

**Annex 3:** Gene-based comparison of horizontal gene transfers as reported by Garcia Vallve *et al.* [16], Nicolas *et al* [12], Nakamura *et al* [14], Moszer *et al* [51] and this work (TW, threshold 99 %) for *B subtilis*. Columns are self-explanatory. A star indicates a detected gene. Yellow indicates genes detected by our approach and at least another method, green indicates gene detected only by our approach, red indicates gene found by all methods except our approach, NF = no feature found in GIB database.

<i>Bacillus</i>	<i>subtilis</i>	gene	Ref 16	Ref 12	Ref 14	Ref 51	TW
begin	end	gene					
23144	23767	yaaG			*		
35529	35723	csfB			*		
35843	36457	xpaC			*	*	
40211	40651	yaaR	*				
40663	41652	holB			*		
52761	53021	veg				*	
68513	69148	yabQ	*		*		
87398	87607	yazB				*	
88724	90223	lysS					*
101446	101910	ctsR	*			*	*
101924	102481	yacH			*	*	
117346	117495	rpmGB				*	
117529	117708	secE					*
117887	118420	nusG					*
118588	119013	rplK					*
119107	119805	rplA					*
120057	120557	rplJ					*
120604	120975	rplL					*
121065	121670	ybxB		*		*	*
121916	125497	rpoB					*
125559	129158	rpoC					*
129339	129587	ybxF					*
129701	130117	rpsL		*		*	*
130159	130629	rpsG					*
130683	132761	fusA					*
132881	134071	tufA					*
134170	135126	ybaC		*		*	*
135362	135670	rpsJ					*
135710	136339	rplC					*
136367	136990	rplD					*
136990	137277	rplW					*
137309	138142	rplB					*
138200	138478	rpsS		*		*	*
138495	138836	rplV					*
138840	139496	rpsC					*
139498	139932	rplP					*
139922	140122	rpmC					*

<i>Bacillus</i>	<i>subtilis</i>	gene	Ref 16	Ref 12	Ref 14	Ref 51	TW
begin	end						
140145	140408	rpsQ					*
140449	140817	rplN					*
140855	141166	rplX					*
141193	141732	rplE					*
141755	141940	rpsN					*
141972	142370	rpsH					*
142400	142939	rplF					*
142972	143334	rplR					*
143359	143859	rpsE					*
143873	144052	rpmD					*
144083	144523	rplO					*
147835	147948	rpmJ			*	*	
155155	155922	ybaJ				*	*
156108	156551	ybaK				*	*
202112	202252	ybbU	*	*			
202533	203444	alkA	*	*	*	*	*
203715	204350	adaA	*	*	*	*	*
204337	204876	adaB		*		*	*
205395	206912	ndhF	*	*	*	*	*
206927	207169	ybcC	*	*		*	*
207166	209430	ybcD		*	*	*	*
209619	210146	ybcF	*	*	*	*	*
210210	210500	ybcH	*	*	*	*	*
210558	210932	ybcI	*	*	*	*	*
213926	214093	ybcO	*	*		*	*
214160	214549	ybcP	*	*	*	*	*
215390	215947	ybcS	*	*	*	*	*
215944	216879	ybcT	*	*	*	*	*
216898	217617	ybdA		*	*	*	*
217682	219028	ybdB	*	*	*	*	*
219075	219488	ybdD	*	*		*	*
219594	220019	ybdE	*	*	*	*	*
220265	221155	ybdG	*	*		*	*
222971	223165	ybdL			*		
235614	235862	ybeF			*		
238153	238437	ybfE			*		
238633	239544	ybfF			*	*	
266711	267655	ycbB	*				
267882	268808	ycbC	*				
268838	270304	ycbD	*				
271792	273159	ycbF	*				
273229	273930	ycbG	*				
274021	275553	ycbH	*				
275830	276750	ycbJ	*				
282011	282439	cwlJ			*		
333653	334120	ycgE			*		

<i>Bacillus</i>	<i>subtilis</i>	gene	Ref 16	Ref 12	Ref 14	Ref 51	TW
begin	end						
336986	337720	ycgI			*		
352430	353440	ycgT	*				
353472	354923	nasF	*				
354984	355304	nasE	*				
355336	357753	nasD	*				
357875	360007	nasC	*				
360014	362326	nasB	*				
362506	363771	nasA	*		*		
371725	372036	nucA	*				
376525	387291	srfAA					*
387304	398067	srfAB					*
390452	390592	comS			*		
398104	401928	srfAC					*
404042	404599	ycxB	*		*	*	
454908	455420	ycsD			*		
490284	490574	ydaQ			*		
524049	524342	ydcF			*		
527860	528312	ydcK			*		
529236	530342	ydcL	*	*	*	*	*
530355	530864	ydcM	*	*	*	*	*
530861	531244	ydcN	*	*		*	*
531518	531712	sacV	*	*	*	*	*
532023	532283	ydcO	*	*		*	*
532653	533033	ydcP	*	*	*	*	*
533069	534511	ydcQ	*	*		*	*
534504	535562	ydcR	*	*	*	*	*
535827	536096	ydcS	*	*		*	*
536418	536726	yddA	*	*	*	*	*
536716	537780	yddB	*	*		*	*
537492	537740	yddC		*		*	*
538053	538577	yddD	*	*	*	*	*
538465	540960	yddE	*	*		*	*
540979	541305	yddF	*	*	*	*	*
541309	543756	yddG	*	*		*	*
543753	544742	yddH	*	*		*	*
544757	545263	yddI	*	*	*	*	*
545326	545706	yddJ	*	*		*	*
545897	546697	yddK	*	*	*	*	*
547037	548212	rapI	*	*	*	*	*
548169	548288	phrI	*	*	*	*	*
548441	549382	yddM	*	*	*	*	*
549953	550972	yddN	*	*		*	*
551232	551642	lrpA	*	*	*	*	*
551765	552214	lrpB	*	*	*	*	*
552159	552701	yddQ		*		*	*
553424	554188	yddR	*	*		*	*

<i>Bacillus</i>	<i>subtilis</i>	gene	Ref 16	Ref 12	Ref 14	Ref 51	TW
begin	end						
554382	555692	yddS		*	*	*	*
556476	557162	yddT	*	*	*	*	*
558122	558715	ydeA	*	*	*	*	*
558618	558818	cspC		*			*
559865	560326	ydeB	*	*	*	*	*
560894	561130	ydzE	*	*	*		*
561228	562103	ydeC	*	*	*	*	*
562216	563175	ydeD	*	*	*	*	*
563328	564200	ydeE	*	*	*	*	*
564058	565455	ydeF		*		*	*
565565	566857	ydeG		*		*	*
567376	567822	ydeH	*	*	*	*	*
568059	568652	ydeI	*	*			*
568834	569493	ydeJ				*	
570085	570948	ydeK	*	*			
570933	572324	ydeL		*			
572518	572943	ydeM		*		*	
572996	573568	ydeN		*			
573820	574149	ydzF		*	*	*	
574234	575106	ydeO		*			
575256	575642	ydeP		*			
575753	576346	ydeQ		*			
576490	577677	ydeR		*			
578477	577881	ydeS		*			
579085	579420	ydeT		*	*		
579433	580740	ydfA		*			
581238	582023	ydfB		*	*	*	
582080	583000	ydfC		*			
583133	584581	ydfD		*		*	
584699	585322	ydfE		*	*		
585412	586092	ydfF		*			
586172	586615	ydfG		*			
587288	588511	ydfH		*			
588504	589145	ydfI		*			
589261	591435	ydfJ		*			
591847	592749	nap		*			
592951	593640	ydfK		*			
593730	594542	ydfL		*			
594653	595546	ydfM		*			
596022	596642	ydfN		*			
596658	597596	ydfO		*			
597698	598087	ydfP		*			
598443	598781	ydfQ	*	*	*	*	
598821	599057	ydzH	*	*	*	*	
599943	600620	ydfR	*	*			
600733	601440	ydfS	*	*			

<i>Bacillus</i>	<i>subtilis</i>	gene	Ref 16	Ref 12	Ref 14	Ref 51	TW
begin	end						
601899	602141	ydgA	*				
602155	602427	ydgB	*			*	
603140	603484	ydgD				*	
641201	641677	ydiB				*	
649781	651415	groEL	*	*			
652979	653359	ydiM	*	*		*	*
654695	654910	ydiN	*	*	*	*	*
654940	656223	ydiO	*	*	*	*	*
656245	657414	ydiP	*	*	*	*	*
657900	658088	ydiQ			*		*
659340	660281	ydiR	*	*	*	*	*
660313	661344	ydiS	*	*	*	*	*
661347	662744	ydjA	*	*	*	*	*
663318	663653	ydjB	*	*	*	*	*
664036	664386	ydjC	*			*	*
679107	679478	ydjM	*			*	
680972	681181	ydjO			*		
695704	696507	yebC			*		
696666	696887	yebD			*		
702075	702758	purL	*				
702742	704970	purQ	*				
704946	706376	purF	*				
706478	707518	purM	*				
707515	708102	purN	*				
708099	709637	purH	*				
709653	710921	purD	*				
738501	739403	yefB	*	*	*	*	*
739342	739719	yefC	*	*	*	*	*
739794	742433	yeeA	*	*	*	*	*
742445	744241	yeeB	*	*		*	*
744354	745502	yeeC	*	*	*	*	*
745764	746069	yeeD	*	*	*	*	*
746136	746342	yezA	*	*		*	*
751916	752638	yeeI	*				
752773	753909	yeeK			*		
755415	755663	cotJA			*		
756619	757161	yesJ	*				
757097	757486	yesK			*		
761215	762453	yesO	*				
764289	765323	yesR	*				
765346	767631	yesS	*				
767645	768343	yesT	*				
768336	768998	yesU	*				
769742	771604	yesW	*				*
771650	773488	yesX	*				*
773646	774299	yesY	*				*

<i>Bacillus</i>	<i>subtilis</i>	gene	Ref 16	Ref 12	Ref 14	Ref 51	TW
begin	end						
774307	776298	yesZ	*				*
776342	778915	yetA	*				*
785693	786778	yetI			*		
806599	808056	yfmT	*				
808070	808930	yfmS	*				
809065	810954	yfmR	*				
811077	811523	yfmQ	*				
811648	812070	yfmP	*				
812136	813326	yfmO	*				
813617	813772	yfmN			*		
813892	815448	yfmM	*				
815621	816751	yfmL	*				
817318	818337	yfmJ	*	*			*
818648	819868	yfmI	*	*	*	*	*
820066	820137	yfmH	*	*			*
821667	820204	yfmG	*	*	*	*	*
822240	823040	yfmF					*
826180	826548	yfmB				*	
826760	826927	yfmA			*	*	
843605	843742	yflD			*		
846789	846989	yfkS			*		
867514	867975	yfkB	*				
877105	877557	yfjM	*				
878508	879509	acoA	*				
879513	880541	acoB	*				
880555	881751	acoC	*				
881772	883148	acoL	*				
883264	885081	acoR	*				
885350	885679	yfjF	*				
937406	937660	sspE			*		
944671	945003	ygaH			*		
953625	953828	ygzA				*	
954397	955152	ygaJ			*		
979822	979977	yhcD			*	*	
979982	980743	yhcE			*	*	
987925	988380	yhcM			*		
988358	988927	yhcN				*	
1018452	1019483	lytE			*		
1034847	1034957	yhdS			*	*	
1036433	1036789	yhdU			*		
1036786	1037181	yhdV			*		
1044517	1044678	yheJ			*		
1049281	1049406	yheF			*		
1055889	1056140	yhaY			*	*	
1071796	1072035	yhaJ			*	*	
1082343	1082657	yhgB			*		

<i>Bacillus</i>	<i>subtilis</i>	gene	Ref 16	Ref 12	Ref 14	Ref 51	TW
begin	end						
1094213	1094416	yhfD			*		
1097592	1097732	yhfH			*		
1124595	1125800	yhjI	*		*	*	
1125872	1126924	yhjJ	*	*	*	*	*
1126927	1127787	yhjK	*	*	*	*	*
1127759	1129084	yhjL	*	*	*	*	*
1129188	1130177	yhjM	*	*	*	*	*
1134728	1135054	yhjQ			*		
1142882	1144057	sbcD					*
1144054	1147446	yirY					*
1150638	1151561	yisJ			*		
1158516	1158995	yizA				*	
1167024	1167665	yisW	*				
1185081	1185374	yitR			*		
1192090	1192302	yitX			*		
1229387	1230508	yjbF			*		
1241920	1242630	tenA	*				
1242605	1243222	tenI	*				
1243206	1244315	yjbR	*				
1244512	1245282	yjbT	*				
1245279	1246289	yjbU	*				
1246308	1247123	yjbV	*				
1248913	1249359	cotZ			*		
1251648	1252004	yjcA	*				
1252329	1252544	yjcB			*		
1255544	1255846	yjcE			*		
1260738	1261928	yjcL					*
1263014	1264243	yjcM		*	*	*	*
1264528	1264848	yjcN	*	*	*	*	*
1266085	1266588	yjcP	*	*	*	*	*
1266600	1266884	yjcQ	*	*		*	*
1267746	1268063	yjcS	*	*			*
1268300	1269055	yjdA	*	*	*	*	*
1269204	1269551	yjdB	*	*	*	*	*
1269943	1271889	manR					*
1275281	1275763	yjdF			*	*	
1275650	1276156	yjdG				*	
1276547	1276951	yjdH			*	*	
1276997	1277476	yjdI					*
1277876	1278364	yjdJ	*			*	*
1278825	1279814	ctaO					*
1279937	1280260	cotT		*		*	*
1280439	1281842	yjeA					*
1282041	1282514	yjfA	*				
1282480	1282647	yjfB				*	
1341852	1342430	xkdU	*				

<i>Bacillus</i>	<i>subtilis</i>		Ref	Ref	Ref	Ref	TW
begin	end	gene	16	12	14	51	
1342701	1344764	xkdV			*	*	
1361640	1362602	dppC	*				
1362607	1363614	dppD	*				
1365607	1366311	ykfA	*				
1366308	1367408	ykfB	*				
1396719	1397051	tnrA		*			
1397246	1397401	ykzB		*			
1397489	1397671	ykoL		*			
1397804	1398268	ykoM		*			
1398283	1399404	ykoN		*			
1413108	1413302	sspD				*	
1429992	1430249	spo0E				*	
1430335	1430766	eag				*	
1441655	1442011	ykvN				*	*
1442180	1442926	ykvO		*		*	*
1443407	1444606	ykvP		*	*	*	*
1444946	1445644	ykvQ		*		*	*
1446559	1446849	ykvR		*		*	*
1447128	1447559	ykvS	*	*	*		*
1447814	1448440	ykvT					*
1477376	1478140	ykuF		*			*
1478441	1480723	ykuG		*	*	*	*
1480853	1481401	ykuH		*	*	*	*
1481554	1482777	ykuI		*		*	*
1483423	1483662	ykuJ		*		*	*
1483772	1484290	ykuK		*		*	*
1490246	1490491	ykuS				*	
1511328	1511597	ykoA			*		
1515646	1515780	ykpC				*	
1524098	1524307	ykzG				*	
1528752	1529729	pdhB					*
1529844	1531172	pdhC					*
1543221	1543490	ylaB			*	*	
1575206	1575385	rpmF			*	*	
1579425	1579856	yllB				*	
1595331	1595696	sbp			*	*	
1608216	1608461	ylmC				*	
1610722	1610994	ylmG			*		
1611824	1612318	divIVA				*	
1654129	1654773	yloS			*		
1670466	1670951	ylqB				*	
1691529	1691849	fliE			*	*	
1694553	1695179	fliH				*	
1696590	1697033	fliJ	*				
1697045	1697686	ylxF	*				
1699133	1699555	ylxG	*				



<i>Bacillus subtilis</i>			Ref	Ref	Ref	Ref	TW
begin	end	gene	16	12	14	51	
1699577	1700371	flgE	*				
1700411	1700626	-	*				
1700623	1701045	fliL	*			*	
1703130	1703492	cheY				*	
1704258	1704923	fliP			*		
1738332	1738601	rpsO			*		
1743216	1743473	ymxH				*	
1755664	1756248	ymfE	*		*	*	
1756523	1756855	ymfF	*				
1782082	1782759	pksB			*		
1864754	1865125	ymaG			*		
1867339	1867569	ymzA				*	
1877155	1877562	glnR				*	
1879331	1879621	ynxB	*	*	*	*	*
1879821	1880165	ynzF		*		*	*
1880342	1880593	ynzG	*	*	*	*	*
1880913	1881224	ynaB	*	*		*	*
1881294	1882085	ynaC	*	*	*	*	*
1882420	1882932	ynaD	*	*	*	*	*
1883492	1884133	ynaE	*	*	*	*	*
1884222	1884575	ynaF	*	*		*	*
1884619	1884894	ynaG	*	*	*	*	*
1885497	1885781	ynaI	*	*		*	*
1886606	1887997	ynaJ	*	*	*	*	*
1888028	1889629	xynB	*	*	*	*	*
1889766	1890818	xylR	*	*	*	*	*
1891162	1892499	xylA	*			*	*
1892650	1894149	xylB	*				*
1894632	1895267	yncB	*			*	
1895632	1896891	yncC				*	
1897149	1898333	yncD					*
1898843	1899304	yncE	*		*	*	*
1899334	1899768	yncF	*				*
1900372	1900632	ynzH	*			*	*
1901474	1902313	thyA	*				*
1904250	1904606	cotC	*		*	*	*
1904625	1904813	ynzA	*				*
1905064	1905462	yndA	*			*	*
1910783	1911589	yndG			*		
1911594	1912211	yndH	*		*		
1912208	1913848	yndJ			*		
1913885	1914250	yndK	*				
1914476	1915234	yndL	*				
1915261	1915800	yndM	*		*	*	
1915918	1916352	yndN	*				
1917661	1917978	yneA	*				

<i>Bacillus</i>	<i>subtilis</i>	gene	Ref 16	Ref 12	Ref 14	Ref 51	TW
begin	end						
1922489	1923196	ccdA		*		*	*
1923150	1922443	ccdA				*	*
1923239	1923601	yneI				*	*
1923680	1924171	yneJ			*	*	*
1924202	1924630	yneK				*	*
1924864	1925256	cotM				*	*
1925383	1925529	cotL		*	*		
1929656	1929907	tlp			*		
1938134	1939531	alsT				*	*
1939834	1941333	bglC				*	*
1941401	1941664	ynfE			*		
1977000	1979000	NF					*
2001892	2002437	yoeB	*				
2017095	2017463	rtp				*	
2026720	2027013	yoaF				*	
2027431	2027835	yoaG	*		*	*	
2028231	2028524	yoaQ				*	
2028684	2030288	yoaH	*				*
2031016	2032143	yoaI	*				
2033148	2033825	yoaK	*				*
2033998	2035035	pelB	*				*
2035292	2035975	yoaM	*				*
2038155	2038643	yoaO	*	*		*	*
2038863	2039618	yoaP	*	*	*		*
2039926	2040282	yoaQ	*	*	*	*	*
2040830	2041081	yoaF	*	*	*	*	*
2041182	2042093	yoaR			*		*
2042440	2042922	yoaS	*		*	*	*
2042932	2043186	yoaG	*				*
2043292	2044086	yoaT	*		*		
2046234	2046665	yoaW	*	*	*	*	*
2046929	2047561	yoaZ	*	*		*	*
2047787	2048707	penP	*	*			*
2049204	2049566	yobA	*	*	*	*	*
2049943	2050206	yobB	*	*	*	*	*
2050539	2053139	pps				*	*
2053853	2054494	xynA	*	*	*	*	*
2055122	2055361	-	*	*			*
2055532	2055870	yobD	*	*		*	*
2055904	2056224	yoaH	*	*	*	*	*
2056469	2056834	yoaI	*	*		*	*
2057056	2057715	yobE	*	*	*	*	*
2057970	2058893	yobF	*	*	*	*	*
2059492	2059947	yoaJ	*	*		*	*
2061405	2062520	rapK	*	*	*	*	*
2062517	2062639	phrK	*	*		*	*

<i>Bacillus</i>	<i>subtilis</i>	gene	Ref 16	Ref 12	Ref 14	Ref 51	TW
begin	end						
2062765	2063376	yobH	*	*	*	*	*
2063455	2063802	yozK	*	*		*	*
2063795	2064088	yozL	*	*	*	*	*
2064297	2064632	yozM	*	*		*	*
2064679	2068284	yobI	*	*	*	*	*
2069499	2070341	yobJ	*	*	*	*	*
2070541	2070999	yobK	*	*		*	*
2071009	2072811	yobL	*	*		*	*
2072913	2073401	yobM	*	*		*	*
2073694	2075034	yobN	*			*	*
2075461	2077881	yobO	*			*	*
2083469	2084014	yobW			*		
2098702	2099046	yozO	*				
2096338	2096967	yocK					*
2096904	2097236	yocL					*
2097528	2098004	yocM					*
2098071	2098334	yozN					*
2098339	2098572	yocN					*
2117767	2118372	yojJ			*		
2120842	2121270	yojG				*	
2125748	2126137	yodA				*	
2147919	2148320	cgeA	*			*	
2151329	2151505	yotN	*	*	*	*	*
2151508	2152095	yotM	*	*	*		*
2152170	2152412	yotL	*	*	*	*	*
2152414	2152599	yotK	*	*	*		*
2152683	2152895	yotJ	*	*	*	*	*
2152961	2153323	yotI	*	*	*	*	*
2153320	2153493	yotH	*	*		*	*
2153509	2153826	yotG	*	*		*	*
2153839	2153916	yotF	*	*		*	*
2153948	2154094	yotE	*	*	*	*	*
2154130	2154261	yotD	*	*	*	*	*
2154301	2154492	yotC	*	*	*	*	*
2154536	2155363	yotB	*	*		*	*
2155437	2155655	sspC				*	*
2155891	2155956	yosZ	*	*			*
2156000	2156353	yosX	*	*		*	*
2156584	2156925	yosW	*	*	*	*	*
2157072	2157362	yosV	*	*	*	*	*
2157682	2157927	yosU	*	*	*	*	*
2157967	2158416	yosT	*	*	*	*	*
2158511	2158939	yosS	*	*			*
2158940	2159182	yosR				*	*
2159808	2160329	yosQ	*	*	*	*	*
2160434	2161021	yosP	*	*			*

<i>Bacillus</i>	<i>subtilis</i>	gene	Ref 16	Ref 12	Ref 14	Ref 51	TW
begin	end						
2161351	2163711	yosO	*	*			*
2164135	2164857	yosN	*	*	*	*	*
2164820	2165209	yosM	*	*	*	*	*
2165215	2165568	yosL	*	*		*	*
2165656	2165856	yosK	*	*	*	*	*
2166071	2166205	yosI		*		*	*
2166237	2166707	yosH		*		*	*
2166813	2167175	yosG	*	*		*	*
2167218	2167343	yosF	*	*		*	*
2167357	2167704	yosE	*	*		*	*
2167719	2168114	yosD	*	*	*	*	*
2168153	2168695	yosC	*	*		*	*
2168740	2168919	yosB	*	*	*	*	*
2169273	2169485	yorZ	*	*	*	*	*
2169552	2169734	yorY	*	*	*	*	*
2169747	2169974	yorX	*	*		*	*
2170014	2170379	yorW	*	*	*	*	*
2170382	2170600	yorV	*	*		*	*
2170644	2171975	mtbP	*	*	*	*	*
2172024	2172143	yorT	*	*		*	*
2172175	2172693	yorS	*	*	*	*	*
2172702	2173199	yorR	*	*		*	*
2173154	2173309	yorQ		*		*	*
2173347	2173562	yorP	*	*	*	*	*
2173595	2173792	yorO	*	*	*		*
2173783	2173932	yorN		*		*	*
2174093	2174809	yorM	*	*	*	*	*
2174837	2178754	yorL	*	*	*	*	*
2178767	2180497	yorK	*	*	*	*	*
2180497	2181633	yorJ	*	*	*	*	*
2181649	2183163	yorI	*	*	*	*	*
2183178	2183648	yorH	*	*	*	*	*
2183646	2184617	yorG		*		*	*
2184745	2185659	yorF	*	*		*	*
2185681	2186052	yorE	*	*	*	*	*
2186226	2186540	yorD	*	*		*	*
2186617	2186997	yorC	*	*		*	*
2187060	2187356	yorB	*	*		*	*
2187445	2189205	yorA	*	*	*	*	*
2189202	2190026	yoqZ	*	*	*	*	*
2190125	2190520	yoqY	*	*		*	*
2190575	2190796	yoqX	*	*			*
2190867	2191541	yoqW	*	*			*
2191611	2192423	yoqV	*	*		*	*
2192489	2192902	yoqU	*	*			*
2193068	2193217	yoqT	*	*	*		*

<i>Bacillus</i>	<i>subtilis</i>	gene	Ref 16	Ref 12	Ref 14	Ref 51	TW
begin	end						
2193294	2193641	yoqS	*	*	*	*	*
2193643	2193999	yoqR	*	*	*	*	*
2193959	2194300	yoqP	*	*		*	*
2194414	2194788	yoqO	*	*	*	*	*
2194760	2194978	yoqN		*		*	*
2195227	2195505	yoqM	*	*	*	*	*
2195630	2196322	yoqL	*	*	*	*	*
2196362	2196565	yoqK	*	*	*	*	*
2196585	2197100	yoqJ	*	*	*	*	*
2197311	2197505	yoqI	*	*		*	*
2197554	2198006	yoqH	*	*	*	*	*
2198089	2198346	yoqG	*	*		*	*
2198391	2198594	yoqF	*	*		*	*
2198603	2198767	yoqE	*	*	*	*	*
2198821	2199576	yoqD	*	*		*	*
2199617	2200024	yoqC	*	*	*	*	*
2200031	2200369	yoqB	*	*	*		*
2200729	2200932	yopZ		*	*		*
2200946	2201224	yopY	*	*	*		*
2201221	2201625	yopX	*	*			*
2201622	2201957	yopW	*	*	*	*	*
2202046	2202240	yopV	*	*		*	*
2202352	2202549	yopU	*	*	*	*	*
2202619	2202837	yopT	*	*	*	*	*
2203020	2203244	yopS	*	*		*	*
2203433	2204410	yopR	*	*	*	*	*
2204434	2205816	yopQ	*	*	*	*	*
2205923	2206999	yopP	*	*	*	*	*
2206989	2207201	yopO	*	*		*	*
2207249	2207566	yopN	*	*	*	*	*
2207569	2207769	yopM	*	*	*	*	*
2208235	2209395	yopK	*	*	*	*	*
2209572	2209988	yopJ	*	*	*	*	*
2209990	2210523	yopI	*	*	*	*	*
2210550	2211086	yopH	*	*	*	*	*
2211267	2211482	yopF	*	*		*	*
2211486	2211737	yopE	*	*		*	*
2212089	2212319	-	*	*			*
2212324	2212719	yopD	*	*	*	*	*
2212777	2214105	yopC	*	*	*	*	*
2214213	2214440	yopB	*	*			*
2214701	2216017	yopA	*	*	*	*	*
2216374	2216880	yonX	*	*		*	*
2217208	2218440	yonV	*	*	*	*	*
2218522	2218710	yonU	*	*		*	*
2219025	2219201	yonT	*	*	*	*	*

<i>Bacillus</i>	<i>subtilis</i>	gene	Ref 16	Ref 12	Ref 14	Ref 51	TW
begin	end						
2219576	2220187	yonS	*	*		*	*
2220302	2220628	yonR	*	*		*	*
2221581	2221775	yonP	*	*		*	*
2221815	2224334	yonO	*	*	*	*	*
2224533	2224811	yonN		*		*	*
2226538	2226729	yonK	*	*		*	*
2226746	2227963	yonJ	*	*		*	*
2227997	2228407	yonI	*	*	*	*	*
2228626	2229126	yonH	*	*	*	*	*
2229229	2230149	yonG	*	*		*	*
2230136	2231905	yonF	*	*	*	*	*
2231923	2233443	yonE	*	*	*	*	*
2233474	2234910	yonD	*	*		*	*
2234890	2235426	yonC		*		*	*
2235465	2236481	yonB		*			*
2236562	2237032	yonA	*	*		*	*
2237047	2237442	yomZ	*	*	*	*	*
2237439	2237693	yomY	*	*	*	*	*
2237677	2238327	yomX	*	*	*	*	*
2238324	2238830	yomW	*	*	*	*	*
2238827	2239537	yomV	*	*	*	*	*
2239580	2240377	yomU		*		*	*
2241006	2241233	yomT	*	*	*	*	*
2241297	2241653	yomS	*	*	*	*	*
2241655	2242872	yomR	*	*	*	*	*
2242883	2243233	yomQ	*	*	*	*	*
2243230	2243421	yomP	*	*		*	*
2243471	2243971	yomO	*	*		*	*
2243955	2244374	yomN	*	*		*	*
2244388	2245389	yomM	*	*	*	*	*
2245392	2245721	yoZP	*	*	*	*	*
2245897	2246583	yomL	*	*		*	*
2247130	2247576	yomK	*	*	*	*	*
2247658	2248341	yomJ	*	*		*	*
2248395	2255252	yomI	*	*		*	*
2255303	2256061	yomH	*	*	*	*	*
2256073	2258700	yomG	*	*	*	*	*
2258716	2259537	yomF	*	*	*	*	*
2259574	2261508	yomE	*	*	*	*	*
2261678	2262502	yomD	*	*	*	*	*
2262730	2263833	yomC	*	*	*	*	*
2263921	2264133	yomB	*	*	*	*	*
2264144	2264410	yomA	*	*	*	*	*
2264466	2264912	yolK	*	*	*	*	*
2264909	2266177	yolJ	*	*	*	*	*
2266177	2266590	yolI	*	*	*	*	*

<i>Bacillus subtilis</i>			Ref	Ref	Ref	Ref	TW
begin	end	gene	16	12	14	51	
2266587	2268704	sunT	*	*	*	*	*
2268762	2268932	sunA		*	*	*	*
2269229	2269546	yolF	*	*	*	*	*
2269648	2270898	uvrX	*	*	*	*	*
2270891	2271223	yolD	*	*		*	*
2271397	2271732	yolC	*	*		*	*
2271775	2272131	yolB	*	*		*	*
2272137	2272604	yolA	*	*	*	*	*
2273230	2273763	yokL	*	*	*	*	*
2273799	2274377	yokK	*	*		*	*
2274441	2274938	yokJ		*	*	*	*
2274947	2276662	yokI	*	*		*	*
2276762	2277319	yokH	*	*		*	*
2277843	2278916	yokG	*	*	*	*	*
2279218	2280108	yokF	*	*		*	*
2280122	2280604	yokE	*	*	*	*	*
2280908	2281726	yokD	*	*	*	*	*
2282377	2282892	yokC	*	*	*	*	*
2283099	2283809	yokB	*	*	*	*	*
2284012	2285649	yokA	*	*	*	*	*
2286338	2286769	yppQ	*				*
2291673	2291924	ypmP			*		
2307354	2307536	degR				*	
2308034	2308216	ypeQ			*		
2332026	2332253	cotD			*		
2338006	2338377	yppE				*	
2339041	2340003	yppC			*		
2348061	2348546	ypmB				*	
2387847	2388050	yphE			*		
2391988	2392587	yphA			*		
2396035	2396211	ypfB			*		
2404348	2404791	ypbF			*		
2430559	2430711	ypuE			*	*	
2430970	2431314	ypuD	*			*	
2432370	2432606	ypzC			*		
2433009	2433398	ypuC			*	*	
2434245	2434457	ypzD			*		
2551678	2551851	sinI				*	
2551885	2552220	sinR					*
2552313	2553098	tasA			*	*	
2553162	2553734	sipW				*	
2553718	2554479	yqxM				*	
2555370	2555744	comGG				*	
2558284	2559354	comGA			*		
2563303	2563683	yqgZ	*				
2563915	2564160	yqgY			*		

<i>Bacillus subtilis</i>			Ref	Ref	Ref	Ref	TW
begin	end	gene	16	12	14	51	
2564993	2565166	yqgW			*	*	
2572796	2572969	yqgO			*	*	
2583267	2584559	yqgE					*
2584666	2585274	sodA					*
2585453	2585935	yqgC					*
2586045	2586803	yqgB					*
2587272	2587700	yqgA	*		*	*	
2610160	2610570	cdd				*	
2610732	2611076	dgkA			*		
2636809	2639139	comEC			*		
2646679	2646837	sda				*	
2649108	2649734	yqeD			*		
2651656	2652066	nucB	*				
2652262	2652732	spoIVCB	*	*			
2652640	2654142	spoIVCA	*	*	*	*	*
2654591	2655010	yqcM	*	*		*	*
2655022	2656062	yqcL	*	*		*	*
2656085	2656525	yqcK	*	*	*	*	*
2656586	2656903	yqcJ	*	*	*	*	*
2657275	2658039	yqcI	*	*	*	*	*
2658483	2659610	rapE	*	*		*	*
2659600	2659734	phrE	*	*		*	*
2659844	2660002	yqzI	*	*		*	*
2660372	2661967	yqcG	*	*		*	*
2661982	2662560	yqcF	*	*	*	*	*
2662821	2663183	yqxJ	*	*		*	*
2663156	2663635	yqxI		*		*	*
2663843	2664661	cwlA	*	*	*		*
2664706	2665128	yqxH	*	*	*	*	*
2665173	2666066	yqxG	*	*		*	*
2666154	2666318	yqcE	*	*		*	*
2666272	2666607	yqcD		*	*	*	*
2666617	2667717	yqcC		*		*	*
2667720	2667992	yqcB		*		*	*
2667989	2668567	yqcA		*		*	*
2668551	2669597	yqbT		*			
2669590	2670015	yqbS		*			
2670028	2670291	yqbR		*		*	
2670288	2671268	yqbQ		*			
2671281	2671940	yqbP		*			
2671933	2676690	yqbO		*		*	*
2676872	2677321	yqbN		*			*
2681755	2682150	yqbG	*	*			
2676872	2677321	yqbN		*			
2677467	2677646	yqdB		*	*		
2678369	2678812	yqbM		*			



<i>Bacillus</i>	<i>subtilis</i>	gene	Ref 16	Ref 12	Ref 14	Ref 51	TW
begin	end						
2678815	2679219	yqbL	*				
2679297	2680214	yqbK	*				
2680403	2680840	yqbJ	*				
2680853	2681356	yqbI	*				
2681353	2681715	yqbH	*	*	*		
2681712	2682107	yqbG	*		*		
2682111	2682422	yqbF	*	*	*		
2682433	2683368	yqbE	*		*	*	
2683387	2684355	yqbD	*			*	
2684388	2685041	yqbC	*	*	*	*	
2685082	2685999	yqbB	*			*	
2685996	2687528	yqbA	*		*	*	
2687532	2688827	yqaT	*	*		*	
2688820	2689539	yqaS	*			*	
2689607	2690071	yqaR	*	*	*	*	
2690215	2690670	yqaQ	*		*	*	
2690868	2691797	yqaP	*	*	*	*	
2691871	2692077	yqaO	*		*	*	
2692159	2692587	yqaN	*	*	*	*	
2692823	2693764	yqaM	*		*	*	
2693646	2694347	yqaL	*	*		*	
2694399	2695253	yqaK	*		*	*	
2695256	2696215	yqaJ	*			*	
2696321	2696515	yqaI	*		*	*	
2696645	2696902	yqaH	*		*	*	
2696899	2697468	yqaG	*		*	*	
2697542	2697682	yqaA	*	*		*	
2697755	2697985	yqaF	*	*	*	*	*
2698162	2698512	yqaE	*	*	*	*	*
2698779	2698946	yqaD	*	*	*	*	*
2699302	2699838	yqaC	*	*	*	*	*
2700107	2700625	yqaB	*	*	*	*	*
2701205	2701369	yrkS			*	*	*
2704624	2705841	yrkO			*		*
2706353	2706910	yrkN					*
2706989	2707096	yrkM		*	*	*	*
2707401	2707925	yrkL		*			*
2708212	2708688	yrkK	*	*	*	*	*
2709271	2710056	yrkJ	*	*	*	*	*
2710117	2710344	yrkI	*	*		*	*
2710378	2711265	yrkH	*	*			*
2711394	2711504	yrkG	*	*	*	*	*
2711803	2712360	yrkF		*		*	*
2712589	2713071	yrkE	*	*		*	*
2714202	2714762	yrkC	*	*		*	*
2714988	2715134	yrkB		*	*	*	*

<i>Bacillus subtilis</i>	begin	end	gene	Ref 16	Ref 12	Ref 14	Ref 51	TW
2715304	2716125	bltR	*	*		*	*	
2716242	2717444	blt	*	*	*	*	*	
2717613	2718071	bltD	*	*		*	*	
2718228	2719532	yrkA	*	*		*	*	
2719956	2720921	yrdR	*	*	*	*	*	
2721047	2721913	yrdQ	*	*	*	*	*	
2722036	2723073	trkA	*	*	*	*	*	
2723161	2724096	czcD	*	*		*	*	
2724340	2724729	yrdN		*		*	*	
2725106	2725996	gltR	*	*	*	*	*	
2726154	2726471	yrdK		*	*	*	*	
2726429	2727751	brnQ	*	*			*	
2728245	2729009	azlC	*	*	*	*	*	
2729022	2729495	azlB	*	*	*	*	*	
2729829	2730104	yrdF	*	*		*	*	
2730376	2731608	cypA	*	*			*	
2732001	2732150	yrdD	*	*	*	*	*	
2732249	2732812	yrdC	*	*	*	*	*	
2733041	2733412	yrdB	*	*	*	*	*	
2734222	2734725	yrdA		*		*	*	
2734951	2735805	aadK	*	*	*	*	*	
2736141	2737184	yrpB		*		*	*	
2737577	2738374	yrpC	*	*		*	*	
2738755	2739462	yrpD	*	*			*	
2740626	2741381	yrpE	*	*		*	*	
2741513	2742043	sigZ	*	*		*	*	
2743432	2744748	yraO	*	*	*	*	*	
2744863	2745732	yraN	*	*	*	*	*	
2745877	2746980	yraM	*	*	*	*	*	
2747210	2748043	csn		*				
2748486	2748749	yraL		*		*		
2748886	2749575	yraK		*				
2750108	2750470	yraJ		*				
2750517	2750951	yraI		*				
2751392	2751778	yraH		*	*	*		
2752027	2752272	yraG		*				
2752290	2752658	yraF		*				
2752677	2753813	adhB		*				
2753832	2754029	yraE		*				
2754045	2754344	yraD		*				
2754394	2754669	yraC		*	*			
2754607	2755029	yraB		*				
2755537	2756586	adhA		*				
2765783	2767162	aapA					*	
2767269	2767901	yrhP			*		*	
2768054	2768881	yrhO					*	

<i>Bacillus</i>	<i>subtilis</i>	gene	Ref 16	Ref 12	Ref 14	Ref 51	TW
begin	end						
2769120	2769620	sigV	*				
2770588	2772492	yrhL			*		
2777147	2777689	yrhH	*		*	*	
2804974	2805498	yrrD			*		
2809738	2809953	yrvP			*		
2839796	2840017	yrzG			*		
2851383	2851826	pheB				*	
2863687	2864433	comC			*		
2896852	2897187	ysnD				*	
2951723	2951923	rpmI			*		
2952629	2952853	yscA			*		
2952903	2953535	yscB			*	*	
2965453	2965839	speD				*	
3010627	3010863	ytzD			*		
3069327	3070484	ythQ			*		
3071449	3071670	ytzE				*	
3071824	3072297	ytzF	*				
3081340	3081831	yteQ	*				
3116077	3117063	ytrC			*		
3135986	3136423	ytkA				*	
3140975	3141142	ythC			*		
3189501	3189764	yubF				*	
3198272	3198586	yulD				*	
3218905	3219309	yugN	*				
3219369	3219740	yugM			*		
3251848	3252492	comA					*
3252573	3254882	comP	*	*	*	*	
3254897	3255064	comX	*	*	*	*	
3255052	3255951	comQ	*	*	*	*	
3256136	3256276	degQ	*		*	*	
3256737	3257105	yuzC	*			*	
3257081	3258310	yuxH				*	
3262911	3263300	yuzE			*		
3279351	3279521	-	*				
3279576	3282215	yukL	*			*	
3282303	3282518	yukM	*			*	
3282876	3286712	dhbF	*			*	
3287698	3289317	dhbE	*				
3289346	3290542	dhbC	*				
3290568	3291353	dhbA	*				
3298775	3298918	yuiA			*		
3326305	3327645	yunH	*				
3327820	3329415	yunI	*				
3329560	3330909	yunJ	*				
3330915	3332207	yunK	*				
3332220	3333704	yunL	*				

<i>Bacillus</i>	<i>subtilis</i>	gene	Ref 16	Ref 12	Ref 14	Ref 51	TW
begin	end						
3333683	3334048	yunM	*				
3334809	3335330	yurB	*				
3335321	3337558	yurC	*				*
3337559	3338392	yurD	*				*
3338414	3339007	yurE	*				*
3339004	3339996	yurF	*				
3340225	3341475	yurG	*				
3341492	3342730	yurH	*				
3343172	3344038	yurI	*				
3344072	3345175	yurJ	*				
3353239	3353514	yurS				*	
3456428	3457138	yvaP			*		
3461136	3462281	opuBA					*
3462556	3463098	yvaV					*
3463352	3463828	yvaW	*	*	*	*	*
3463825	3464796	yvaX	*	*	*	*	*
3464839	3465450	yvaY	*	*	*	*	*
3465497	3466120	yvaZ	*	*	*	*	*
3466117	3466389	yvbA	*	*	*	*	*
3466577	3467266	opuCD		*			*
3467284	3468195	opuCC					*
3542003	3543346	yvdP			*	*	
3543702	3544664	yvdO			*		
3550539	3551423	yvdJ			*		
3581025	3581750	yvcA			*	*	
3583377	3584114	hisA	*				
3584111	3584749	hisH	*				
3584750	3585334	hisB	*				
3585331	3586614	hisD	*				
3586611	3587252	hisG	*				
3587245	3588420	hisZ	*				
3601134	3601607	yvnA			*		
3614146	3614376	csbA				*	
3620678	3621016	yvzD	*		*	*	
3633485	3633814	yvyC	*		*	*	
3639315	3639581	flgM				*	
3639692	3640111	yvyF			*		
3640185	3640874	comFC			*		
3640841	3641137	comFB				*	
3641227	3642618	comFA			*		
3658149	3659639	lytC		*	*	*	*
3659678	3661795	lytB		*		*	*
3661849	3662157	lytA	*	*		*	*
3666269	3668971	ggaB	*	*	*	*	*
3669095	3670435	ggaA	*	*	*	*	*
3672624	3674207	tagH	*	*			*

<i>Bacillus subtilis</i>			Ref	Ref	Ref	Ref	TW
begin	end	gene	16	12	14	51	
3674227	3675054	tagG	*	*	*		*
3675219	3677459	tagF	*	*	*	*	*
3677459	3679480	tagE	*	*	*	*	*
3679641	3680030	tagD	*	*		*	*
3680430	3681200	tagA	*	*		*	*
3681233	3682378	tagB	*	*	*	*	*
3682498	3683826	tagC	*	*	*	*	*
3683856	3686498	lytD		*			*
3689326	3690432	gerBB			*		
3706171	3706707	ywsB				*	
3711644	3712972	ywrK			*	*	*
3713029	3713706	ywrJ			*	*	*
3713766	3714908	cotB			*	*	*
3715036	3716124	cotH					*
3716265	3716852	cotG		*			*
3717026	3717643	ywrF					*
3717851	3718186	ywrE	*		*		
3721062	3721598	ywrA	*				
3724203	3724667	ywqK	*		*	*	
3747771	3747881	usd			*		
3767845	3768162	ureA	*				
3769420	3769899	ywmF			*		
3778316	3779056	ywmB				*	
3780124	3780522	atpC	*				
3786675	3787058	atpI			*	*	
3808603	3808977	spo0F	*				
3829814	3830533	ywiC			*		
3835169	3835321	sboX				*	
3837605	3838915	ywhP			*		
3841347	3842048	ywhM			*		
3845054	3846199	rapF			*		
3846183	3846302	phrF			*	*	
3898067	3898600	ywdE			*		
3898648	3899139	ywdD			*		
3899182	3899610	ywdC			*		
3911128	3912309	ywcF			*		
3922716	3923024	ywcB			*		
3936574	3937251	ywbB				*	
3981765	3981965	yxzE			*		
3988024	3988665	yxkC	*			*	
3991954	3993174	yxjM			*		
3995621	3995884	yxjJ			*		
3996756	3997778	yxjH	*				
3998141	3999145	yxjG	*				
3999327	4000100	yxjF	*				
4000117	4000767	yxjE	*				

<i>Bacillus</i>	<i>subtilis</i>	gene	Ref 16	Ref 12	Ref 14	Ref 51	TW
begin	end						
4000764	4001480	yxjD	*				
4001559	4002923	yxjC	*				
4017628	4017828	yxjL			*		
4018967	4019455	yxjI				*	*
4019473	4019925	yxzG					*
4019995	4020324	yxjH		*			*
4020447	4020863	yxjG			*		*
4020914	4021282	yxzC	*	*	*		*
4021843	4022271	yxjG			*	*	
4034779	4035087	yxjE	*			*	
4035133	4035576	yxjD			*	*	
4040272	4040727	hutP	*				
4046327	4047754	hutM			*		
4053144	4054256	yxjR	*				
4055660	4056802	yxjP	*				
4056819	4057568	yxjO	*				
4061119	4061346	yxjJ			*	*	
4090271	4090522	yxjA			*		
4094935	4095927	yxjC				*	
4097170	4097439	yxjA				*	
4097216	4097698	yxjB	*			*	
4099959	4101158	yxjM			*		
4122217	4122927	yydK					*
4123428	4124150	yydJ	*	*	*	*	*
4124171	4124800	yydI	*	*	*	*	*
4124950	4125708	yydH	*	*	*	*	*
4125689	4126648	yydG	*	*	*	*	*
4126706	4126855	yydF	*	*		*	*
4127237	4129252	fbp		*			*
4129786	4131546	yydD	*	*	*	*	*
4131546	4131944	yydC	*	*	*	*	*
4131937	4133382	yydB	*	*	*	*	*
4133460	4133939	yydA		*			*
4134376	4134789	yycS					*
4134823	4136049	yycR					*
4136571	4136819	yycQ					*
4168374	4168820	yybP	*				
4172322	4172759	yybN	*	*	*	*	*
4172873	4173628	yybM	*	*	*	*	*
4173618	4174328	yybL	*	*	*	*	*
4174325	4175080	yybK	*	*	*	*	*
4175077	4175733	yybJ	*	*	*	*	*
4175924	4176712	yybI		*			*
4176780	4177169	yybH					*
4183041	4183487	yyaT					*
4183484	4184089	yyaS		*	*		*

<i>Bacillus subtilis</i>		gene	Ref	Ref	Ref	Ref	TW
begin	end		16	12	14	51	
4184184	4184705	yyaR	*	*	*	*	*
4185116	4185656	yyaQ	*	*	*		*
4185816	4186382	yyaP	*	*	*	*	*
4186889	4188265	tetB	*	*	*	*	*
4188115	4188177	tetL		*		*	*
4188614	4188853	yyaO	*	*		*	*
4189004	4189420	yyaN	*	*	*	*	*
4189417	4190334	yyaM	*	*	*	*	*
4214463	4214597	rpmH			*		