LEUM_RS03415	K01945	Phosphoribosylamine--glycine ligase
<i>purN</i>			LBUCD034_RS01950	LBCZ_RS08410	CG419_RS07130	LAF_RS00700	lp_2721	L164626	LEUM_RS03540	K11175	Phosphoribosylglycinamide formyltransferase 1
<i>purT</i>										K08289	Phosphoribosylglycinamide formyltransferase 2
<i>purL,PFAS</i>								L177031		K01952	Phosphoribosylformylglycinamide synthase
<i>purL,PFAS</i>			LBUCD034_RS01925	LBCZ_RS08435	CG419_RS07155	LAF_RS00675	lp_2726		LEUM_RS03515	K01952	Phosphoribosylformylglycinamide synthase
<i>purL,PFAS</i>			LBUCD034_RS01930	LBCZ_RS08430	CG419_RS07150	LAF_RS00680			LEUM_RS03520	K01952	Phosphoribosylformylglycinamide synthase
<i>purL,PFAS</i>			LBUCD034_RS01935	LBCZ_RS08425	CG419_RS07145	LAF_RS00685			LEUM_RS03525	K01952	Phosphoribosylformylglycinamide synthase
<i>purL,PFAS</i>							lp_2725	L176360		K01952	Phosphoribosylformylglycinamide synthase
<i>purL,PFAS</i>							lp_2724	L173921		K01952	Phosphoribosylformylglycinamide synthase
<i>purL,PFAS</i>							lp_2722	L165202		K01933	Phosphoribosylformylglycinamide synthase
<i>purM</i>			LBUCD034_RS01945	LBCZ_RS08415	CG419_RS07135	LAF_RS00695				K01933	Phosphoribosylformylglycinamide synthase
<i>purM</i>			LBUCD034_RS11510							K01933	Phosphoribosylformylglycinamide synthase
<i>purM</i>		LVIS_RS21965	LBUCD034_RS11590							K01933	Phosphoribosylformylglycinamide synthase
<i>purM</i>									LEUM_RS03535	K01933	Phosphoribosylformylglycinamide synthase
<i>purM</i>									LEUM_RS09635	K01933	Phosphoribosylformylglycinamide synthase
<i>purM</i>									LEUM_RS03505	K01589	5-(carboxyamino)imidazole ribonucleotide synthase
<i>purK</i>			LBUCD034_RS01915	LBCZ_RS08445		LAF_RS00645	lp_2728	L151330		K01589	5-(carboxyamino)imidazole ribonucleotide synthase
<i>purK</i>			LBUCD034_RS08570	LBCZ_RS05220	CG419_RS02420	LAF_RS08420				K01589	5-(carboxyamino)imidazole ribonucleotide synthase
<i>purK</i>		LVIS_RS19515					lp_1141			K01589	5-(carboxyamino)imidazole ribonucleotide synthase
<i>purK</i>			LBUCD034_RS01910	LBCZ_RS08450	CG419_RS07170	LAF_RS00640	lp_2729	L152487	LEUM_RS03500	K01588	5-(carboxyamino)imidazole ribonucleotide mutase
<i>purE</i>			LBUCD034_RS01920	LBCZ_RS08440	CG419_RS07160	LAF_RS00670	lp_2727	L177350	LEUM_RS03510	K01923	Phosphoribosylaminoimidazole-succinocarboxamide synthase
<i>purC</i>											Phosphoribosylaminoimidazole-succinocarboxamide synthase
<i>purH</i>			LBUCD034_RS01955	LBCZ_RS08405	CG419_RS07125	LAF_RS00705	lp_2720	L158710	LEUM_RS03545	K00602	Phosphoribosylaminoimidazolecarboxamide formyltransferase / IMP cyclohydrolase
<i>purA</i>			LBUCD034_RS02600	LBCZ_RS00310	CG419_RS00340	LAF_RS00225	lp_3270	L12179		K01939	Adenylosuccinate synthase
<i>purA</i>		LVIS_RS12645							LEUM_RS07135	K01939	Adenylosuccinate synthase
<i>purB</i>			LBUCD034_RS02605	LBCZ_RS05225	CG419_RS02425	LAF_RS00650	lp_3269	L88187	LEUM_RS06785	K01756	Adenylosuccinate lyase
<i>purB</i>		LVIS_RS12650	LBUCD034_RS02175							K01756	Adenylosuccinate lyase