

called mutations in strain A of ethanol resistance data set

#CHROM	POS	mapped to gene	REF	ALT	type of mutation
NC_007779	432873	ribD	T	G	synonymous_SNP
NC_007779	3632213	yigI	T	G	nonsynonymous_SNP
NC_007779	1881068	yoag	GTTTTTTTT	GTTTTTTTTT	intergenic_INDEL
NC_007779	1219107	ycgG	A	G	nonsynonymous_SNP
NC_007779	2204029	yehI	T	C	synonymous_SNP
NC_007779	1350607	rnb	A	G	nonsynonymous_SNP
NC_007779	1260091	pth	GTTTTTTTT	GTTTTTTTTT	intergenic_INDEL
NC_007779	2418020	yfbU	T	C	synonymous_SNP
NC_007779	1848612	topB	T	C	synonymous_SNP
NC_007779	2693128	purL	G	A	nonsynonymous_SNP
NC_007779	3045505	gcvP	T	C	synonymous_SNP
NC_007779	3678574	ilvC	G	A	synonymous_SNP
NC_007779	2374075	arna	T	C	nonsynonymous_SNP
NC_007779	3519498	glpK	A	G	nonsynonymous_SNP
NC_007779	2875230	iap	A	G	intergenic_SNP
NC_007779	1216504	bluf	T	C	synonymous_SNP
NC_007779	2605808	hyfF	T	C	nonsynonymous_SNP
NC_007779	2634872	der	T	C	nonsynonymous_SNP
NC_007779	1005273	pyrD	T	C	synonymous_SNP
NC_007779	3592358	yihF	G	GGGAAGGTGCGAAT	frameshift_INDEL
NC_007779	2429952	hisP	A	G	nonsynonymous_SNP
NC_007779	2477843	yfdN	A	G	nonsynonymous_SNP
NC_007779	837002	ybiC	CGGGGG	CGGGG	frameshift_INDEL
NC_007779	944418	dmsB	A	G	nonsynonymous_SNP
NC_007779	3709331	asnA	G	A	SNP_stop_gained
NC_007779	773431	cydA	A	G	nonsynonymous_SNP
NC_007779	474969	ybaY	A	G	nonsynonymous_SNP
NC_007779	1743754	cfa	T	C	nonsynonymous_SNP
NC_007779	2274950	rtn	A	G	synonymous_SNP
NC_007779	2818531	alaS	G	A	nonsynonymous_SNP
NC_007779	3986214	slp	AG	AGGGAAGGTG	frameshift_INDEL
NC_007779	4463791	pmbA	A	G	nonsynonymous_SNP
NC_007779	3178798	ygiB	T	C	synonymous_SNP
NC_007779	2723361	kgtP	G	A	synonymous_SNP
NC_007779	2271636	yeiR	G	A	synonymous_SNP
NC_007779	2646727	yfhM	T	C	nonsynonymous_SNP
NC_007779	2851804	hypD	T	C	nonsynonymous_SNP
NC_007779	19427	nhaR	A	G	nonsynonymous_SNP
NC_007779	1623852	ydeE	C	G	nonsynonymous_SNP
NC_007779	4442880	ytfI	T	C	nonsynonymous_SNP
NC_007779	3682574	ilvD	C	T	synonymous_SNP
NC_007779	1482657	ynbD	C	T	nonsynonymous_SNP
NC_007779	152161	yadL	A	G	nonsynonymous_SNP
NC_007779	3033104	lysS	A	G	nonsynonymous_SNP
NC_007779	2890186	cysJ	T	C	synonymous_SNP
NC_007779	616788	entF	T	C	nonsynonymous_SNP
NC_007779	2743082	rplS	A	G	synonymous_SNP
NC_007779	1393120	ycjY	T	C	nonsynonymous_SNP

NC_007779	2538886	cysk	T	C	intergenic_SNP
NC_007779	3604149	yigZ	A	G	nonsynonymous_SNP
NC_007779	3335060	sfsb	C	T	intergenic_SNP
NC_007779	1349144	rnb	A	G	nonsynonymous_SNP
NC_007779	647873	citF	T	C	nonsynonymous_SNP
NC_007779	2834637	hypF	G	A	nonsynonymous_SNP
NC_007779	4166134	rpsL	C	T	nonsynonymous_SNP
NC_007779	1813544	ydjN	G	A	synonymous_SNP
NC_007779	4262675	dinF	T	C	synonymous_SNP
NC_007779	2668960	hcaE	T	C	nonsynonymous_SNP
NC_007779	1733814	lhr	G	A	nonsynonymous_SNP
NC_007779	422258	malZ	A	G	nonsynonymous_SNP
NC_007779	1126189	mdtH	C	T	nonsynonymous_SNP
NC_007779	3442749	thiE	A	G	synonymous_SNP
NC_007779	2123615	wcaJ	A	G	nonsynonymous_SNP
NC_007779	2179979	gatY	G	A	nonsynonymous_SNP
NC_007779	3337200	mIaC	T	C	nonsynonymous_SNP
NC_007779	3712414	mnmG	G	C	nonsynonymous_SNP
NC_007779	1977759	motB	T	C	nonsynonymous_SNP
NC_007779	1457976	paaD	C	A	nonsynonymous_SNP
NC_007779	3455034	rpoB	T	C	nonsynonymous_SNP
NC_007779	2999613	xdhA	A	G	nonsynonymous_SNP
NC_007779	2768585	yfjR	T	C	nonsynonymous_SNP
NC_007779	3226690	ygjJ	T	C	synonymous_SNP
NC_007779	3252124	yhaJ	G	A	synonymous_SNP
NC_007779	4574132	yjiQ	A	G	nonsynonymous_SNP
NC_007779	2779100	ypjA	A	G	synonymous_SNP
NC_007779	4443654	ytfJ	T	C	nonsynonymous_SNP
NC_007779	4455503	ytfQ	A	G	nonsynonymous_SNP
NC_007779	3942761	bcsE	T	C	synonymous_SNP
NC_007779	1628459	dcp	A	G	synonymous_SNP
NC_007779	1715957	dtpa	A	G	nonsynonymous_SNP
NC_007779	2005956	flid	A	G	intergenic_SNP
NC_007779	2513660	fryb	G	A	nonsynonymous_SNP
NC_007779	3710290	mioc	T	C	nonsynonymous_SNP
NC_007779	1977463	motB	T	C	synonymous_SNP
NC_007779	1284989	narZ	T	C	synonymous_SNP
NC_007779	1826815	spy	T	C	intergenic_SNP
NC_007779	838200	ybiJ	C	T	nonsynonymous_SNP
NC_007779	970634	ycaQ	C	T	nonsynonymous_SNP
NC_007779	649967	citD	A	G	nonsynonymous_SNP
NC_007779	179350	dgt	T	C	synonymous_SNP
NC_007779	2484772	dsdA	T	C	nonsynonymous_SNP
NC_007779	3222220	ebgA	T	C	nonsynonymous_SNP
NC_007779	1687275	fumC	T	C	nonsynonymous_SNP
NC_007779	2790905	gabD	T	C	nonsynonymous_SNP
NC_007779	2941170	gcvA	T	C	synonymous_SNP
NC_007779	2666599	hcar	A	G	intergenic_SNP
NC_007779	3984411	hdeB	A	G	nonsynonymous_SNP
NC_007779	275552	mmuP	T	C	nonsynonymous_SNP

NC_007779	3316515	nusA	T	G	synonymous_SNP
NC_007779	1464132	paaK	T	C	synonymous_SNP
NC_007779	1365413	puuC	A	G	synonymous_SNP
NC_007779	3168585	qseB	T	C	synonymous_SNP
NC_007779	2320623	rcsc	A	G	intergenic_SNP
NC_007779	1712704	rsxE	A	G	nonsynonymous_SNP
NC_007779	1356817	sapB	A	G	nonsynonymous_SNP
NC_007779	8698	talB	A	G	nonsynonymous_SNP
NC_007779	8972	talB	A	G	synonymous_SNP
NC_007779	245321	yafK	A	G	nonsynonymous_SNP
NC_007779	501700	ybaL	A	G	nonsynonymous_SNP
NC_007779	1590915	ydeT	A	G	synonymous_SNP
NC_007779	1707042	ydgK	A	G	nonsynonymous_SNP
NC_007779	1925886	yebZ	T	C	synonymous_SNP
NC_007779	2047421	yeeI	A	G	nonsynonymous_SNP
NC_007779	2747579	yfjD	A	G	synonymous_SNP
NC_007779	3397873	yhdE	C	T	nonsynonymous_SNP
NC_007779	2675299	yphD	G	A	synonymous_SNP
NC_007779	3085013	yqgC	G	A	synonymous_SNP
NC_007779	3247046	yqjA	T	C	synonymous_SNP
NC_007779	2535727	zipA	T	C	nonsynonymous_SNP
NC_007779	3284089	agaB	T	C	nonsynonymous_SNP
NC_007779	3950257	bcsZ	A	G	nonsynonymous_SNP
NC_007779	1795962	btuC	T	C	nonsynonymous_SNP
NC_007779	663570	dacA	A	G	synonymous_SNP
NC_007779	3071463	epd	G	A	synonymous_SNP
NC_007779	2565892	eutH	A	G	nonsynonymous_SNP
NC_007779	1891010	fadD	G	A	nonsynonymous_SNP
NC_007779	3230205	fadh	T	C	intergenic_SNP
NC_007779	4099913	feoB	A	G	nonsynonymous_SNP
NC_007779	3498598	gldA	T	C	nonsynonymous_SNP
NC_007779	4064228	gntU	T	C	nonsynonymous_SNP
NC_007779	912676	hcp	T	C	nonsynonymous_SNP
NC_007779	1026432	helD	C	T	nonsynonymous_SNP
NC_007779	2981321	kduD	T	C	synonymous_SNP
NC_007779	4249861	malE	C	T	nonsynonymous_SNP
NC_007779	19523	nhaR	A	G	nonsynonymous_SNP
NC_007779	1897648	pabB	A	G	nonsynonymous_SNP
NC_007779	2621951	ppk	G	A	synonymous_SNP
NC_007779	1789889	ppsR	A	G	nonsynonymous_SNP
NC_007779	2621296	purN	T	C	nonsynonymous_SNP
NC_007779	3194166	rfaE	T	C	nonsynonymous_SNP
NC_007779	4318372	rpiB	A	G	synonymous_SNP
NC_007779	2236204	sana	T	C	intergenic_SNP
NC_007779	718961	speF	T	C	nonsynonymous_SNP
NC_007779	2119805	wcaK	G	A	nonsynonymous_SNP
NC_007779	948653	ycaM	A	G	nonsynonymous_SNP
NC_007779	1707215	ydgK	T	C	synonymous_SNP
NC_007779	2347609	yfaL	C	T	nonsynonymous_SNP
NC_007779	3784364	yidH	A	G	nonsynonymous_SNP

NC_007779	267754	ykfA	T	C	nonsynonymous_SNP
NC_007779	2234532	yohK	A	G	synonymous_SNP
NC_007779	3715056	atpB	C	T	nonsynonymous_SNP
NC_007779	2545887	cysA	T	C	nonsynonymous_SNP
NC_007779	2890541	cysJ	A	G	nonsynonymous_SNP
NC_007779	160542	dksA	T	C	synonymous_SNP
NC_007779	2065115	erfK	T	C	nonsynonymous_SNP
NC_007779	1550225	fdnG	T	C	nonsynonymous_SNP
NC_007779	2856122	mutS	T	A	SNP_stop_gained
NC_007779	3317320	nusA	T	C	nonsynonymous_SNP
NC_007779	990816	pncb	A	G	intergenic_SNP
NC_007779	3309942	pnp	T	G	nonsynonymous_SNP
NC_007779	3475831	stha	A	G	intergenic_SNP
NC_007779	3969883	treF	T	C	nonsynonymous_SNP
NC_007779	2144946	udk	T	C	nonsynonymous_SNP
NC_007779	798640	ybhA	A	G	nonsynonymous_SNP
NC_007779	821688	ybhM	A	G	synonymous_SNP
NC_007779	2795799	ygav	T	C	intergenic_SNP
NC_007779	4264473	yjbM	T	C	synonymous_SNP
NC_007779	4331214	yjdm	T	C	nonsynonymous_SNP
NC_007779	3824604	pyre	GCC	GC	intergenic_INDEL
NC_007779	2910127	relA	ACCCAGCACGCGCCCCAGCAC	ACCCAGCAC	inframe_deletion
NC_007779	3620604	ysgA	CTT	CT	frameshift_INDEL

called mutations in strain B of ethanol resistance data set

#CHROM	POS	mapped to gene	REF	ALT	type of mutation
NC_007779	795452	modA	A	G	intergenic_SNP
NC_007779	2660496	iscR	A	T	nonsynonymous_SNP
NC_007779	2910127	relA	ACCCAGCACGCGCCCCAGCAC	ACCCAGCAC	inframe_deletion
NC_007779	3685148	ilvG_2	A	T	intergenic_SNP
NC_007779	1881540	yeaR	TGGG	TAATACCACAACCCCTTAAGTTAGCGCTTATGGGG	inframe_insertion
NC_007779	2322120	rscC	GT	GAGCGTTAT	intergenic_INDEL
NC_007779	3750592	insH	G	GCAAGTAAATA	intergenic_INDEL
NC_007779	2176983	gatA	G	GAT	intergenic_INDEL

called mutations in strain C of ethanol resistance data set

#CHROM	POS	mapped to gene	REF	ALT	type of mutation
NC_007779	2322120	rcsC	GT	GAGCGTTAT	intergenic_INDEL
NC_007779	2380505	menC	CC	CCATAAGCGCTAACTTAAGGGTTGAC	INDEL_stop_gained
NC_007779	1302406	insD	T	TTCGCACCTTC	intergenic_INDEL
NC_007779	581786	ybcY	G	GGACTTGTTTCGCACCTTCC	inframe_insertion
NC_007779	705229	nagE	TCCGC	TCCGCCGC	inframe_insertion
NC_007779	1892079	yeaY	T	A	synonymous_SNP
NC_007779	2910761	relA	A	G	nonsynonymous_SNP
NC_007779	3448513	rpoC	G	A	nonsynonymous_SNP
NC_007779	4200347	rpoA	T	A	nonsynonymous_SNP
NC_007779	574996-581653	insH	.	.	Large deletion
NC_007779	574996-581653	nmpC	.	.	Large deletion
NC_007779	574996-581653	essD	.	.	Large deletion
NC_007779	574996-581653	ybcS	.	.	Large deletion
NC_007779	574996-581653	rzpD	.	.	Large deletion
NC_007779	574996-581653	borD	.	.	Large deletion
NC_007779	574996-581653	ybcV	.	.	Large deletion
NC_007779	574996-581653	ybcW	.	.	Large deletion
NC_007779	574996-581653	nohB	.	.	Large deletion
NC_007779	574996-581653	tfaD	.	.	Large deletion
NC_007779	574996-581653	bycY	.	.	Large deletion
NC_007779	574996-581653	rzoD	.	.	Large deletion

called mutations in strain D of ethanol resistance data set

#CHROM	POS	mapped to gene	REF	ALT	type of mutation
NC_007779	1916977	proQ	A	T	nonsynonymous_SNP
NC_007779	2639469	ispG	T	C	nonsynonymous_SNP
NC_007779	2910127	relA	ACCCAGCACGCGCCCCAGCAC	ACCCAGCAC	inframe_deletion
NC_007779	4198966	rpsD	T	G	nonsynonymous_SNP

called mutations in strain E of ethanol resistance data set

#CHROM	POS	mapped to gene	REF	ALT	type of mutation
NC_007779	2746219	ffh	A	G	nonsynonymous_SNP
NC_007779	1335007	topA	C	T	nonsynonymous_SNP
NC_007779	4002969	yhiN	A	G	intergenic_SNP
NC_007779	2855834	mutS	T	A	nonsynonymous_SNP
NC_007779	3602373	trkH	T	C	synonymous_SNP
NC_007779	2472663	intS	A	G	nonsynonymous_SNP
NC_007779	2212091	yehP	A	G	nonsynonymous_SNP
NC_007779	1406309	abgA	A	G	intergenic_SNP
NC_007779	1648781	ydfW	T	C	intergenic_SNP
NC_007779	2471949	intS	T	C	intergenic_SNP
NC_007779	916131	aqpZ	G	A	synonymous_SNP
NC_007779	3648106	hemX	T	C	synonymous_SNP
NC_007779	1516725	ydcV	A	G	nonsynonymous_SNP
NC_007779	1406269	abgA	A	ACA	frameshift_INDEL
NC_007779	2645910	pbpC	T	C	synonymous_SNP
NC_007779	3790458	uhpB	G	A	INDEL_stop_gained
NC_007779	2962177	ppdB	C	T	nonsynonymous_SNP
NC_007779	2877551	cas1	A	G	nonsynonymous_SNP
NC_007779	2512955	fryC	G	A	nonsynonymous_SNP
NC_007779	1644370	ydfT	TAAA	TAA	frameshift_INDEL
NC_007779	1991081	ftnA	T	C	nonsynonymous_SNP
NC_007779	449374	cyoB	T	C	synonymous_SNP
NC_007779	4041774	livJ	A	G	nonsynonymous_SNP
NC_007779	2763433	yfjL	T	C	nonsynonymous_SNP
NC_007779	642258	ybdR	T	C	synonymous_SNP
NC_007779	2813572	gshA	T	C	synonymous_SNP
NC_007779	1932029	yebF	T	C	nonsynonymous_SNP
NC_007779	4632259	nadR	A	C	nonsynonymous_SNP
NC_007779	2074477	flu	A	G	nonsynonymous_SNP
NC_007779	582170	ftaX	A	G	nonsynonymous_SNP
NC_007779	3955895	yhjK	T	C	nonsynonymous_SNP
NC_007779	1718276	tyrS	A	G	nonsynonymous_SNP
NC_007779	1858002	ydjH	T	C	nonsynonymous_SNP
NC_007779	1667148	clcB	T	C	synonymous_SNP
NC_007779	4561746	iraD	T	C	nonsynonymous_SNP
NC_007779	4069227	glgX	A	G	synonymous_SNP
NC_007779	2128340	gmm	T	C	nonsynonymous_SNP
NC_007779	2673614	yphC	T	C	synonymous_SNP
NC_007779	591407	nfrB	A	G	nonsynonymous_SNP
NC_007779	1668443	ynfK	A	G	nonsynonymous_SNP
NC_007779	1513839	ydcS	A	G	nonsynonymous_SNP
NC_007779	2579066	tktB	G	A	nonsynonymous_SNP
NC_007779	1824414	nadE	A	G	synonymous_SNP
NC_007779	4095881	bioH	A	G	nonsynonymous_SNP
NC_007779	2355566	glpQ	G	A	nonsynonymous_SNP
NC_007779	632320	ybdH	T	C	synonymous_SNP
NC_007779	1905809	manZ	T	C	synonymous_SNP
NC_007779	2258308	rihB	A	G	synonymous_SNP

NC_007779	53165	pdxA	G	A	synonymous_SNP
NC_007779	1578891	yddb	A	G	nonsynonymous_SNP
NC_007779	3372994	nanA	T	C	synonymous_SNP
NC_007779	210994	ldcC	T	C	nonsynonymous_SNP
NC_007779	1813070	ydjN	T	C	synonymous_SNP
NC_007779	3206583	ttdB	G	A	nonsynonymous_SNP
NC_007779	479721	tomB	T	C	nonsynonymous_SNP
NC_007779	4372300	aspA	A	G	synonymous_SNP
NC_007779	1392432	ymjC	G	A	INDEL_stop_gained
NC_007779	1859322	ydjI	A	G	synonymous_SNP
NC_007779	2837365	ascG	T	C	nonsynonymous_SNP
NC_007779	3450775	rpoC	T	C	nonsynonymous_SNP
NC_007779	1350440	rnb	C	T	nonsynonymous_SNP
NC_007779	2813659	gshA	C	T	synonymous_SNP
NC_007779	1629848	ydfG	A	G	synonymous_SNP
NC_007779	1802255	infC	T	C	nonsynonymous_SNP
NC_007779	386965	tauC	A	G	synonymous_SNP
NC_007779	4275018	uvrA	T	C	nonsynonymous_SNP
NC_007779	2135997	wzc	G	A	nonsynonymous_SNP
NC_007779	1928151	exoX	G	A	synonymous_SNP
NC_007779	1440143	ydbK	A	G	nonsynonymous_SNP
NC_007779	2022089	fliL	T	C	nonsynonymous_SNP
NC_007779	3708445	viaA	A	G	synonymous_SNP
NC_007779	1158744	ycfH	A	G	nonsynonymous_SNP
NC_007779	2660496	iscR	A	T	nonsynonymous_SNP
NC_007779	1600253	isrK	C	T	intergenic_SNP
NC_007779	1775399	ydiN	T	C	nonsynonymous_SNP
NC_007779	1823202	chbB	A	C	synonymous_SNP
NC_007779	1845615	ynjI	T	C	nonsynonymous_SNP
NC_007779	2081558	yeeX	C	T	nonsynonymous_SNP
NC_007779	2237845	preT	G	A	nonsynonymous_SNP
NC_007779	2328463	atoD	G	A	nonsynonymous_SNP
NC_007779	2647907	yfhM	T	C	nonsynonymous_SNP
NC_007779	2793721	gabP	T	C	synonymous_SNP
NC_007779	2910944	relA	A	T	nonsynonymous_SNP
NC_007779	3013385	yqeC	A	G	nonsynonymous_SNP
NC_007779	3606626	fadB	T	C	nonsynonymous_SNP
NC_007779	3645220	cyaA	G	A	synonymous_SNP
NC_007779	3745991	mdtL	T	C	nonsynonymous_SNP
NC_007779	3820133	ligB	G	A	nonsynonymous_SNP
NC_007779	4017560	rhsB	G	A	nonsynonymous_SNP
NC_007779	4199333	rpsD	A	G	nonsynonymous_SNP
NC_007779	4583511	mcrB	A	G	synonymous_SNP
NC_007779	4603422	opgB	C	T	nonsynonymous_SNP
NC_007779	801248	ybhH	A	G	nonsynonymous_SNP
NC_007779	926681	infA	A	T	nonsynonymous_SNP
NC_007779	1349026	rnb	C	T	nonsynonymous_SNP
NC_007779	1569576	yddW	T	C	nonsynonymous_SNP
NC_007779	1757345	pykF	G	A	intergenic_SNP
NC_007779	1951939	aspS	T	C	nonsynonymous_SNP

NC_007779	2910127	relA	ACCCAGCACGCGCCCCAGCAC	ACCCAGCAC	inframe_deletion
NC_007779	3336758	malB	C	T	intergenic_SNP
NC_007779	3715545	atpE	T	G	synonymous_SNP
NC_007779	3831076	waaA	A	G	nonsynonymous_SNP

called mutations in strain F of ethanol resistance data set

#CHROM	POS	mapped to gene	REF	ALT	type of mutation
NC_007779	3750588	insH	TAA	TAAAACAA	intergenic_INDEL
NC_007779	456415	clpP	G	T	nonsynonymous_SNP
NC_007779	694644	miaB	G	GCCCATCAGGTTC	INDEL_stop_gained & inframe_insertion
NC_007779	1885215	yeaV	A	AGG	frameshift_INDEL
NC_007779	694650	miaB	T	G	nonsynonymous_SNP
NC_007779	4495938	idnT	A	G	nonsynonymous_SNP
NC_007779	1909108	cspC	AG	AGGGAAGGTGCG	frameshift_INDEL
NC_007779	2120992	wzxC	A	T	nonsynonymous_SNP
NC_007779	2660468	iscR	T	A	nonsynonymous_SNP
NC_007779	2911891	relA	T	G	nonsynonymous_SNP